Langley Researcher

VOLUME 5, NUMBER 1 LANGLEY RESEARCH CENTER JANUARY 14, 1966

HORNE PRESENTED THULIN MEDAL BY SWEDISH AERONAUTICAL GROUP

Walter B. Horne, Landing and Impact Branch, Dynamic Loads Division, recently received the Enoch Thulin Medal from the Royal Aeronautical Society of Sweden for his contributions to the understanding of airplane take-off and landing problems on wet runways. The medal is named in honor of Enoch Thulin who was the first Swede to build and fly an airplane. The medal has been awarded to only six persons.

Walter B. Horne

Horne received the medal last month when he presented a paper to the Swedish Society. The title of his paper was "Research on Ways to Improve Tire Traction on Wet, Slush and Ice Covered Runways." Co-authors on the paper were Thomas J. Yager and Glenn R. Taylor, both of Dynamic Loads Division.

Horne was born in Worcester, Massachusetts, and received his B.S. degree in Mechanical Engineering from the University of Rhode Island. He joined the Langley staff in 1948 and was assigned to a group working to develop a powered catapult for the Landing Loads Track carriage. His major activity has been in the design and development of the Landing Loads Track, in research performed with the track and, in recent years, a concentration on aircraft ground operating problems research.

ENGINEERS' CLUB OF VIRGINIA PENINSULA TO HEAR HUSSON

Charles Husson

Charles Husson, Head of Microelectronics Section, Flight Instrumentation Division, will be guest speaker at the meeting of the Engineers' Club of the Virginia Peninsula on January 19 at 8 p.m. at the Thomas Eaton Junior High School.

Husson will speak on "Microelectronics." He will discuss the historical background and significant steps achieved in electronic material science as they relate to microelectronics.

(Continued on page 8)

CENTER PLANS SAFETY SLOGAN CONTEST; DEADLINE FEBRUARY 1

A Safety Slogan Contest to promote greater safety consciousness among Langley staff members and to help achieve the objective of Mission Safety Seventy has been authorized by Dr. Floyd L. Thompson, Center Director.

A cash prize of $50 will be presented to the winner and two runners-up prizes of $25 each have been authorized and may be granted at the discretion of the Incentive Awards Committee.

All slogans should be submitted on a suggestion form to the Incentive Awards Office, Mail Stop 124, by the close of business on February 1. The winner will be announced in the February 11 issue of Langley Researcher.

The President's Mission Safety Seventy Program was developed to help reduce accident rates among Federal employees. The objective of the program is to bring accident rates by 1970 down to 70 percent of the rate which was recorded in 1963.

All staff members are urged to participate in the contest.

Rear Admiral L. C. Daspit, Commandant of the Armed Forces Staff College, is shown with Charles J. Donlan, Langley Associate Director, during a recent visit to the Center. Admiral Daspit and approximately 200 student officers and faculty members of the AFSC toured nine Langley research facilities during the visit.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575

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ANNOUNCEMENTS

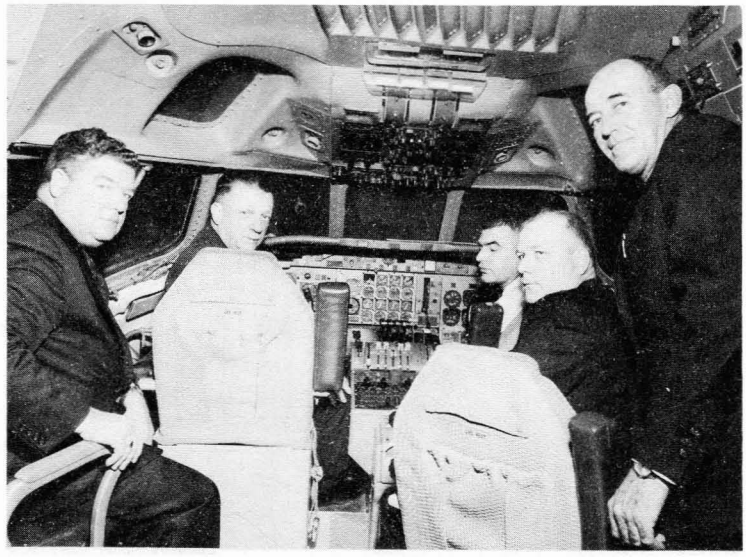
NEW DIAMONDS. . .Sporting a new sparkler on the third finger left hand is Sharyn Mullins, Administrative Services Division. She is engaged to Charles Hilstrom, Williamsburg, and no definite date has been announced for the big event. . .Dan Cupid scored another victory when Sandra DeBlasio, Personnel Division, became engaged to Jeffrey D. Anthony, Hampton. No date has been announced for the wedding. . .Dr. Wendell B. Stephens, Structures Research Division, recently became engaged to Marjorie Louise Clark, Waynesboro. No date has been announced for the wedding.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Field Representative of the Government-wide Service Plan, will visit the Center on January 19 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2523, for an appointment.

ORANGE BLOSSOMS. . .Wedding bells will ring on January 22 when James R. Brabrand, Program Schedules and Analysis Unit, takes his final vows with Agnes Mae Lowe, Newport News, at the First Presbyterian Church in Williamsburg. . .George T. Carson Jr., Space Mechanics Division, was married on December 19 to Joan Early, Norfolk. . . Mitchell J. Petway, Fiscal Division, deserted the bachelor ranks on December 19 when he took his final vows with Betty Anne Mulder, Gatesville, North Carolina. . .Wedding bells will ring on January 29 when Thomas J. Yager, Dynamic Division, marries Judy Phillips, Portland, Oregon, in Portland.

ASTRONOMY CLUB. . .The Langley Astronomy Club will meet on January 19 from 7 to 9 p.m. in the Activities Building. Dr. Goetz K. Oertel, Aero-Physics Division, will show a film of the sun and will narrate the film and answer questions from the audience. Club members will show picture slides of the planets Juipter and Saturn; also of the moon and stars. A progress report of the Observatory Building and the powerful 16-inch telescope will be presented and future club operations and plans will be discussed. All interested NASA and LAFB personnel are invited to attend.

BLOODMOBILE. . .The Red Cross Bloodmobile will make its first visit for 1966 to the Center on February 16. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.



A group from the Federal Aviation Association visited the Center last Friday and toured a number of facilities. Shown in the cockpit of a fixed base Supersonic Transport simulator are (from left): George W. Kriskie, FAA; Archie League, Director of Air Traffic Services for FAA; Perry L. Deal, Pilots Section, Flight Mechanics and Technology Division; Edward C. Krupinski, FAA, and Ferris J. Rowland, FAA.

NEW ARRIVALS. . .Weighing in at six pounds, ten ounces on December 16 was Joy Raye, new daughter of James A. Mullins, Applied Materials and Physics Division. . .Word has been received at the Center that Gloria Alto, MORL Office, became the mother of an eight pound, three ounce son, Lee Rhoads, on December 10.

SINGLETON CLUB. . .The Activities Building will be the scene of a dance on Friday, January 21. Tickets may be purchased at the door. Admission will be seventy-five cents for NASA employees and one dollar for guests. Live music will be furnished by the Saharas. Doors will open at 8 p.m. and refreshments will be available at the bar. For information call Sharon Huggett, 2245, or Tom Foughner, 2661.

WANTED: Driving combination from Wythe to W.A. on 8 shift. McGuire, 4425.

WANTED: Driving combination from Shore Park to W.A. on 8 shift. Putman, 4633.

WANTED: 2 alternate drivers from Bethel Pk. to W.A. on 8 shift. Bradshaw, 4817.

FOR SALE: 1954 Plymouth. Miller, 877-3431.

WANTED: Third driver from Portsmouth to E.A. on 8 shift. Stegall, 2231.

WANTED: Drivers or passengers from Stuart Gardens - Christopher Shore area to W.A. on 8 shift. Clevenson, 3561.

FOR SALE: 1964 Impala sports coupe, $1795. Williams, 722-4864.

FOR RENT: Unfurnished 3-room apartment in Indian River Park. Keffer, 723-7540.

WANTED: Ride or alternate driver from Newmarket or Briarfield area to E.A. on 8 shift. Parker, 2631.

WANTED: Alternate driver from Norfolk to W.A. on 8 shift. Kennedy, 4557 or 4481.

WANTED: Passengers from Stuart Gardens and Chesapeake Blvd. area to W.A. on 8 shift. Schmidt, 3439.

The new Executive Board of the Activities Association held its first meeting last month. Members of the Board are (from left): Joseph A. Siefring, Chairman of the Activities Committee; Roy E. Henley, Treasurer; Marvin L. Leffel, Building and Grounds Chairman; Rossalyn W. Smith, Chairman of the Children's Committee; Richard L. Kurtz, Social Chairman; Linda T. Johnson, Secretary; Charles A. Clarke, Vice-President, and H. E. Rockey, President. Absent when the picture was taken was Betty T. Sheets, Chairman of the Arts and Crafts Committee.

FEDERAL CODE OF ETHICS

Employees of the Federal Government are expected to conduct themselves in a manner which will reflect favorably upon themselves and their Government. The need for Federal employees to live up to certain moral and ethical standards is important both to the efficiency of the conduct of Government business and to the maintenance of public confidence in the United States Government.

The Code of Ethics quoted below was agreed to by the House of Representatives and the Senate as House concurrent Resolution 175 in the Second Session of the 85th Congress. This Code applies to all Government employees and Office Holders.

"Put loyalty to the highest moral principles and to country above loyalty to persons, party, or Government department.

"Uphold the Constitution, laws, and legal regulations of the United States and of all governments therein and never be a party to their evasion.

"Give a full day's labor for a full day's pay; giving to the performance of his duties his earnest effort and best thought.

"Seek to find and employ more efficient and economical ways of getting tasks accomplished.

"Never discriminate unfairly by the dispensing of special favors or privileges to anyone, whether for remuneration or not; and never accept, for himself or his family, favors or benefits under circumstances which might be construed by reasonable persons as influencing the performance of his governmental duties.

"Make no private promises of any kind binding upon the duties of office, since a Government employee has no private word which can be binding on public duty.

"Engage in no business with the Government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

"Never use any information coming to him confidentially in the performance of Governmental duties as a means for making private profit.

"Expose corruption wherever discovered.

"Uphold these principles, ever conscious that public office is public trust."

NEW AMES FACILITY DEDICATED

NASA dedicated a Life Sciences Research Laboratory at Ames Research Center, Moffett Field, California, on December 29. The laboratory will provide the focal point in the agency's efforts to gain new knowledge in the life sciences field.

The three main areas of life science research are exobiology, or the detection of life outside the Earth's environment; environmental biology, the interactions between man and other biological systems with the space environment; and biotechnology, which has to do with the engineering support of man and the effective integration of man into the space flight system.

The new Ames structure centralizes the work of several hundred persons under Dr. Harold P. Klein, the Center's Assistant Director for Life Sciences. The three-story concrete building comprises 130,000 square feet of working space.

A specialist in microbial physiology, Dr. Klein joined Ames following seven years as a professor and chairman of biology at Brandeis University in Massachusetts. He also taught at the University of California - Berkeley and the University of Washington in Seattle. He has published over fifty technical papers, including discussions of the site and mechanism of fat formation in the cell and the adaptation of microorganism to changes in their environment.

Dr. Klein received a B.A. degree in Chemistry from Brooklyn College in 1942 and a Ph.D. in Bacteriology from the University of California in 1950.

Heading the dedication program was Dr. Mac C. Adams, NASA Associate Administrator for Advanced Research and Technology, under whose programs Ames operates. H. Julian Allen is Director of the Ames Center.

FOR SALE: 1956 4-door Plymouth - $2450. Boyle, PA33400.

FOR SALE: 750 x 14 Goodyear white wall tire and wheel - $15. Evans, PA 2-4676.

FOR SALE: Presto cookwear and small electrical appliances. Scott, 245-2796.

FOR SALE: 1957 Chevrolet. Bosta, 838-0162.

GEMINI AND MARINER SUCCESSES MARK YEAR IN SPACE

For the sophisticated space observer, 1965 was an International Quiet Sun Year (IQSY). For others, it was the year of the two-man Gemini flights and the year that America spacecraft sent photos back from Mars and the Moon.

NASA went to launch pads 30 times. Twenty-nine of these trips were attempts to launch spacecraft; one was a launch vehicle (booster) test with no spacecraft aboard, and one had two spacecraft.

During 1965 there were 23 NASA mission successes out of 28 attempts for a success percentage of 82, and 26 launch vehicle successes out of 30 attempts which included three non-NASA spacecraft, a record of 87 percent.

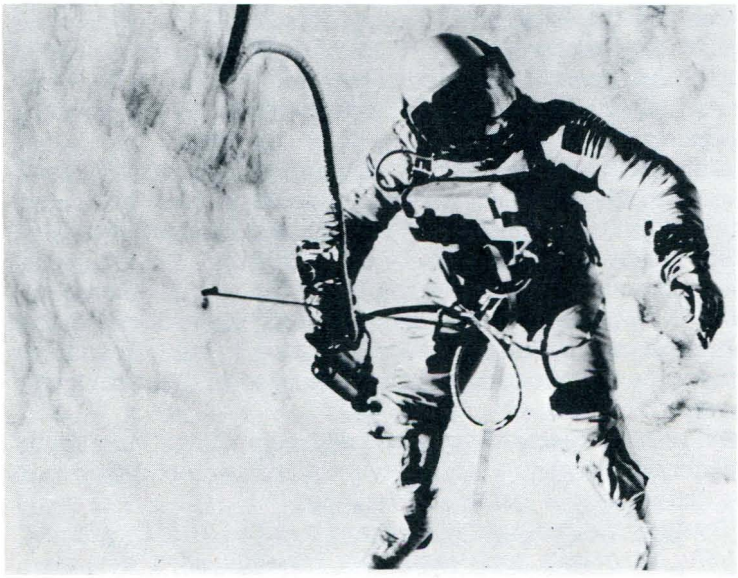
This record made the year a big one for lunar and planetary scientists and engineers and for astronauts.

MANNED FLIGHT - NASA began the year with an unmanned suborbital flight of its Gemini 2 spacecraft in January. There followed, in the year, five manned flights of the Gemini which included a space walk, a rendezvous in space, and two long-duration flights.

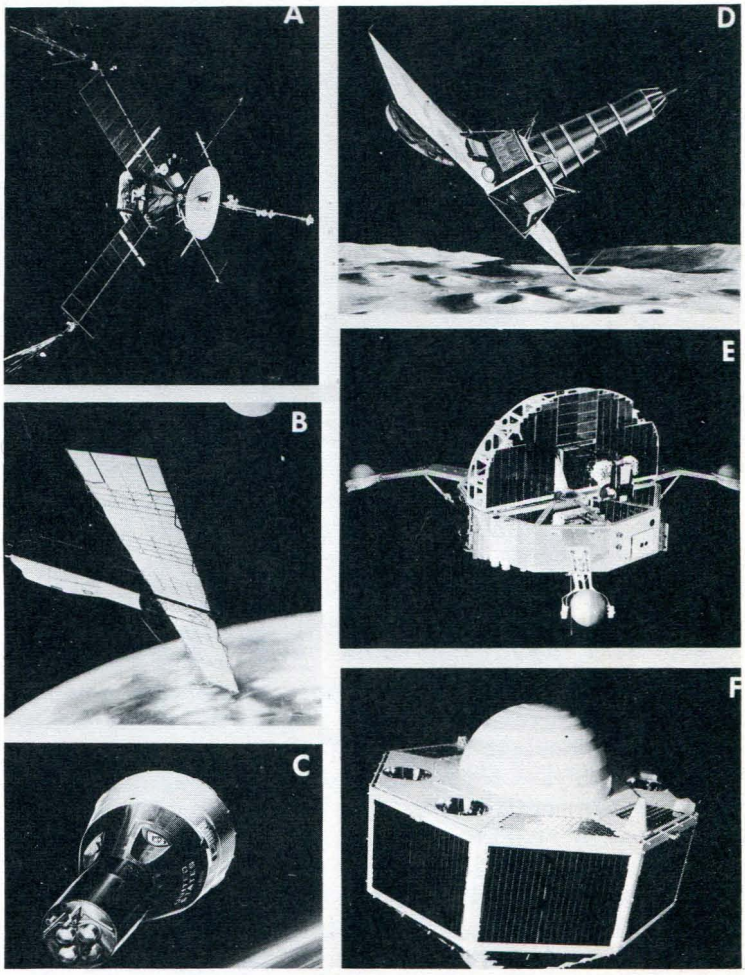
The Cooper-Conrad flight in the Gemini 5 (Aug. 21-29) was for eight days, and the Borman-Lovell flight in the Gemini 7 (Dec. 4-18) was for 14 days.

It was in the McDivitt-White flight (June 3-7) that the United States first succeeded in EVA (extra vehicular activity) when Astronaut Edward H. White climbed out of his orbiting Gemini 4 spacecraft and took a 20-minute, 17,500 miles-per-hour stroll across the U.S. Once outside the spacecraft he used a hand-held propulsion gun for maneuvering in space.

The Gemini 6 spacecraft with Astronauts Schirra and Stafford took part in the December dual launch in which Gemini 7 and 6 "flew formation" and photographed each other on Dec. 15, thus achieving America's first rendezvous in space.



On June 3, 1965, Astronaut Edward White got out of his spacecraft and went for a jet-propelled walk in space, a coast-to-coast stroll over the United States at 17,500 miles per hour. White performed the feat during the Gemini 4 mission June 3-7. With James McDivitt flying the capsule, White became the first space man to use a personal power unit, a small handheld gas jet device, to maneuver himself in orbit outside his spacecraft.

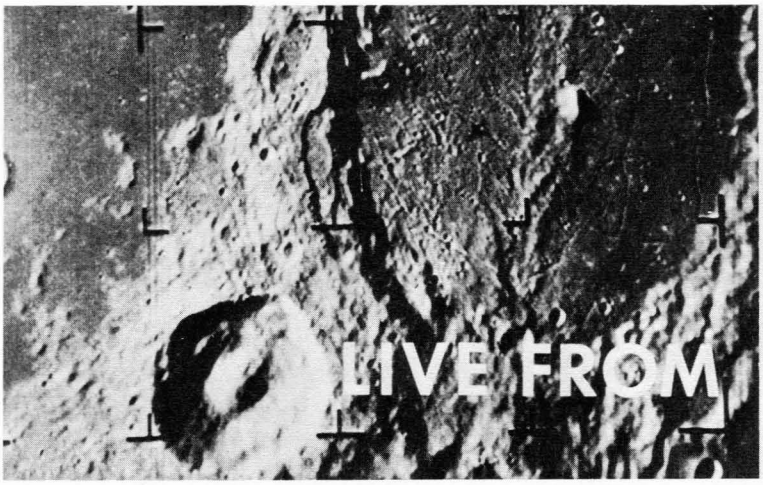


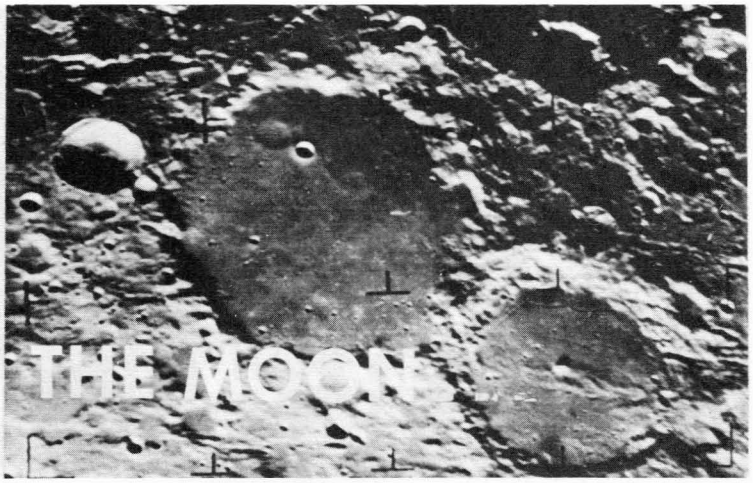
These spacecraft made history in 1965 - Here are six NASA satellites that were among those making 1965 the most eventful year in space history. A - Mariner IV flew past Mars July 14 obtaining first closeup photos of the planet. B - Pegasus: three of them launched to collect micrometeoroid data. C - Gemini: world's first maneuverable manned spacecraft successfully flown on unmanned and manned missions. D - Rangers: Ranger VIII photographed moon's surface before impact Feb. 17. Ranger IX followed on March 21 with live TV pictures of lunar surface. E - OSO II was launched Aug. 25 to make solar observations. F - Explorer XXIX (GEOS I) was launched Nov. 6 for more precise mapping of earth.

SCIENTIFIC SPACECRAFT - These manned missions shared public attention with the exploits of a highly successful stable of scientific spacecraft which included the Ranger, Mariner, Pioneer, Pegasus and five more of the Explorer series, bringing to 31 the number of Explorer satellites launched by the U.S.

Rangers VIII and IX, between them, televised to Earth some 13,000 photos of the lunar surface. These, added to those taken by Ranger VII in 1964, brought to more than 17,000 the number of Moon surface photos taken by three U.S. Ranger spacecraft. The photos are under study by scientists throughout the world.

The Mariner IV, after its 325-million-mile, 228-day journey to Mars returned the first close-up pictures of the Martian surface. Mariner IV was not a life-detection





spacecraft and it neither confirmed nor ruled out the possibility of some form of life on Mars but found no measurable meteoritic dust, magnetic field or radiation belt. A thin atmosphere was detected.

In the scientific series, NASA also succeeded for the second time in orbiting two satellites with one launch vehicle. On November 28 the Alouette II (Canadian) and the Explorer XXXI spacecraft were launched together from the Western Test Range by a Thor-Agena booster.

Three Pegasus satellites, each with panels spanning 96 feet, were launched during the year and have since returned meteoroid impact data useful to designers of future spacecraft for long-duration manned flights.

INTERNATIONAL LAUNCHES - The Alouette was the first of two international launches during the year. On Dec. 6 NASA put into orbit from the Western Test Range the French scientific satellite, FR-1. These launches were part of a broader program of international cooperation in space which included more than 65 countries.

The recent French launch marked the 13th success in a row for the Scout launch vehicle.

THE EARLY BIRD - A national milestone was achieved when NASA launched the first commercial satellite, Early Bird, for the Communications Satellite Corp., April 6. This was a direct result of NASA's research and development in the field of synchronous satellites.

An interim operational satellite was launched by NASA for the Weather Bureau. TIROS X, placed in orbit July 2, was paid for by the Weather Bureau.

APOLLO - Of importance to the forthcoming Apollo program was the remarkable success of the Saturn I rockets. The Saturn I was completed during the year following 10 successful launches in 10 attempts, a record not achieved in any other rocket development program. The technology, hardware and experience developed in this program paved the way for forthcoming launches of the Saturn IB.

Also in the Apollo program progress was made in the development and testing of the engines to be used in the Saturn V, with a 100 percent record of ground tests.

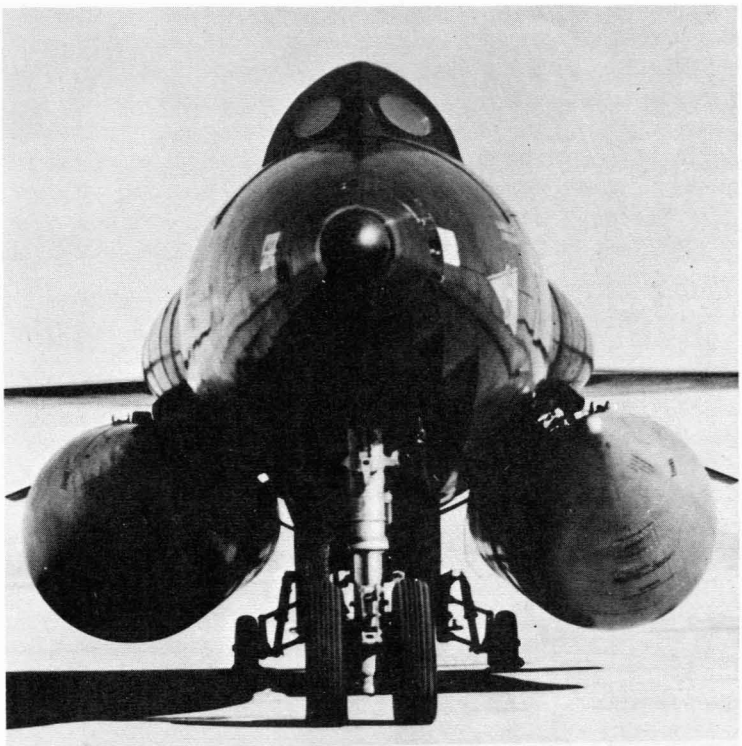
NUCLEAR - Highly encouraging tests of the NERVA nuclear reactors continued in 1965 and the first of a series of new tests of the more advanced Phoebus reactor was successfully carried out in June.

SOLID FUEL ROCKETS - The world's largest known solid fuel rocket motor (260 inches in diameter and 80 feet long, including the 20-foot nozzle) was successfully fired in ground tests Sept. 25, developing 3.5 million pounds of thrust.

AERONAUTICS - Work was begun on Phase II of the ramjet engine research program, leading to preliminary design for what may well prove to be the engines of the future for hypersonic (in excess of 3,000 mph) flight through the atmosphere or for Earth-to-robit vehicles.

On Sept. 28 the X-15 research airplane made its 150th successful flight. It has flown to the record altitude of 67 miles and at the record speed of 4,104 mph. A modified version now flying is expected to exceed 5,000 mph.

The flight research phase of the M-2 lifting body program was well advanced in 1965 and a flight model of this wingless aircraft was delivered for high altitude tests expected to take place early this year.



NASA's X-15 research airplane took on a new appearance in 1965 - a pair of 25-foot long fuel tanks attached to its fuselage. They'll mean more speed for the plane which flew its 150th successful mission last Sept. 28. It has flown to a record altitude of 354,200 feet and at a record speed of 4,104 miles per hour. With the extra tanks, the X-15 will seek to top 5,000 miles per hour.

A SOLEMN TRUST

THE FEDERAL SERVICE must never be either the active or passive ally of any who flout the Constitution of the United States. Regional custom, local tradition, personal prejudice or predilection are no excuses, no justification, no defense in this regard.

WHERE THERE IS an office of this Government, there must be equal treatment, equal respect, equal service—and equal support—for all American citizens, regardless of race, or sex, or region, or religion.

PUBLIC SERVICE is a public trust. I would call upon every Federal civilian employee to remember that he bears a high and solemn trust to the Constitution under which he serves.

Lyndon B. Johnson
PRESIDENT OF THE UNITED STATES

As has been fully publicized in official directives, in articles in Langley Researcher, at staff meetings and supervisory training programs, and by posters, the unequivocal policy of the management of Langley Research Center has been and will continue to be the prohibition and exclusion of discrimination against any employee or applicant for employment because of race, creed, color, sex, or national origin. This dedication to the cause of equal opportunity must be shared by all staff members, in keeping with the above message from President Lyndon B. Johnson, that we consider our participation in the Federal Service as a solemn trust.

IEEE GROUP MEETS JAN. 19

The Hampton Roads Section of the Institute of Electrical and Electronics Engineers will meet on Wednesday, January 19 at the Chateau Restaurant on Pembroke Avenue.

Carlton M. Stallings, Superintendent of Power Supply, Virginia Electric and Power Co., will speak on "Black-out! Can it Happen Here?" He will discuss the recent black-out in the Northeast and will review the Federal Power Commission report of the catastrophe. He will describe VEPCO's power transmission and generation system and their tie-ins with other power systems. Emphasis will be placed on studies that have been made and preventive measures that have been taken to prevent a similar occurrence on VEPCO's system.

The meeting will be preceded by a social period at 6:30 p.m., followed by dinner at 7:15 and the meeting at 8. For reservations call one of the following by noon on January 18: Bob Faust, 3332, or Frank Senft, 3461.

FOR SALE: 1965 Buick. R. V. Doggett, 838-0484.

WANTED: Fifth driver from Gloucester Point to W.A. on 8 shift. Hudgins, 4826.

DRIVE SAFELY

WRONG-WAY CORRIGAN: IS THIS YOU?

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of January 17:

Monday - Green split pea soup, braised short ribs over noodles, grilled pork chops, clam croquettes, wieners and sauerkraut.

Tuesday - Beef-barley soup, roast veal, stuffed shrimp, beef stew, Spanish omelette.

Wednesday - Chicken noodle soup, Spanish pot roast, grilled Canadian bacon, fried chicken, tuna-noodle casserole.

Thursday - Vegetable-beef soup, grilled steak, chicken pie, veal stew, grilled cheese sandwich.

Friday - Clam chowder, roast beef, stuffed flounder, baked hash, broiled fish.

The menu for the week of January 24 is as follows:

Monday - Tomato-barley soup, baked Virginia ham, fried fish sticks, braised beef tips over rice, Western omelette.

Tuesday - French onion soup, Swiss steak, smoked pork sausage, liver and onions, macaroni and wieners.

Wednesday - Puree of bean soup, pepper steak, breaded veal cutlet, ham and noodle casserole, hot dog.

Thursday - Vegetable-beef soup, grilled steak, barbecued pork chunks over rice, fried chicken, chili con carne.

Friday - Clam chowder, Spanish pot roast, salmon loaf, fried fish, barbecued sandwich.

WANTED: Ride from Forrest Drive, Newport News, to W.A. on 8 shift. Dianne Adams, 4866.

FOR SALE: 1960 Chevrolet Impala. Adams, 595-0557 after 5 p.m.

FOR SALE: 1959 4-door Chevrolet Impala and 1956 Ford station wagon. Michael, 838-1229.

FOR SALE: Baby's 40-inch nylon knit play yard - $8, also Petersen stroller - $6. Zitzelberger, 898-5408.

FOR SALE: 1963 Volkswagon Karman Ghia coupe. Judd, 596-2783.

FOR SALE: Two AKC registered black male Toy Poodle puppies - $75 each. Forrest, 868-6226 after 5 p.m.

POSITION CLASSIFICATION APPEALS

The position classification system, as required by the Classification Act of 1949, is a comprehensive, orderly system for classifying positions by occupational group, series, class, and grade according to similarities and differences in duties, responsibilities, and qualification requirements. The objective of position classification is to provide an orderly grouping of positions for pay administration and for other personnel and management purposes. Positions are placed in appropriate classes and grades in conformance with position classification standards published by the Civil Service Commission. Upon request, an employee may review published classification standards and other documented information concerning his position.

If an employee feels that the classification (title, series, or grade) assigned to his position is improper or questions whether or not his position is properly covered by or excluded from the Classification Act of 1949, he may appeal either situation through the Classification Appeals System.

A GS employee may appeal the classification of his positions within NASA and to the Civil Service Commission.

NASA extends to employees occupying wage board positions the same classification appeal privileges extended to employees occupying GS positions. Wage board employees have no legal classification appeal rights to the Civil Service Commission except for adverse actions taken as a result of classification decisions or to request a determination whether their position is properly wage board or GS. Therefore, wage board appeals are limited to review within NASA.

Employees should discuss the classification of their positions with their supervisor and succeeding levels of supervision, the Classification Office, or the Personnel Officer before resorting to a formal appeal procedure, but are advised that such discussions are not required.

More detailed information regarding classification appeals may be obtained from the Personnel Office.

KINNEY DIES UNEXPECTEDLY

Lyle M. Kinney, Industrial Specialist in the Procurement Division, died unexpectedly on January 6.

Kinney was born April 11, 1908 in Ithaca, Michigan. He graduated from Royal Oak High School in Royal Oak, Michigan, and attended Alma College. He received his B.A. degree from the University of Michigan in 1931.

He served in the U.S. Navy from 1943 to 1946. Following his discharge he opened a men's clothing store in Michigan. He joined the Center staff on December 28, 1959 as a Purchasing Agent.

He is survived by his wife and two children.

Robert L. Hunt, Photographic Division, is shown with the two bowling trophies he won last fall during the Nationwide Insurance TV Bowl. He won the trophy on the right during the local elimination tournament which included the areas of Norfolk, Portsmouth, Williamsburg, Newport News and Hampton. He won the trophy on the left plus $750 when he won his first match on the Nationwide TV Bowl. He lost his second match but gained an additional $250.

NEW TENPIN LEAGUE PLANNED

In as much as bowling among NASA employees is limited due to the fact that present leagues are filled to capacity and realizing that there are many low and medium average bowlers who are willing but unable to bowl in organized leagues, steps are now underway to form a new tenpin league. Modern facilities with bowling at a reasonable hour and prices have been located.

Teams and bowlers interested in entering the league are requested to contact one of the following by the close of business on Tuesday, January 18: Rodney C. Wyatt, 4835; Jerry Williams, 3226, or Bill Goad, 3224.

WANTED: Ride from Armistead Ave. and Queen St. to W.A. on 7 or 7:30 shift. Staton, 4766.

WANTED: Driving combination or ride from Croaker, Norge, Toana, Lightfoot or Williamsburg to W.A. on 8 shift. Henk, 4826.

WANTED: Fifth driver from Wythe to E.A. on 8 shift. Edith Horrocks, 2614.

WANTED: Ride from Forest Park area to W.A. on 8 shift. Cheryl Nuttall, 3221.

WANTED: Ride from Shelton Rd., Fordham, to E.A. on 7:30 shift. Arrington, 2545.

FOR SALE: Wolverine camper and 1965 Chevrolet pickup truck - will sell separately or together. Purdue, 877-0568 after 5 p.m.

FOR SALE: Jarmon Kardon Citation V power amplifier - $90, Polaroid 150 with accessories - $50. Newcomb, 596-8241.

FOR SALE: 2-bedroom waterfront cottage. Lawson, 868-9253.

FOR SALE: Crocheted bedspread, popcorn pattern - completed for twin or three-quarter bed except for adding fringe, may be completed for double bed. Belle, 244-7040.

REPORT ON PROJECT CHRISTMAS STAR

The Activities Association sponsored Project Christmas Star at Langley to provide gifts of cheer for the United States servicemen in Viet-Nam. More than 1000 packages were donated by personnel of this Center.

Numerous letters of appreciation have been received from individual servicemen to whom the packages were delivered. The letters quoted below were received by staff members and are typical of the reaction of the servicemen to whom those packages meant so much, and they are printed so that those who participated in this project will know that the time and effort they put forth was sincerely appreciated by those protecting our freedom so far from home.

Major R. D. Walker wrote the following:

"I wish to take this opportunity to inform you that my organization received 'Christmas Star' packages yesterday and I was fortunate to have received yours.

"In one respect, I grasp for words to explain to you my sincere and heartfelt thanks to you and your family for your kindness and generosity. It was a very gratifying thrill to be able to witness the expressions of awe and amazement on the various faces and further to hear the comments of astonishment as the packages were opened, myself included.

"As for myself, I have a little over nineteen years in the Army, and have experienced quite a few Christmas seasons away from my wife and children. During all this time I have never seen nor experienced a Christmas where the American public has banned together and literally assured every soldier in a theater of operations a Christmas gift.

"Frankly, I do not know where Tabb is located in Virginia, but I am determined to find out. If the opportunity ever presents itself, I most certainly appreciate an opportunity to stop by and personally thank such a thoughtful family. Your gesture is one I will never forget and your address is one I will never destroy.

"Thank you all again, and please let me extend to you and your family a very happy holiday season."

The following letter was received from Lt. W. A. Hall:

"Thank you for displaying your support of our efforts in Vietnam. The knowledge that the American people are behind us makes the road a little smoother.

"The morale of the men is wonderful. I have yet to hear a man ask 'Why am I here?' The complaints are negligible compared to State-side duty.

"Your selection of items in you package was unbeatable. Every single thing will be used, read, or eaten.

"I am a Virginia boy myself and my wife is spending this year in Fredericksburg.

"Yesterday our unit was fortunate enough to see the Bob Hope show.

"Where else but the United States would the soldiers see the performance of a top star and receive a gift from an unknown family the same day - 12,000 miles from home?

"Yesterday marked the end of my fifth month in this country and I pray that in five more we will be able to see the end of this.

"In the meantime, please continue your support of our efforts. It means so much.

"To you both I hope you have a Merry Christmas, have a joyous holiday season, and a very prosperous New Year."

FOR SALE: 1963 Chevrolet Impala, $1400. Miller, 877-3026.

Jack Schmidt, Vice-President of the Pilot Life Insurance Company, presents a premium-refund check for 1965 to C. S. Hudgens, Treasurer of the Langley Federal Credit Union. With reserve and dividend expenses already earned, the $7833 returned can help make the building - envisaged by the background sign - a reality. Remember share-life coverage now depends on age at time-of-deposit - not age at date-of-death. This significant liberalization of the policy results from a joint effort on the part of the Board of Directors and the Pilot Life Insurance Company. The Langley Federal Credit Union will hold its annual meeting on January 31. Complete details will be announced later.

ENGINEERS' CLUB MEETING

(Continued from page 1)

Husson received his B.S. degree in Electrical Engineering from Ohio University. Before joining the Center staff in 1950 he worked for the Bausch and Lomb Optical Company and Westinghouse Electric Company. At Langley he has been concerned with the development of optical radiation instrumentation for evaluation of reentry radiant heating and, for the past three years, advanced application of microelectronics to spacecraft.

The meeting will be preceded by a dutch treat dinner at Eli's Restaurant. A social period will be held at 6 p.m., followed by the dinner at 6:30. Reservations for the dinner should be made with one of the following by Tuesday noon: F. W. Schmidt, CH5-1714, A. W. Robins, TW 8-5495, or J. E. Robins, 723-0385.

VACUUM SOCIETY PLANS MEETING

The Mid-Atlantic States Section of the American Vacuum Society will meet at the Ranch House Corral Restaurant on Wednesday, January 19. The meeting will feature a talk by Charles M. Stearns, VARC Mechanical Engineering staff, on "Vacuum Problems of Large Radiation Producing Systems." The address will be followed by a tour of the Space Radiation Effects Laboratory.

A social hour will begin at 6 p.m., followed by the dinner-meeting at 7. For reservations call P. R. Yeager, 3483, or L. T. Melfi, 3234.

FOR SALE: 1965 M.G. Midget, $1400. Bomberger, Ch 50585.
FOR RENT: 2-bedroom furnished apartment on Phoebus waterfront. Carmel, 722-1379.

Langley Researcher

VOLUME 5, NUMBER 2 LANGLEY RESEARCH CENTER JANUARY 28, 1966

LANGLEY DESIGNED HL-10 VEHICLE SCHEDULED FOR RESEARCH FLIGHTS

A wingless, tri-finned flight research vehicle, designed and developed by Langley Research Center to help solve control problems of future manned spacecraft entering the earth's atmosphere, is scheduled to make its initial flights in California sometime before mid-1966.

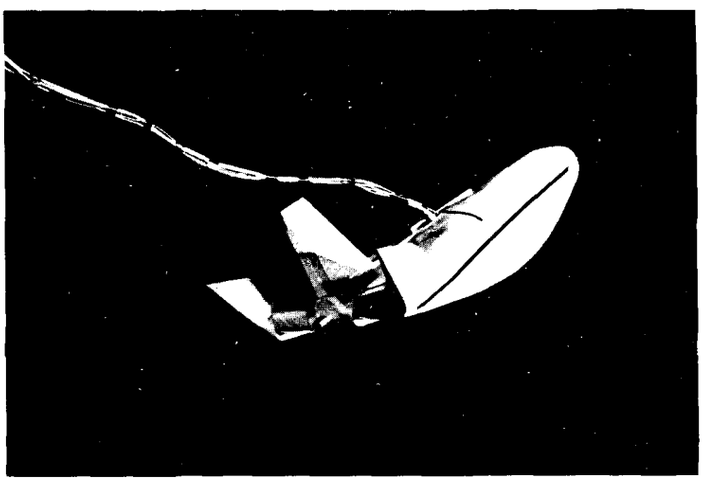
Designated HL-10, the 22-foot long lifting body vehicle was turned over to the NASA Flight Research Center on January 18 by the Northrop Corporation. Northrop also built the M2-F2 lifting body research vehicle developed by the Ames Research Center.

Both vehicles will ultimately be dropped at speeds of about Mach 0.8 (530 mph) from beneath the wing of a B-52 bomber, flying at an altitude of 45,000 feet over the Rogers Dry Lake in California.

Lift and flight will be achieved by the bodies of the vehicles alone which are designed aerodynamically to eliminate the need for wings. Both shapes are basically configured as half cones with their noses blunted and vertical and horizontal surfaces added for control.

Primarily the body design of the HL-10 features a rounded top and flat bottom cross section contrasted to the flat top and rounded bottom configuration of the M2-F2. The HL-10 also has three vertical fins as opposed to two for the M2-F2 and is approximately five feet wider across the tail as

(Continued on page 8)



A model of the HL-10 lifting-body type reentry vehicle is shown being studied in free flight in the Langley Research Center Full-Scale Wind Tunnel to determine low-speed dynamic stability and control characteristics. The wingless, tri-finned flight research vehicle, designed and developed by the Langley Center to help solve control problems of future manned spacecraft entering the earth's atmosphere, is scheduled to make its initial flights in California sometime before mid-1966. The vehicle will not need recovery devices such as parachutes or paragliders, since it can land like a conventional airplane.

RETIRED EMPLOYEES HONORED AT LUNCHEON HELD AT CENTER

Forty-four employees who retired from the Center in October, November and December were invited to attend a luncheon given in their honor last Monday in the Private Dining Room, West Cafeteria.

All of the retirees retired under an amendment to the Civil Service Retirement Act which provided for increased annuities to persons who retired before December 31, 1965.

Dr. Floyd L. Thompson, Center Director, presided and pointed out that the retirees represented a total of 1252 years of Federal service of which 1130 years were NASA service.

Following the introduction of each retiree by his respective division chief, the guests were shown an NASA film on the Lunar Orbiter Program.

The following employees retired from the Center in October, November and December:

James E. Ferguson, Procurement; Erbie L. Johnson, Electrical Systems; Paul R. Marks, Mechanical Service; William P. Haney, Mechanical Service; Wayne D. Hurlbut, Flight Mechanics and Technology; Paul R. Thomas, Mechanical Service; Daniel W. Chapman, Plant Maintenance; William D. White, Mechanical Service; Charles R. Diggs, Mechanical Service; Harry Mariani, Mechanical Service; Metta Graham, Research Models and Facilities; Aubrey B. Covington, Electrical Systems; Edward S. Manship, Plant Maintenance; Harry N. Ketchie, Mechanical Service; Rufus O. House, Executive Assistant to the Director; Upshur T. Joyner, Head, Landing and Impact Branch, Dynamic Loads Division; Joseph Stora, Research Models and Facilities; Albert Bainbridge, Mechanical Service; Lucy Bainbridge, Head, Stenographic and Report Typing, Administrative Services Division; W. E. Beamon, Plant Maintenance; Ruth T. Belle, Administrative Services; Odeon Bloodgood, Plant Maintenance.

Clarence M. Caldwell, Flight Mechanics and Technology; Joseph C. Cockrell, Electrical Systems; C. Bernard Cook, Flight Vehicles and Systems; Charles T. Copeland, Mechanical Service; Charles C. Decker, Mechanical Service; Paul E. Hanna, Mechanical Service; Andrew Hattett, Plant Maintenance; Verner D. Howell, Mechanical Service; Anne V. Johnson, Photographic Division; Clarence B. Kline, Head, Spacecraft Equipment Section, Flight Vehicles and Systems; Bernard Mattare, Mechanical Service; Floyd T. McDaniel, Mechanical Service; Aaron G. Mills, Mechanical Service; Cecil V. Morris, Personnel; John Pritchett, Plant Maintenance; Alvah H. Riggins, Plant Maintenance; George W. Satchell, Plant Maintenance; Albert B. Stacey, Plant Maintenance; Walter G. Taylor, Mechanical Service; Joseph Walker, Mechanical Service; Walter G. Walker, Flight Mechanics and Technology, and Thaddeus J. Zepnikowski, Plant Maintenance.

Pictures taken of the retirees during the luncheon are shown on Page 5.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW ARRIVALS. . .The employees of Electronic Reliability Section of Flight Instrumentation Division had a busy day on January 5 when two members of their group became fathers. Harold E. Poole announced the arrival of a daugher and Harry R. Brockmeyer celebrated the birth of a son. Carol Fenton, Research Models and Facilities Division, recently became the mother of a daughter, Mona Lynn, The young lady weighed in at six pounds, eleven ounces.

PAYDAY GAME NIGHT. . .Staff members are reminded that the Payday Game Nights have been resumed and the next one will be held on Thursday, February 10 at 8 p.m. in the Activities Building.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, February 1 at 7 p.m. at the Central Labor Union Hall, Newport News.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on February 8 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2523, for an appointment.

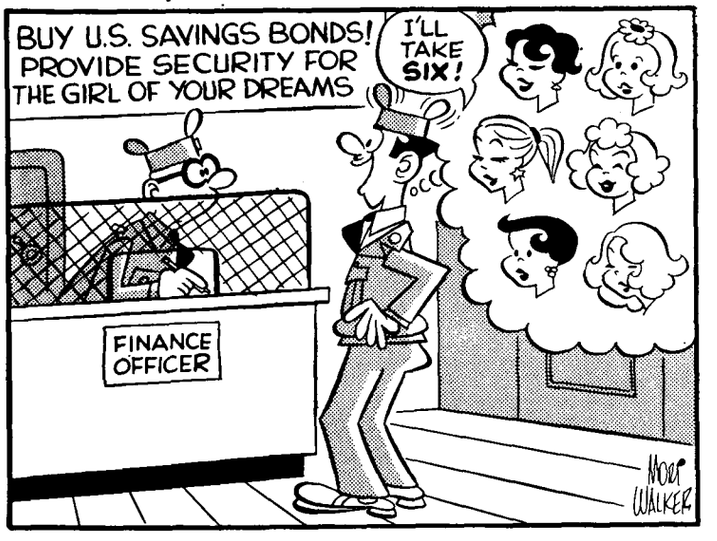
REPORT AVAILABLE. . .The publications Branch has a number of extra copies of the bound volume of "U.S. Standard Atmosphere - 1962." Persons interested in obtaining a copy may call 3337.

NOTE OF THANKS. . .A note from Rufus O. House has been received at the Center thanking his many friends and associates for their kind expressions and for the mementos given him on the occasion of his recent retirement.

ARTMOBILE. . .The Virginia Museum's Artmobile, featuring "English Conversation Pieces," will visit Langley Air Force Base on Wednesday, February 9. Located in the Service Club parking lot (Building SB 247), the Artmobile will be open to the public between the hours of 1 to 4 p.m. and 6 to 9 p.m. Gainsborough and Hogarth are among the artists represented in the collection of 18th century English paintings loaned by Mr. and Mrs. Paul Mellon. The Artmobile visit is being sponsored by the Langley Officers' Wives' Club.

ENGINEERS' EXAMINATION. . .Engineers interested in attending a refresher course for Part II (PE) of Virginia Professional Engineer Examination may obtain additional information by calling 826-2153 on weekdays between the hour of 5:30 and 6:30 p.m.

Beetle Bailey



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of January 31:

Monday - Cream of tomato soup, roast beef, meat balls and spaghetti, fried chicken livers, ham omelette.

Tuesday - Cream of potato soup, fried clams, barbecued beef chunks on rice, Salisbury steak, baked hash.

Wednesday - Chicken-noodle soup, country style chopped steak, barbecued spare ribs, fried chicken, hot dog.

Thursday - Vegetable-beef soup, roast turkey, corned beef brisket, fried fish sticks, cheeseburger.

Friday - Clam chowder, Swiss steak, shrimp-crab meat Newburg, fried fish, franks and beans.

The menu for the week of February 7 is as follows:

Monday - Tomato-barley soup, Spanish pot roast, baked ham, chicken chow mein with rice, fish cakes.

Tuesday - Puree of bean soup, half-dozen fried oysters, roast fresh ham, grilled liver and onions, Austrian ravilol.

Wednesday - Split green pea soup, roast beef, veal chop, fried chicken, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, baked lasagna, smoked pork sausage, tuna-noodle casserole.

Friday - Clam chowder, braised short ribs over rice, fried shrimp, broiled fish, tamale pie.

FOR SALE: Electric stove and boy's bicycle. Firman, UN 8-9583 after 5 p.m.

SINGLETON CLUB. . .An organizational meeting of the Singleton Club will be held on Thursday, February 3 at 4:45 p.m. in the Activities Building. The function of the Singleton Club is to provide social activities for single NASA employees and their guests. All eligible employees are urged to attend.

COPIES AVAILABLE. . .The Training Office has a number of extra copies of the manual on "Clear Writing and Report Construction." Persons interested in obtaining a copy may call the Training Office, telephone 2611.

LEAVE ADMINISTRATION

A NASA employee earns annual leave, or time off with pay for vacation and other purposes, on a graduated scale based on his total length of Federal civilian and military service. During the first 3 years of service, 13 working days or 4 hours every 2 weeks are earned. Those with 3 to 15 years of service earn 20 working days or 6 hours every 2 weeks and those with 15 years or more earn 26 days a year or 8 hours every 2 weeks. Annual leave remaining to the individuals credit at the end of the leave year may be accumulated for later use up to a limit of 30 days.

To become qualified to earn annual leave, a new employee must be employed for 90 calendar days without a break in service. A break in service is 1 day or more when the employee is not on the Government's employment rolls. Any absence during this 90-day period will be without pay unless the absence is due to illness for which accrued sick leave is granted. After an employee has worked the 90-day period, his leave credits will be restored retroactively for each payday included in that period. An employee should always request annual leave from his supervisor in advance.

Thirteen days of sick leave a year, or 4 hours for each biweekly pay period, are earned by all employees regardless of length of service. Unused sick leave is accumulated and remains to the employee's credit indefinitely. There is no restriction on the amount that may be accumulated. If an employee is on sick leave for more than 3 working days, he must furnish a statement from his doctor or other evidence acceptable to his supervisor. Where evidence other than a doctor's statement is used, the supervisor must state, in writing, the means he used to determine that the employee was absent due to illness.

An employee may be granted leave without pay in an emergency or under exceptional circumstances. Request for leave without pay up to 30 calendar days may be approved by the supervisor. Longer periods of time must also be approved by the Personnel Officer.

More detailed information regarding leave is contained in Langley Management Manual Instruction 3600.1.

VALENTINE DANCE PLANNED

Jerry Fisher and his band will furnish the music from 9 p.m. until 1 a.m. on February 12 for the Activities Association's Valentine Dance. The scene of the festivities will be the Activities Building.

Tickets may be purchased from the following representatives: Sarah Jaite, Building 1247-A, phone 4586; Robert Fairbairn, Building 1192-A, phone 3426; George Summerfield, Building 1244, phone 4817; Norman Akey, Building 1230, phone 4766; Robert Forrest, Building 647, phone 2511; Dick Kurtz, Building 586, phone 2203, and Bruce Amole, Building 1222, phone 4508.

The price of the tickets will be three dollars per couple and will include setups for the entire evening. Group table reservations may be made by calling Amole, 4583.

Give the wife or girl friend her favorite Valentine by taking her out for an enjoyable evening of fun and dancing.

FOUND: Gray overcoat with Robert Hall label. Left in 7 x 10 Conference Room. Alexander, 3339.

LOST: Film on "Nuclear Reactor Control Computer Experiment Part Three Display Techniques." Training Office, 2611.

Dr. William H. McFarlane, Director of the Virginia Associated Research Center, accepts contract awarded by the Langley Research Center for the operation by VARC of the NASA Space Radiation Effects Laboratory. The award was made January 18 in an informal ceremony in the office of Dr. Floyd L. Thompson, Langley Director. Participating in the ceremony were (from left): Dr. Thompson, Dr. Piet C. Gugelot, Scientific Director of SREL; Sherwood L. Butler, NASA contracting officer and head of the Langley Procurement Division, and Dr. McFarlane.

NASA SIGNS CONTRACT WITH VARC FOR OPERATION OF NEW FACILITY

Langley Research Center has entered into a contract with the Virginia Associated Research Center to operate the NASA Space Radiation Effects Laboratory through mid-1970.

The contract, retroactive to the beginning of 1966, is estimated at nearly $5 million. The contract was awarded to VARC January 18 in informal ceremonies in the office of Dr. Floyd L. Thompson, Langley Director.

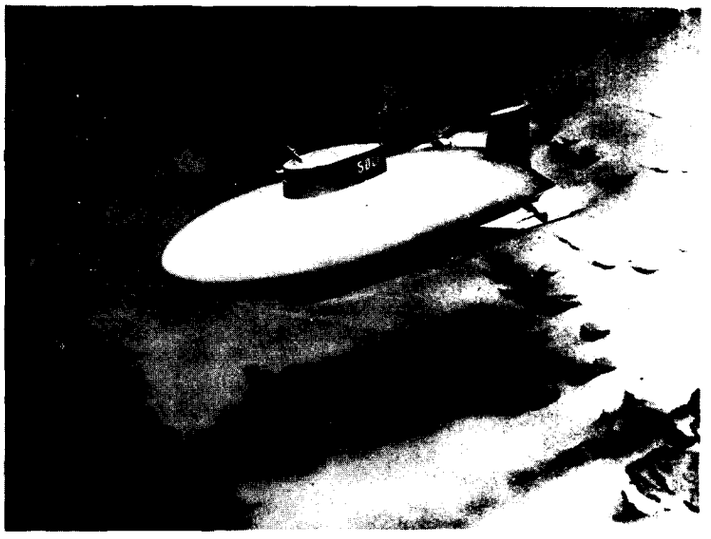
The Space Radiation Effects Laboratory is a $15 million facility established by Langley on a 110-acre site at Oyster Point in Newport News, about ten miles north of the Center, for research in support of national programs in space technology.

VARC, a joint venture of the College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute, will operate SREL under the NASA contract and utilize the research facility as the focal point of a graduate education program to be conducted in cooperation with NASA.

VARC's Nuclear Science Building now nearing completion is located a third of a mile from SREL on a 348-acre site deeded to the State by the U.S. Government in August 1963 for educational purposes.

The award of the contract for the operation of SREL was made by Sherwood L. Butler, Langley contracting officer and head of the Langley Procurement Division. It was accepted by Dr. William H. McFarlane, Director of VARC.

Others present at the meeting with Dr. Thompson were Dr. Piet C. Gugelot, Scientific Director of SREL; Dr. John E. Duberg, Langley Assistant Director; T. Melvin Butler, Assistant Director for Administration, and S. Walter Hixon, head of the Training Branch of the Personnel Division.



Shown here is an artist's concept of Deep Quest, a unique 50-ton research submarine. Development and construction of the 40-foot long vehicle is being carried out by the Research and Development Division of Lockheed Missiles and Space Company, Sunnyvale, California.

ENGINEERS' CLUB TO HEAR HELVEY

Dr. William M. Helvey, Head of Manned Aspects of Deep Submergibles, Lockheed Missiles and Space Company, will be guest speaker at a meeting of the Engineers' Club of the Virginia Peninsula on Tuesday, February 1 at 8 p.m. at the Thomas Eaton Junior High School.

The meeting will be preceded by a dutch treat dinner at Eli's Restaurant. A social period will start at 6 p.m., followed by dinner at 6:30.

Dr. Helvey will discuss the Deep Quest research submarine. Now under construction in Sunnyvale, California, and Chester, Pennsylvania, the Deep Quest submarine is designed to fulfill a broad program of research applicable to military and commercial ocean programs. Its 6,000 foot operating depth, bispherical pressure hull construction and unique integrated control system provide an excellent test bed facility for deep ocean exploration and search, and for proving out advanced modes of instrumentation and communications. Its battery power will permit continuous submerged operations of up to 24 hours, with full life support provided for its crew of two plus two scientist/observers for a total of 48 hours. Equipped with fully submerged transfer capability, the Deep Quest can be operated from either a submerged submarine or a surface vessel.

The vessel, which is developed and constructed by Lockheed, will be 39-feet, 10 inches long and displaces approximately 50 tons. Carrying submerged weights of up to 7,000 pounds in a 700 cubic foot space within its free-flooding outer hull, it has been designed to carry modular work payloads applicable to a variety of missions. In addition, it will carry up to 30 cubic feet of mission-oriented dry-volume payload within the pressure hull. The Deep Quest is scheduled to become operational in late 1966.

FOR SALE: Set of wooden Army bunk beds with inner spring mattresses and small chest of drawers - $45. Quinn, 838-2657.

FOR SALE: Dodge pickup truck. Edwards, 838-2261.

CLUB OF THE MONTH

The NASA Radio Control Club, a club of model airplane flying enthusiasts, has elected officers for the coming year. They are: Dave Holmes, president; Gerald Boggs, vice-president; Gray Wilson, corresponding secretary, and Martin Leiss, secretary-treasurer.

Affiliated with the Academy of Model Aeronautics, the Radio Control Club is a national organization. They meet the second Tuesday of each month in the Activities Building and have a membership numbering 30. This is one of NASA's oldest clubs and is open to all interested Center employees.

Educational sessions, social activities, and guest speakers are on the agenda for upcoming meetings. Flying sessions are held on Sunday afternoons at Langley Field, on the road between the golf course and the lighter-than-air area, near the gun butt taxi strip.

A "Double-A" contest was held this fall and was a success. In May the Radio Control Club will host a "Double-A" contest for the Academy of Model Aeronautics. Members of the Academy from the entire eastern coast will be competing. Many events will be sponsored and first, second, and third place trophies awarded. If anyone is interested in joining the club, call Dave Holmes, 4691.

POST OFFICE SUMMER JOBS

The U.S. Civil Service Commission has announced the opening of an examination for Post Office Summer Jobs for 1966. Under the examination, Seasonal Assistants will be hired for temporary employment during the summer to assist the regular workforce in handling the mail. Some assignments will involve the operation of motor vehicles.

A written test will be required. Any other Civil Service examination that the applicant has already taken or is planning to take will not be used for summer employment in the Postal Field Service. This is the only examination to take in order to be considered for summer employment in the Postal Field Service.

Application forms and copies of the announcement may be obtained from any Post Office. The closing date for applying is February 24.

STAFF MEMBERS VISIT POPE

Twenty-two members of the San Marco Project, Scout Office, had an audience with Pope Paul VI in Rome on Thursday, January 20. Included in the group were 10 Americans and 12 Italians. With the group were Roland D. English, Technical Assistant of the Scout Project Office; Louis P. Tosti, head of the San Marco Project, and Warren Guild, NASA Headquarters.

CALCULUS COURSE OFFERED

The University of Virginia Extension is offering a four-semester-hour course in Calcullus II. The class will meet on Saturday, February 5 at 9 a.m. in Building 1347.

For further information call Kenneth Margolis, 2559.

FOR RENT: 3-bedroom brick house with attached garage - $125 per month. Pressley, 838-1623 or 851-2521.

FOR RENT: 3-bedroom house - $90 per month - located at 117 Gilbert St. Woolard, 723-8213.

FOR SALE: 3-bedroom, 1-1/2 bath brick rancher in Riverdale. Grose, 838-1314.

Employees who retired in October, November and December were honored at a luncheon at the Center last Monday. Top left photo - Dr. Floyd L. Thompson (left), Director, greets Rufus O. House, former Executive Assistant to the Director, while Bernard C. Cook looks on. Top right photo- The only husband and wife team among the retirees are Al and Lucy Bainbridge. Center left - Posing for the camera are Joseph C. Cockrell, Lucy Bainbridge, Anne V. Johnson, and Joseph Stora. Center right - Attending the affair were (from left): Walter G. Taylor, Walter G. Walker, Charles C. Decker, Verner D. Howell, Aaron G. Mills, Clarence B. Kline, and Harry Mariani. Lower left - Other retirees are Odeon Bloodgood, T. J. Zepnikowski, W. D. White, Paul R. Thomas, and George W. Satchell, Lower right - I. E. Garrick (left), Chief of Dynamic Loads Division, and J. Norwood Evans, Assistant Personnel Officer, talk with Upshur T. Joyner, former Head of Landing and Impact Branch, Dynamic Loads Division.

NASA BOWLING LEAGUE

Hampton Scientific leads Group A in the NASA Tenpin League with a record of 56.5 wins and 11.5 losses. Top scores were rolled by Bill Wood with a 279 game and 638 set.

Strikeouts are in first place in Group B with 49.5 wins and 18.5 losses. Top bowlers for the week were Charles Gerrity with a 252 game, Bill Clarke with a 698 set and Cynthia Polk with a 200 game and 558 set.

HMS leads Group C with 51 wins and 17 losses. ACD trails in a close second with 48 wins and 20 losses. High scores were rolled by Mickey Rowe with a 276 game, George Summerfield with a 647 set, and Megan Lynch with a 213 game and 570 set.

GROUP A

Hampton Scien.	56.5	11.5	Mexicali	34	34
Filter Queen	42	25	Hornets	30	38
Phantoms	38.5	29.5	Unitary	24.5	43.5
Alley Cats	35	33	Odd Balls	22.5	45.5
Flyers	34.5	33.5	Short Circuits	19.5	48.5

GROUP B			GROUP C		
Strikeouts	49.5	18.5	HMS	51	17
Southeastern	45	23	ACD	48	20
W. Gate Grill	42	26	Greenhorns	44	24
Question Marks	41	27	Latecomers	36	32
Misfits	39	29	RPM	36	32
Galaxies	36	32	Trackers	35	33
Cee Pees	31	37	Mets	34	34
Hampton Scien.	31	37	C-Scouts	33	35
Flight	31	37	Sparkys	33	35
Payloads	30	38	Gliders	29	39
Flight Engineers	30	38	Bowling Belles	29	39
A-OK's	26.5	41.5	Dillys	26	42
Pinwigglers	25	43	Chargers	22	46
Pussy Cats	19	49	Hits & Misses	20	48

NOTICE TO ALL EMPLOYEES

The Personnel Records Office is charged with the responsibility of maintaining the official and complete record of each employee at this Center.

All employees are requested to notify this office immediately in the event of a change in name, address, telephone number or martial status, or if there is any doubt that their records are not current.

This may be done by completing the Personnel Record Change Form and forwarding it to the Personnel Records Office, Mail Stop 301.

These forms may generally be obtained from the time and attendance clerk in each organizational unit.

GRADUATE COURSE OFFERED

Training officials announced that a graduate study course in Advanced Propulsion Systems will be taught by Dr. Andrew R. Saunders, Applied Materials and Physics Division. The three-semester-hour course is offered under the sponsorship of the University of Virginia and the prerequisite will be at the consent of the instructor.

Employees interested in enrolling in this course should contact the Training Office, telephone 2611.

FOR SALE: Two-piece green nylon living room suite - $75, Amcrest china in Mandarin pattern - $20, double bed mattress - $15. Trusty, 877-3217.

A negotiated agreement between Langley Research Center and the Pattern Makers' League of North America, Newport News Association, was signed at Langley January 25. Shown above are members of the Union Negotiating Committee and Langley management representatives. Seated at the table are (from left): Charles F. Barnett, Personnel Officer and Chief, Personnel Division; Dr. Floyd L. Thompson, Langley Director, and Eli J. Oakly, Secretary, District 3, Pattern Makers' League of North America. Standing are: Joyce M. Anthony, Personnel Division Secretary; William B. Mayo, Chief of Mechanical Service Division; Charles C. Gilman, Dynamic Model Shop; Harry E. Johns and Francis S. Wolak, both of Model and Pliant Structures Shop, and Curtis E. Jacob, Business Manager of the Newport News Association of Pattern Makers.

UNION CONTRACT SIGNED AT CENTER

A negotiated agreement between Langley Research Center and the Pattern Makers' League of North America, Newport News Association, was signed at Langley on January 25 and has been forwarded to Headquarters for approval by the Administrator.

Langley Center has had informal relations with the Pattern Makers' Association from the time skilled craftsmen were first employed by NACA. Formalized dealings with this Association, made possible by Executive Order 10988 effective July 1962, date from December 5, 1963 when they were granted exclusive recognition for a unit composed of all modelmakers and apprentices assigned to the Dynamic Model Shop and Model and Pliant Structures Shop.

Executive Order 10988 contained guidelines covering dealings between Government agencies and bona fide employee groups and organizations. It provides employees with the right to join or refrain from joining bona fide employee organizations and Government agencies are cautioned not to interfere with these rights of employees. In addition, after employees have organized and clearly manifested their wish to deal collectively with management, the Executive Order provides that the attitude of management should be one of affirmative willingness to enter such relations.

FOR SALE: Allstate 1964 motor scooter - $175. Ross, 1160 Jeb's Place, Newport News.

FOR SALE: 1961 4-door Falcon station wagon. Conner, 898-5580.

MERIT PROMOTION PLAN

It is the practice of the Center to keep its personnel informed of the various personnel programs concerning them. One of these plans is the Merit Promotion Plan. All staff members have been given copies of this plan and copies are also given to new employees when they enter on duty.

Since January 1, 1959, the Civil Service Commission has required that all promotions in the Federal civil service be made under agency promotion programs that conform to guidelines established under the Federal Merit Promotion Program.

The purpose of the Federal Merit Promotion Plan is not to reward workers for long and faithful service. Rather, it is to help management select the best talent in the ranks of the career service to meet the many challenging problems facing the Nation and to assure that selections are made on a fair and equitable basis.

The Langley Center's Merit Promotion Plan applies to filling positions by means of internal transfer of employees, either where a reassignment results directly in a promotion, or where it results in definitely improved opportunity for promotion. The Merit Promotion Plan does not apply to promotion resulting from gradual change of duties and responsibilities. Neither does it apply to reassignments when it is determined that opportunity for promotion will not be improved because of the reassignment. Authority to fill positions by new appointment, transfer from another agency, change to lower grade, or other methods besides promotion is not affected by the establishment of this plan.

For further information concerning the plan, employees may consult their supervisors or the Employment Office.

APPRENTICE SCHOOL NOTICE

The Spring Semester of the Apprentice School will start on Monday, February 7 and classes will be held in the Apprentice classrooms located on the first floor of Building 586.

Courses which are being offered and the instructors are:

Monday - College Algebra, J. C. Shearin, and Blueprint Reading, J. A. Walker.

Tuesday - Engineering Drawing II, C. W. Osborn; Machinery's Handbook, S. E. Devan; College Physics I, F. A. Kern, and Industrial Instrumentation, R. V. Fansler.

Wednesday - College Physics III, V. G. Collins; A. C. Fundamentals I, J. A. Coleman; Mag. & D.C. Circuits II, G. R. Bedsaul, and Electrical Measurement Instrumentation, H. R. Long.

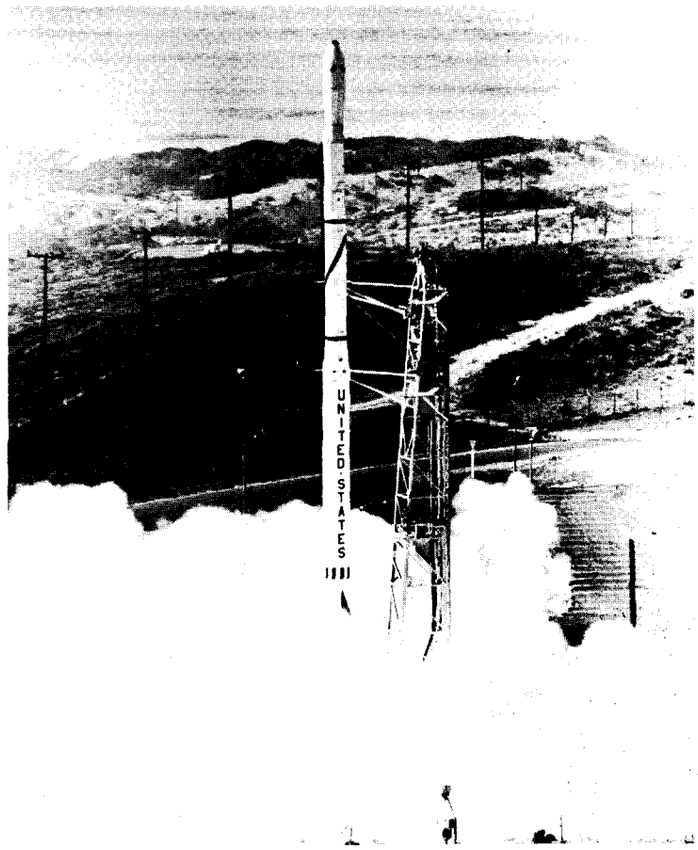
Thursday - Engineering Drawing II, O. E. Schrader; Physics I, G. C. Moen; Electrical Circuit Analysis, A. L. Jones; Machinery's Handbook I, H. W. Caughman, and Transistors II, R. O. Staib.

Friday - College Physics II, J. Norwood; Metallurgy, H. A. Reid; Industrial Electronics, R. H. Coultrip, and Strength of Materials I, P. M. Dicker.

WANTED: Riding combination from Riverdale Apts. to W.A. on 8 shift. Taylor, 4817.

WANTED: Driving combination from Norfolk to W.A. on 7:30 shift. Rammell, 3466.

WANTED: Ride from Riverdale Terrace Apts. to W.A. on 8 shift. Polly Green, 4567.



The four-stage Scout lifts off pad at the Western Test Range carrying the French-built FR-1 satellite into a nearly circular polar orbit. It was the 12th success in a row for the Langley managed Scout launch vehicle. This was the first French satellite to be launched by NASA. Five other satellites have been put in orbit for other nations in the NASA international cooperative program. The FR-1 will measure propagation of very low frequency (VLF) radio waves in the ionosphere and electron densities. The spacecraft achieved an orbit barying between 462 and 465 statute miles in altitude and inclined 76 degrees to the Equator. It takes 100 minutes to complete an orbit.

GARDAPEE DIES UNEXPECTEDLY

Louis H. Gardapee, Inventory Management Assistant in the Procurement Division, died unexpectedly on January 17.

Gardapee was born June 22, 1901 in Kewanee, Wisconsin and was a veteran of World War II. During his service career he was stationed at Fort Monroe where he was a member of the Fort Monroe Band. He retired after 25 years of service and joined the Center staff on September 9, 1959 as a Property Clerk.

Surviving are his wife, Mrs. Esther Olefield Gardapee, and three daughters.

WANTED: Alternate drivers from Tide Mill Farms to W.A. on 8 shift. Maddalon, 4705.

WANTED: Ride from Washington St., Hampton, to W.A. on 8 shift. Dalin, 4607.

FOR SALE: Westinghouse automatic washer - $20, round walnut table (381inch diameter) - $40. Mueller, 898-5406.

FOR RENT: 3-bedroom brick rancher on Menchville Rd. Boyd, 826-4545 or 826-3990.

CREDIT UNION MEETS JANUARY 31

The Langley Federal Credit Union will hold its 30th Anniversary Annual Meeting on Monday, January 31 at 8:00 p.m. at the Activities Building.

All members are urged to attend and hear first hand details of a banner year of operations, participate in the election of officers and see an NASA film on the recent GT-6 and GT-7 flight.

During the meeting, the membership will elect four members to the Board of Directors and two members to the Credit Committee. Nominees for directors are Albert L. Braslow, B. Deems, Lt. Col. Irving Fischer, C. S. Hudgens, and Manuel Stein. Credit Committee nominees are Frank A. Lofurno and Captain Albert J. Seback. Nominations will also be accepted from the floor.

Also included on the agenda will be a discussion and vote on changing the issuing of statements to members from quarterly to semi-annually.

CENTER'S SAFETY SLOGAN CONTEST

Employees are reminded that the deadline for entering the Center's Safety Slogan Contest is Tuesday, February 1. The purpose of the contest is to promote greater safety consciousness among Langley staff members and to help achieve the objective of Mission Safety Seventy.

A cash prize of $50 will be presented to the winner and two runner-up prizes of $25 each have been authorized and may be granted at the discretion of the Incentive Awards Committee.

All slogans should be submitted on a suggestion form to the Incentive Awards Office, Mail Stop 124, by the close of business on February 1.

The President's Mission Safety Seventy Program was developed to help reduce accident rates among Federal employees. The objective of the program is to bring accident rates by 1970 down to 70 percent of the rate which was recorded in 1963.

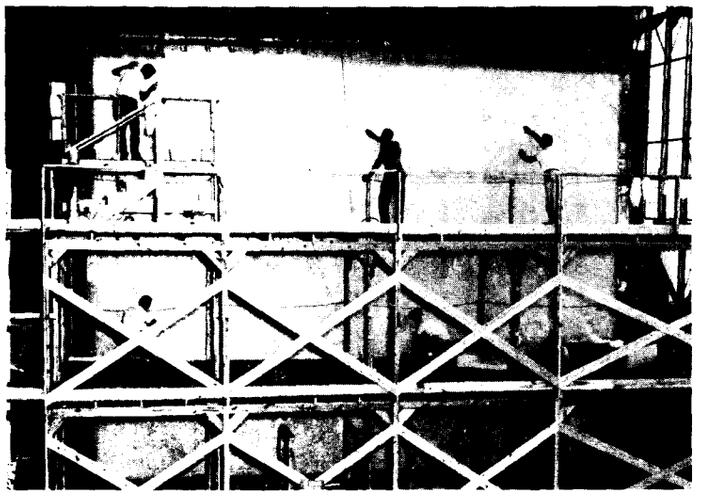
NASA BASKETBALL SCHEDULE

The NASA Basketball League opened its season of play on January 11. The league is divided into two divisions with four teams in one group and six teams in the other. Playoffs will be held on March 16, 17, and 24. For further information call Charles Clarke, 2631.

TEAMS: Division 1 - 1. Misfits, 2. Boozers, 3. Packers, 6. Bucket Brigade. Division 2 - 7. Exciters, 8. Short Circuits, 9. ACD, 10. Fire, 11. X-Raiders, 12. Structures.

Date	5:00	6:15	7:30	8:45
Feb. 2	11-12	2-6	1-3	7-8
Feb. 3	9-10	7-12	1-6	2-3
Feb. 9	8-9	1-2	10-11	3-6
Feb. 14	7-10	8-12	9-11	2-6
Feb. 16	1-3	7-11	8-10	9-12
Feb. 17	8-11	7-9	1-6	2-3
Feb. 21	3-6	1-2	7-8	10-12
Feb. 23	9-10	2-3	1-6	11-12
Feb. 28	1-3	8-9	10-11	7-12
Mar. 2	2-6	9-11	8-12	7-10
Mar. 3	1-2	3-6	7-11	9-12
Mar. 9	7-9	2-3	1-6	8-10
Mar. 14	2-6	1-3	8-11	10-12

FOR SALE: AR turntable with Shure M44-7 cartridge. Pearson, 838-0151.



Map number three of the Lunar Orbit and Landing Approach (LOLA) simulator is being prepared to have shadow patterns painted on the map model to give it a realistic appearance. The simulator is being developed for use in defining control tasks best performed by man or machine and thus to determine an effective man-machine integration for the lunar mission. The simulator, consisting of four lunar surface models, viewing systems to transmit pictures of the models to a display area, and a four porthole display system will present a research pilot with realistic lunar features such as the irregular lunar horizon, and closeup features during final landing approach. Four models of various scales permit altitude simulations from 200 miles to 150 feet above the lunar surface.

HL-10 RESEARCH FLIGHTS SCHEDULED

(Continued from page 1)

well as standing more than two feet higher from the ground to the top of the center fin. There are also significant differences in the controls of the two vehicles.

The first lifting body to be flown by NASA was the plywood M2-F1 model. Since 1963 it has achieved more than 500 successful flights, first at low level by auto tow and later being towed aloft by a C-47 aircraft and released to glide from altitudes of about 10,000 feet. The M2-F1, a plywood version of the metal M2-F2, is still in operation at the Flight Research Center.

The HL-10 and M2-F2 are designed to accommodate rocket engines which could be installed for possible use in more advanced future flight experimentation.

Milton Thompson, Flight Research Center, is chief pilot of the flight programs for the HL-10 and the M2-F2. He has flown the X-15 research airplane, the paraglider research vehicle, and the M2-F1. Capt. Jerauld R. Gentry, USAF Flight Test Center at Edwards, is assigned to flight responsibilities under Thompson's direction.

Problems concerned with the design, development, and operation of the HL-10, the M2-F2, and the M2-F1 have been studied in a variety of wind tunnels and specialized research laboratories by scientists at the Langley Research Center during the past several years.

FOR SALE: Tractor with two-gang plow - $250. Cuddihy, 877-3332.

FOR SALE: 9-pane Colonial-style front door, 36 x 80 - $18. Conway, 826-7730.

Langley Researcher

VOLUME 5 NUMBER 3 LANGLEY RESEARCH CENTER FEBRUARY 11, 1966

BARBARA W. SAIN SELECTED WINNER OF CENTER'S SAFETY SLOGAN CONTEST

Barbara W. Sain, Personnel Records, Personnel Division, was selected the winner in the Center's Safety Slogan Contest with her entry "Workers who think first - last!" She will receive a cash award of $50.

Runner-up prizes of $25 each were won by Earl P. Conkling, Research Facilities Service Section C, Mechanical Service Division, and Eldon E. Pettigrew, Publications Branch, Photographic Division. Conkling's slogan was "Safety Seventy for Longevity" and Pettigrew's entry was "The Four P's of Safety - Promote, Practice, Preach, Participate."

Dr. Floyd L. Thompson, Center Director, will present checks to the winners at a staff meeting on February 16.

The purpose of the contest was to promote greater safety consciousness among Langley staff members and to help achieve the objective of Mission Safety Seventy.

The President's Mission Safety Seventy Program was developed to help reduce accident rates among Federal employees. The objective of the program is to bring accident rates by 1970 down to 70 percent of the rate which was recorded in 1963.

AIAA GROUP TO HEAR MACFEE

Fred O. MacFee

Fred O. MacFee, General Manager of Advanced Engine and Technology Department, Flight Propulsion Division of General Electric Company, will be guest speaker at a meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on February 16 at the Holiday Inn, Mercury Boulevard.

The subject of MacFee's talk will be "Trends in Air-Breathing Propulsion." He will discuss advanced engines for new military and commercial aircraft. Included will be the TF39 high bypass ratio turbofan engine for the huge C-5A military transport, General Electric's 50,000-pound thrust class turbojet for the nation's first Supersonic Transport, and a variety of vertical lift engines for future V/STOL aircraft. He will also discuss significant technological trends necessary to meet future aircraft needs.

MacFee has twenty-five years of engineering and engineering management experience with the General Electric Company. Educated in the company's advanced engineering program and the Lowell Institute of the Massa-

(Continued on page 5)

In ceremonies held this week Dr. Floyd L. Thompson (left), Langley Director, presented special service awards to five scientists of the Center staff. The awards were for contributions to the advancement of the nation's aerospace programs. Receiving the honors were (from left): Blake W. Corson Jr., Eugene D. Schult, Herbert A. Wilson Jr., David G. Stone, and Eugene S. Love.

FIVE SCIENTISTS RECEIVE AWARDS IN NASA LANGLEY HONORS PROGRAM

Five scientists of the Langley Research Center have been presented special service awards given by the Center for contributions to the advancement of the nation's aerospace programs.

Dr. Floyd L. Thompson, Langley Director, announced the recipients as Herbert A. Wilson Jr., Davis G. Stone, and Eugene D. Schult for outstanding leadership; Eugene S. Love for exceptional scientific achievement; and Blake W. Corson Jr. for exceptional service.

In addition to individual certificates citing their contributions to the progress of flight, the Langley awards included checks of $1,000 each for Wilson, Stone, Schult, and Love, and $500 for Corson.

Wilson, Chief of the Applied Materials and Physics Division and a Langley scientist since 1937, and Stone, Head of the Flight Reentry Projects Office and a veteran of more than 24 years at Langley, were recognized for their "outstanding contributions in skillful and effective management of the Fire Project."

There were two successful Fire launches from Cape Kennedy on reentry trajectories to make pioneering studies of the problems a spacecraft would encounter in returning to the earth's atmosphere from a lunar mission - at speeds of about 25,000 miles an hour.

The first flight was April 14, 1964, at which time Wilson was head of the Flight Reentry Programs Office, with Stone as Assistant Head. Wilson was appointed to his present position two months later, and Stone was head of the office

(Continued on page 5)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hamton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGED. . .Making plans to desert the bachelor ranks is Charles Anderson King, Research Models and Facilities Division. He is engaged to Catherine Tatum Moore, Newport News. No date has been announced for the wedding.

NEW ARRIVALS. . .Announcing the birth of a son on January 15 is Allen Whitehead, Aero-Physics Division. The mother, Patricia, is formerly of Aero-Physics. . .Weighing in at seven pounds, one ounce on January 28 was Amy Elizabeth, daughter of Lemuel E. Meetze, Analysis and Computation Division. . .Celebrating the birth of a five pound, twelve ounce daughter, Susan Kay, on February 3 is James S. Harvey, Mechanical Service Division.

NEWLY WEDS. . .Thomas J. Yager, Dynamic Loads Division, took his final vows with Judy Ann Phillips, Portland, Oregon, on January 29 in Portland. . .Joseph Gera, Full-Scale Research Division, was married to Julia Szaho on December 31 in Budapest, Hungary.

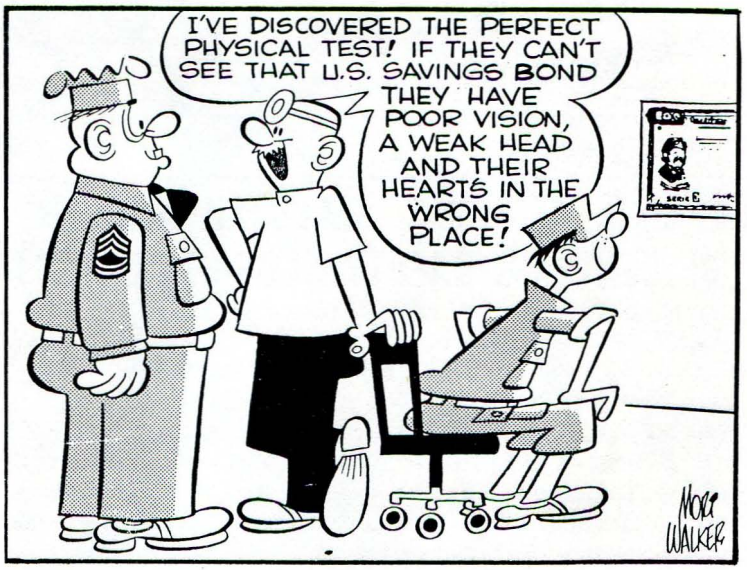
COURSES OFFERED. . .William and Mary is offering a course in Physics 572, Statistical Plasma Physics. The course will start on February 14 and will be taught by Dr. Marc Roy Feix. The class will meet on Monday and Wednesday afternoon from 2:45 until 4 in Room 214, Building 1229. Interested employees may call Dr. Feix, 4474. . . Interested staff members are reminded that the University of Virginia Extension is offering a four-semester-hour course in Calculus II. The class will meet tomorrow at 9 a.m. in Building 1347. For further information call Kenneth Margolis, 2559.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will visit the Center on February 16 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2523, for an appointment.

SINGLETON CLUB. . .An organizational meeting of the Singleton Club will be held on Thursday, February 17 at 4:45 p.m. in the Activities Building. The function of the Singleton Club is to provide social activities for single NASA employees and their guests. All eligible employees are urged to attend.

CAMERA CLUB. . .A color slide contest was held at a recent meeting of the Langley Camera Club with the following results: "Sailor Boy" by Charles Bryant, first place; "Miller" by Banks Holt, second place; "Gardens By The Sea" by Bryant, third place; "Golden Gate" by Bryant, first honorable mention; " Mexican Boy" by Billie Hall, second honorable mention; "Mill" by Holt and "Ilene" by Abraham Leiss, tied for third honorable mention. The club meets every third Thursday in the month and all interested persons are invited to attend.

Beetle Bailey



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of February 14:

Monday - Cream of potato soup, roast beef, Polish sausage, fried chicken livers, cheese omelette.

Tuesday - French onion soup, roast fresh ham, deep fried scallops, beef stew, hot dog.

Wednesday - Chicken rice soup, pepper steak, veal chop, fried chicken, baked hash.

Thursday - Vegetable-beef soup, grilled steak, crab cakes, broiled ham slice, grilled cheese and bacon sandwich.

Friday - Clam chowder, Spanish pot roast, stuffed flounder, broiled fish, macaroni and wieners.

The menu for the week is February 21 is as follows:

Monday - Split green pea soup, Swiss steak, grilled pork steak, fish sticks, chili con carne.

Tuesday - HOLIDAY

Wednesday - Puree of bean soup, barbecued pork chunks over rice, meat loaf, liver and onions, franks and beans.

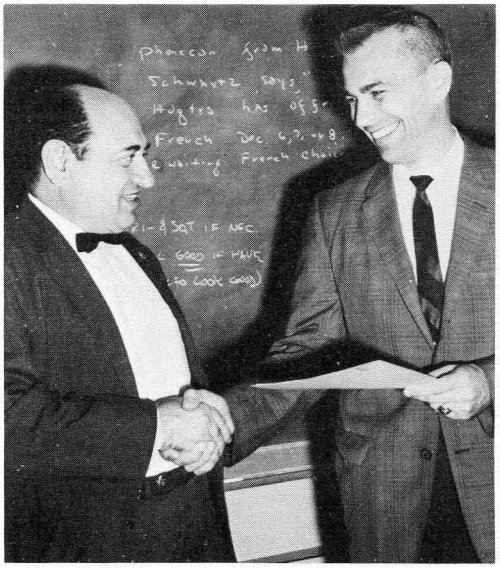
Thursday - Vegetable-beef soup, grilled steak, smoked pork sausage, fried chicken, cheeseburger.

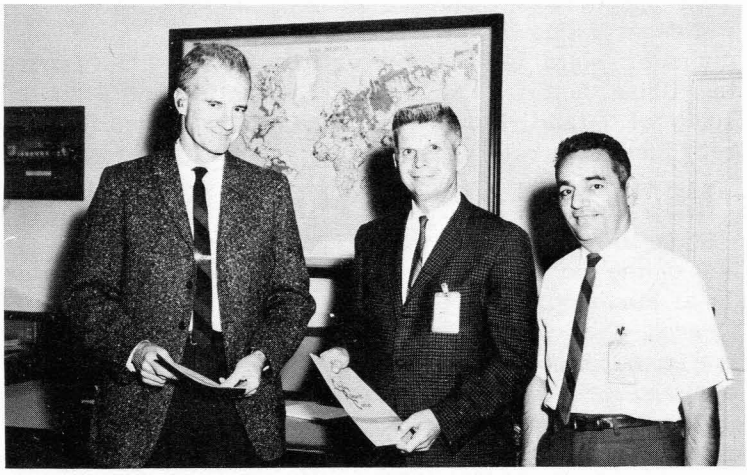
Friday - Clam chowder, Spanish pot roast, fried shrimp, broiled fish, barbecued sandwich.

INSPECTION TEAM TO VISIT CENTER

During the week of February 28 through March 4, representatives from the Personnel Division, NASA Headquarters, will visit the Center for the purpose of conducting a limited survey to evaluate the personnel management program.

Employees are advised that while most parts of the evaluation will be conducted within the Personnel Division, it may be necessary for the representatives to discuss personnel programs with a number of the supervisory employees.





Eight employees recently received cash awards for applications that might result in the granting of patents. Top left - Edwin C. Kilgore (left), Chief of Flight Vehicles and Systems Division, presents a check to Robert S. Freeman. Top center - Abraham Leiss (left) receives congratulations from Eugene D. Schult, Head of Scout Project Office. Top right - Norman L. Crabill (left) receives his award from Clifford H. Nelson, Manager of Lunar Orbiter Project Office. Lower left - Herbert A. Wilson Jr. (left), Chief of Applied Materials and Physics Division, presents awards to Noel T. Wakelyn, Joseph H. Judd, and John M. Riebe. Lower right - Howard B. Edwards (left), Chief of Instrument Research Division, presented checks to Ira S. Hoffman, and Thomas Vranas.

VALENTINE DANCE TOMORROW NIGHT

Center socialites are reminded that the Activities Association will open the 1966 social season with a Valentine Dance tomorrow night at the Activities Building.

Music for the informal affair will be furnished by Jerry Fisher and his band from 9 p.m. until 1 a.m.

The price of admission will be three dollars per couple and will include setups for the entire evening. Group table reservations may be made by calling the Activities Building, telephone 4583.

Tickets may be purchased from the following representatives: Sarah Jaite, Building 1247-A, phone 4586; Robert Fairbairn, Building 1192-A, phone 3426; George Summerfield, Building 1244, phone 4817; Norman Akey, Building 1230, phone 4766; Robert Forrest, Building 647, phone 2511; Dick Kurtz, Building 586, phone 2203, and Bruce Amole, Building 1222, phone 4508.

WANTED: Driving combination from Riverdale Plaza Apts. to W.A. on 8 shift. Marcum, 4705.

EIGHT RECEIVE CASH AWARDS

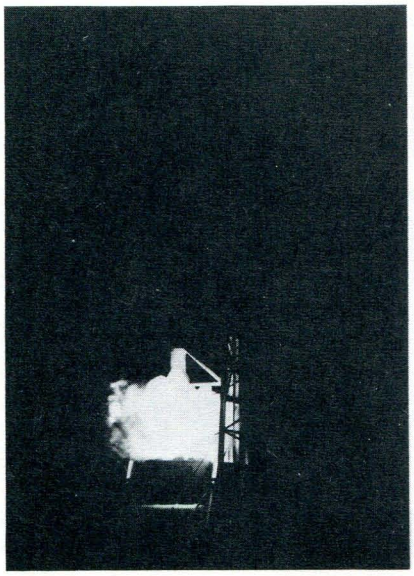
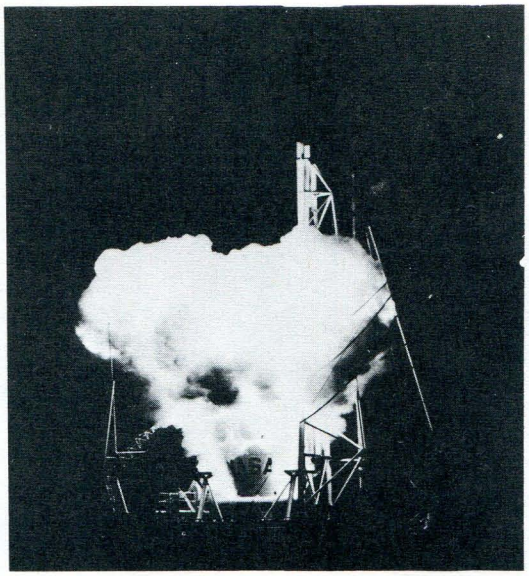
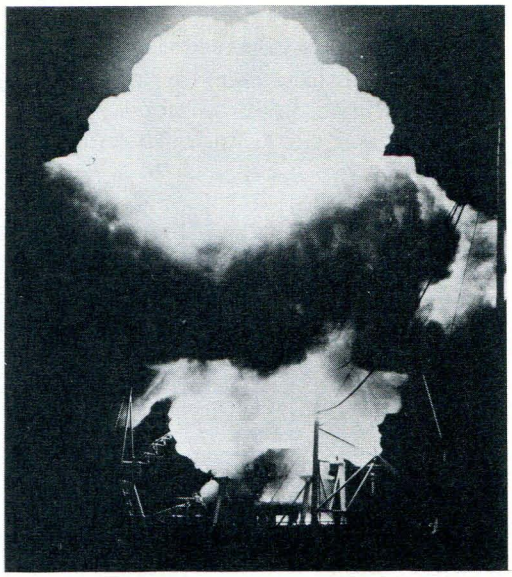
Eight employees recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Norman L. Crabill, Lunar Orbiter Project Office, and John M. Riebe, Applied Materials and Physics Division, received $50 each for their suggestion entitled "Control System for Rocket Vehicles."

Abraham Leiss, Scout Project Office; Joseph H. Judd, Applied Materials and Physics Division, and Robert S. Freeman, Flight Vehicles and Systems Division, were awarded $100 each for their joint suggestion entitled "Air Frame Drag Balance."

Noel T. Wakelyn, Applied Materials and Physics Division, received $200 for a "Thermal Control Coating."

Ira S. Hoffman and Thomas Vranas, both of Instrument Research Division, were awarded $200 each for an "Impact Energy Absorber."

This spectacular sequence shows the birth of a ball of white-hot flame in the test firing of the NASA's 260-inch diameter solid fuel motor, largest in the world. During the firing last fall at Aerojet-General's Dade Division, south of Miami, Florida, the huge engine burned its rubbery fuel at the rate of six tons per second for 140 seconds, generated a thrust of more than three million pounds and sent a great roar rolling across the swamps of nearby Everglades. The successful firing was a milestone in NASA's program to determine whether large solid propellant rockets can be effectively used as boosters for giant space payloads.

MOON SURFACE EXPERIMENTS CHOSEN

Scientific experiments have been selected by NASA to be left on the moon's surface by astronauts in Apollo manned lunar landings.

Seven geophysical instruments were chosen as primary and backup experiments to be included in three flight packages and one backup on the initial Apollo landing missions.

A package of experiments - called Apollo Lunar Surface Experiments Package (ALSEP) - will weigh about 150 pounds. An ALSEP will be carried in the Lunar Excursion Module on initial Apollo flights and astronauts will deploy and activate each instrument in an effective operating location near their landing site. Experiments will be left on the moon to transmit data for six months to one year.

Selection of the experiments was made by Dr. Homer E. Newell, Associate Administrator for Space Science and Applications, upon recommendation of NASA's Space Science Steering Committee. The experiments were approved by the Office of Manned Space Flight's Experiments Board which is headed by Dr. George E. Mueller, OMSF Associate Administrator.

Since the ALSEPs are still in the design stage, the number of experiments for each package is somewhat flexible. ALSEPs will be modular in form, however, to allow for later interchange of scientific instruments.

The seven experiments and their principal scientific investigator and co-investigators are:

Passive Lunar Seismic Experiment - Dr. Frank Press, Massachusetts Institute of Technology, and Dr. George Sutton, Columbia University's Lamont Geological Observatory. This three-axis seismometer will measure lunar tremors or moonquakes to study the moon's interior to its center - whether it has a crust and core and whether it is layered in structure.

Lunar Tri-Axis Magnetometer - Dr. C. P. Sonnett, Ames Research Center, and Jerry Modisetts, Manned Spacecraft Center. The magnetometer, similar to ones flown in unmanned flights, will measure the moon's internal magnetic field as well as the interraction of the solar wind with the magnetic field around the moon.

Medium Energy Solar Wind Experiment - Dr. C. W. Snyder and Dr. M. N. Neugebauer, Jet Propulsion Laboratory. This plasma spectrometer will measure the velocity and direction of protons, electrons and alpha particles in the solar wind as they arrive at the moon and the interraction of these particles with the lunar surface.

Suprathermal Ion Detector - Dr. J. W. Freeman, Rice University, and Dr. F. Curtis Michel, formerly of Rice and now a NASA scientist-astronaut. This experiment will measure the moon's ionosphere by sampling ions in a wide range of energies to determine how strongly it is affected by the solar wind.

Lunar Heat Flow Measurements - Dr. Marcus G. Langseth, Lamont Observatory, Dr. Sydney Clark, Yale University, and Dr. M. Gene Simmons, MIT. This instrument is designed to measure the outflow of heat from the moon's interior through the surface to provide information on the distribution of radioactive elements and the thermal history of the moon, including volcanism.

Low Energy Solar Wind - Dr. Brian J. O'Brien, Rice. Like the JPL experiment, this instrument will study solar wind particles, but in lower energy ranges.

Active Lunar Seismic Experiment - Dr. Robert L. Kovach, Stanford University, and Dr. Joel S. Watkins, U.S. Geological Survey. This experiment will require more astronaut activity than the others. After the instrument is activated, an astronaut will hit the lunar surface with a thumping device as he walks out to 1,000 feet from the Lunar Excursion Module. Beyond that distance, a small mortar device will be used to fire small projectiles to land on the surface and the instrument will study the resulting tremors to obtain information on physical properties of the lunar surface to a depth of about 500 feet.

FOR SALE: Mahogany credenza, 61 inches long; also baby stroller. Phillips, PA 3-5382.

CREDIT UNION MEETS FEBRUARY 21

A Special Annual Meeting of the Langley Federal Credit Union will be held on Monday, February 21 at 8 p.m. in the Activities Building. The meeting was originally set for January 31 but had to be postponed because of bad weather.

During the meeting, the membership will elect four members to the Board of Directors and two members to the Credit Committee. Nominees for directors are Albert L. Braslow, B. Deems, Lt. Col. Irving Fischer, C. S. Hudgens, and Manuel Stein. Credit Committee nominees are Frank A. Lofurno and Captain Albert J. Seback. Nominations will also be accepted from the floor.

Also included on the agenda will be a discussion and vote on changing the issuing of statements to members from quarterly to semi-annually.

The contract for the new Credit Union Building was signed February 2. Details will be presented at the meeting.

Light refreshments will be served and the following door prizes will be given away: Polaroid color camera, electric blender, AM-FM transistor radio, hair dryer, 1/4-inch electric drill, and an electric skillet.

FIVE SCIENTISTS RECEIVE AWARDS

(Continued from page 1)

during the second flight of a Fire spacecraft May 22, 1965. All objectives in the Fire program were attained as planned, according to the citation honoring Wilson and Stone.

Schult, who came to Langley in 1949, was honored for his outstanding service as manager for the Scout launch vehicle project. Schult was project manager from June 1963 to last December, when he was named head of the newly-established Space Vehicle Design Criteria Office. The award cited Schult for contributing "significantly to improvement of the reliability of Scout..and to the success of the nation's space program and the NASA international program." The Scout, which has recorded 14 successful flights in succession, is now managed by Roland D. English, former assistant head of the office.

Love, Assistant Chief of the Aero-Physics Division, was cited for "outstanding achievements in the field of reentry science and technology and for providing valuable technical counsel to the Langley reentry sciences program." Love started his career at Langley in 1947 and is internationally recognized as an authority in the fields of hypersonic aerodynamics and reentry.

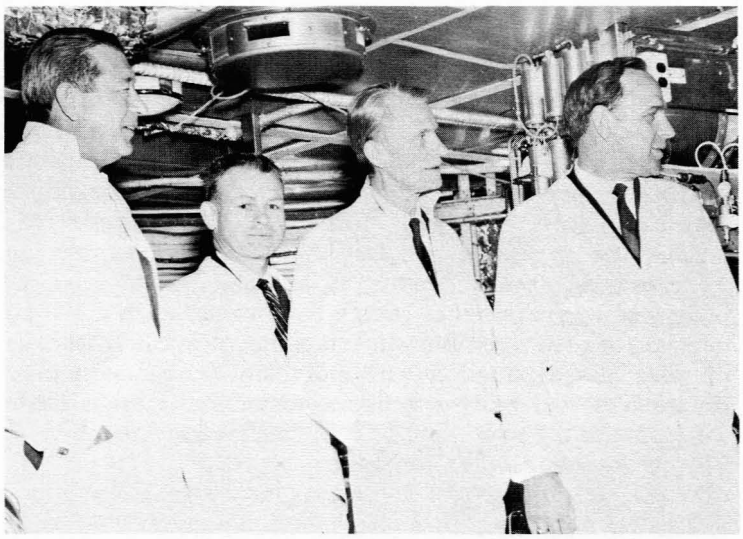
Corson, who has been at Langley since 1935, is head of the 16-Foot Transonic Tunnels Branch of the Full-Scale Research Division. His award was "for development of techniques for the experimental study of jet nozzles and the planning and direction of jet nozzle research programs which have had a highly significant influence on the development of modern jet aircraft."

WANTED: Driving combination from Mercury West Apts. to E.A. on 8 shift. Samuels, 2631.

WANTED: Ride from Riverdale to W.A. on 8 shift. Keller, 4504.

WANTED: Ride from Claiborne Place, Newport News, to W.A. on 8 shift. Sharpe, 3421.

WANTED: Alternate driver from Gloucester Point to W.A. on 8 shift. Hudgins, 4426.



Langley Research Center officials and two members of Congress donned the required white uniforms for inspection of the Integrated Experimental Life Support System being established at Langley. Shown during a recent tour of Langley aerospace facilities are (from left): Representative Thomas N. Downing of the first district of Virginia; Charles J. Donlan, Langley Associate Director; Dr. Floyd L. Thompson, Director, and Representative David N. Henderson of the third district of North Carolina.

AIAA MEETS FEBRUARY 16

(Continued from page 1)

chusetts Institute of Technology, he began his career with General Electric at Lynn, Massachusetts, as a laboratory assistant in 1940 and by 1943 he was engineer in charge of temperature measurements and temperature measuring equipment. He moved to Schenectady, N. Y., in 1946 to take the advanced engineering course and handle rotating assignments in various fields.

In 1949 he returned to Lynn and the Thomson Laboratory to manage the electromechanical and instrumentation development activity. In 1955 he joined the Flight Propulsion Division as Manager, Component Design and Development of the Small Aircraft Engine Department, and then served in a managerial capacity in preliminary design, J85 design, reliability, cost and quality control until 1959. From 1959 to 1962 he managed the highly successful J85 Project and saw the engine through development and into production for the Northrop T38 and McDonnell GAM 72 programs.

In 1962 he became manager of the GE1 Components Operation in the Large Jet Engine Department. The following year he was appointed General Manager of the newly formed Advanced Engine and Technology Department with responsibility for all flight propulsion research and development which now includes development of the TF 39 engine for the C-5A, the GE4, General Electric's entry for the Supersonic Transport, and other engines for more advanced applications.

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the meeting at 8.

The Treasury offers taxpayers the option of receiving their tax refunds in risk-free, interest-paying U.S. Savings Bonds. Check the right box on the return - and the rest is automatic!

SDI CHANGES ANNOUNCED

The NASA Selective Dissemination of Information (SDI) program has been operating on an experimental basis since late 1963 with about 500 NASA scientists and engineers participating. Its purpose is to notify the participant of pertinent current literature based upon his own subject interest profile.

Since the system's inception there has been an increase in coverage, improvements in matching strategies, and program improvements which have resulted in a 700 per cent increase in volume of announcements mailed. Because of user dissatisfaction with individual announcement notices and the necessity of reducing unit costs to make future expansion of the system possible, the announcement media will be changed in the near future.

Instead of an IBM notice card plus abstract card in an individual envelope for each accession number, the participant will receive an individualized bibliographic listing printed by computer in triplicate on NCR (no carbon) paper. The notice citations will be in numerical sequence and will consist of accession number, journal category, corporate source, title, author, imprint data, contract and/or report number, source from which document can be obtained, and cost. If the individual desires, indexing terms can also be supplied as an aid to judging usefulness of the cited document. The participant will check action desired in a series of boxes on the right margin of the printout. He will retain the original and forward two copies to the library for action. One of these will be returned to the SDI operation for post analysis.

Behind the scenes at the Scientific and Technical Information Facility there will be increased emphasis on improving the users profiles, transfer of the computer operations to their own IBM 1410, and a generally improved surveillance of the operation to insure prompt response to changing situations.

A more detailed progress report will be forwarded to participants shortly, and additional information is available from the Center Library, telephone 4789 or 4726.

RESA CHAPTER MEETS FEBRUARY 18

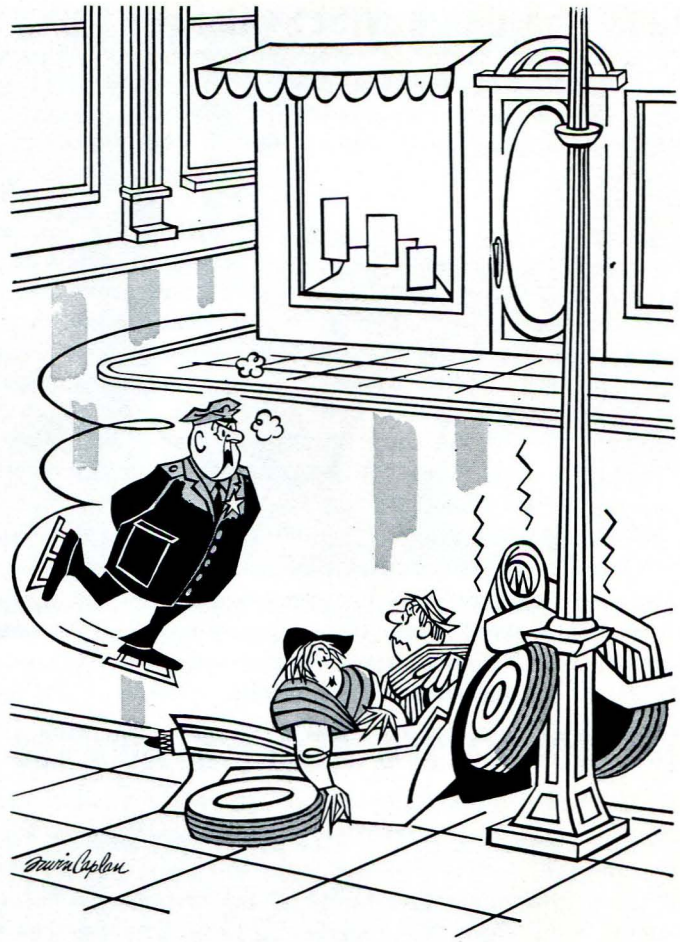
A review of the archaeological discoveries in the Dead Sea area will be presented by Reverend James K. Solari, Belmont Abbey College, at a dinner meeting of the Hampton Roads Chapter of the Research Society of America (RESA) on Friday, February 18 at Eli's Restaurant.

Reverend Solari will discuss the historical accidents which brought the Dead Sea Scrolls to light and present an archaeological evaluation of the kinds of materials uncovered. He will also give a comparision of the leading ideas of the Qumran Sect with the old and new testaments.

A social period will be held at 6 p.m. followed by dinner at 7. Reservations should be made with George F. Pezdirtz, 4420 or 877-1800, by 1 p.m. on February 17.

PROFESSOR TO VISIT: Dr. Daniel Frederick, Professor of Engineering Mechanics, Virginia Polytechnic Institute, will visit the Center on Monday, February 21 to discuss VPI's graduate program in Engineering Mechanics. Persons wishing an appointment with Dr. Frederick should call the Training Office, 2611 or 2567.

A woman would rather marry a poor provider any time than a poor listener. --Kin Hubbard



"YOU CAN'T SAY I DIDN'T WARN YOU FOLKS THE ROADS WERE IN ICY CONDITION."

NASA APPEALS SYSTEM CITED

NASA inaugurated an appeals system effective July 1, 1962, for the reconsideration of administrative decisions to take adverse action against employees.

In general, this appeals system is applicable to all employees with the exception of those serving under a temporary appointment or those serving a probationary or trial period.

The types of adverse actions covered are suspension for more than 30 calendar days, furlough without pay, reduction in rank or compensation, and involuntary separation or removal.

Under NASA appeals system an employee is entitled to one formal hearing either at the time the adverse action is proposed or after the adverse decision is made and he is likewise entitled to appeal the adverse decision to the Langley Director at any time after the notice of adverse decision but not later than 10 calendar days after the effective date of the adverse action. In addition, the employee has the right to appeal adverse actions to the Civil Service Commission.

Questions concerning these regulations should be directed to the Personnel Office.

FOR SALE: 16-foot boat and trailer. Ellingsworth, 826-6170 after 4 p.m.

If you're one of those who have a tax refund coming to you - why not take it in U.S. Savings Bonds?

COMMISSION REVISES REGULATIONS

The Civil Service Commission has issued revised regulations granting Federal employees the right to appeal agency decisions that employees have not earned within-grade salary increases. The regulations went into effect January 27.

The regulations provide guidelines for uniform handling within agencies of employee requests for agency reconsideration of such decisions and for their appeal to the Commission.

The regulations are based on a provision of the Federal Employees Salary Act of 1965. They do not change the concept that within-grade salary increases must be earned and cannot be granted to employees who, while meeting the period-in-service requirement, have not operated at a level of competence entitling them to the increase.

Main points of the regulations are:

1. Supervisors must keep employees currently informed of their performance. At least 60 days prior to an employee's completing the service necessary for consideration for a within-grade salary increase, he must be told of any factor raising a question about his meeting the acceptable-level-of-competence requirement. If the supervisor fails to give this notice and the agency determines that the employee has not met the level of competence requirement, the agency must again determine, within 60 days of the date the employee completes his service requirement, whether the employee is meeting the competence requirement.

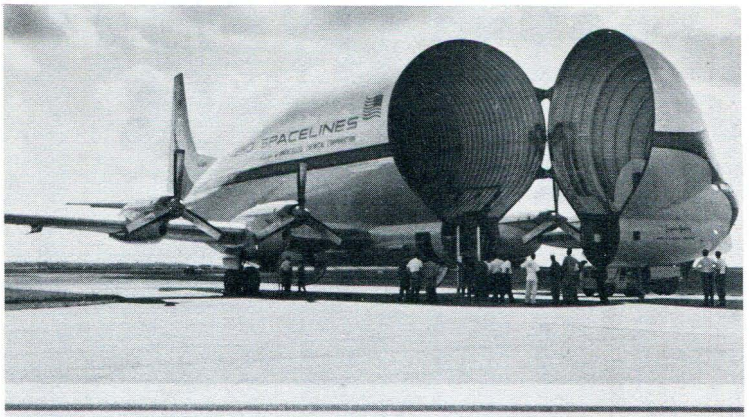
2. If an agency determines that the employee does not meet the level-of-competence requirement, it must inform the employee of this decision, in writing, no later than the day he completes his period-of-service requirement. This notice must include the basis for the decision.

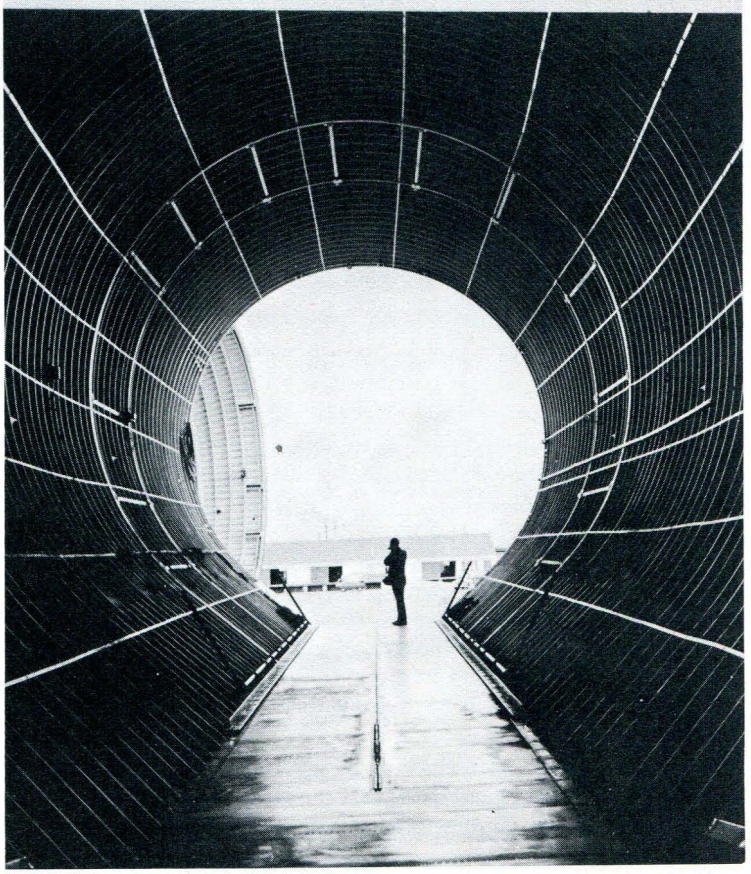
3. Within ten days of being informed that he has not earned a within-grade salary increase, the employee may make a written request that the agency reconsider its decision. The request must contain the employee's basis for contesting the decision. The request may be presented personally as well as in writing, and the employee may have a representative of his own choosing assist him in preparing and presenting his request.

4. The employee's request for reconsideration must be reviewed at a higher organization level which had no part, formally or informally, in making the original decision. A prompt decision, in writing, must be provided the employee.

5. If the agency reaffirms its original decision, the employee may, within ten days, appeal to the Civil Service Commission in writing. The Board of Appeals and Review in the Commission will then call for the "reconsideration file" which must contain all documents pertinent to the agency decision and the employee's request for consideration, including a written transcript or summary of any personal presentation by the employee. The file may not contain any document that has not been made available to the employee and his representative.

6. The decision of the Board of Appeals and Review is final and mandatory.





A GIANT KEYHOLE - A man is dwarfed in what appears to be a king-size keyhole. It's really the opening of an airplane cargo section designed to carry outsize loads like NASA rocket stages. Space hardware often is too big for ordinary transports but the Super Guppy, shown above, is made to swallow cargo like that. This scene is the interior of the cargo area with the nose section swung open for maximum entry room.

FOR SALE: 1956 Oldsmobile 88 - $200. Lenning, 826-2630.

FOR SALE: 8 venetian blinds, 29 inches wide by 41 inches long, aluminum slats, nylon cords and tapes, off-white. Henry, 596-7829 after 5 p.m.

FOR SALE: 1962 Oldsmobile 88. Steele, 838-2661 after 5.

WANTED: Driving combination from Hampton Terrace and Northwood Dr. to W.A. on 8 shift. Hayduk, 4649.

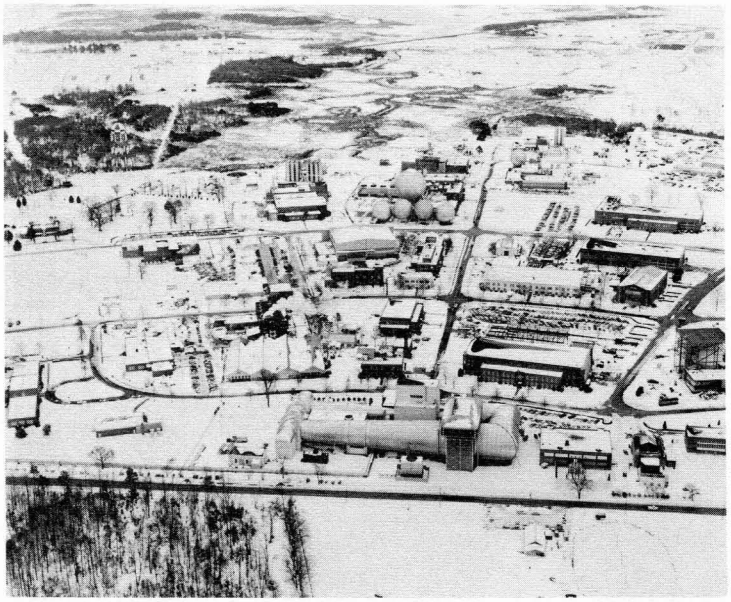
FOR SALE: Concert flute. Morris, 723-8651 after 6 p.m.

FOR SALE: Custom-built Cape Cod house with 4 bedrooms and den - located in York County. Wilson, 877-3014.

FOR SALE: Carter AFB carb. model 3721SB (from 1965 350 hp Chevelle), adapter, manifold, and air cleaner - fits 1957-1966 Chevrolet 283-327 -$50. Edwards, 722-2383.

FOR RENT: Unfurnished 3-bedroom brick rancher in Forest Park. Hinson, 826-3388.

FOR SALE: 1958 Buick Special. Gerdes, 723-2772.



The recent snow storms which left up to 19 inches at the Langley Research Center were among the worst in the nearly 50-year history of the Center, but the cooperation of the staff, contractors, and visitors helped minimize the problems which resulted from the weather. Center officials expressed their appreciation for all those whose courtesy in utilizing car pools and parking in special areas made it possible to expedite the clearance of streets for a return to normal operations. And safety officials had a kind word for the way the staff cooperated in helping to keep down accidents during this difficult period. Shown above are a number of aerial views taken of the West Area during the storm. The top left photo overlooks the West Area from Route 134. The back of 16-Foot Transonic Tunnel is shown in the foreground. The top right photo was taken looking down Moffett Road to 16-Foot Tunnel. The bottom left photo shows automobile parked beside the Langley Research Center Hangar. Bottom right photo was taken in the area of the Lunar Landing Facility. The pictures were taken by Bob Nye, Staff Photographer of Langley Research, from a helicopter piloted by Norman R. Driscoll, Flight Mechanics and Technology Division.

FOR SALE: 21-inch Philco console TV set - $35. Berryman, 596-4645.

FOR SALE: 1965 MGB. London, 245-7526 after 5 p.m.

FOR SALE: 15-1/2-foot runabout, 35 hp Evinrude, trailer - $600. Price, 723-1678.

FOR SALE: 3-bedroom brick rancher in Hallwood - fenced backyard, assume loan. Wright, 851-0378.

FOR RENT: 3-bedroom brick house - $110 per month. Link, 851-3642 or 851-3648.

FOR SALE: 1964 Volkswagon camper. E. B. Davis, 877-9042.

FOR SALE: Radio ear hearing aid eyeglass frames - aid in right temple piece. Tubbs, PA 2-6193.

WANTED: Driving combination from 1472 Morgan Dr., near Holly Cts., to W.A. on 7:30 shift. Bailey, 4731.

WANTED: Ride from Oriana Rd., near Route 17, to W.A. on 8 shift. Natalie Johnson, 4866.

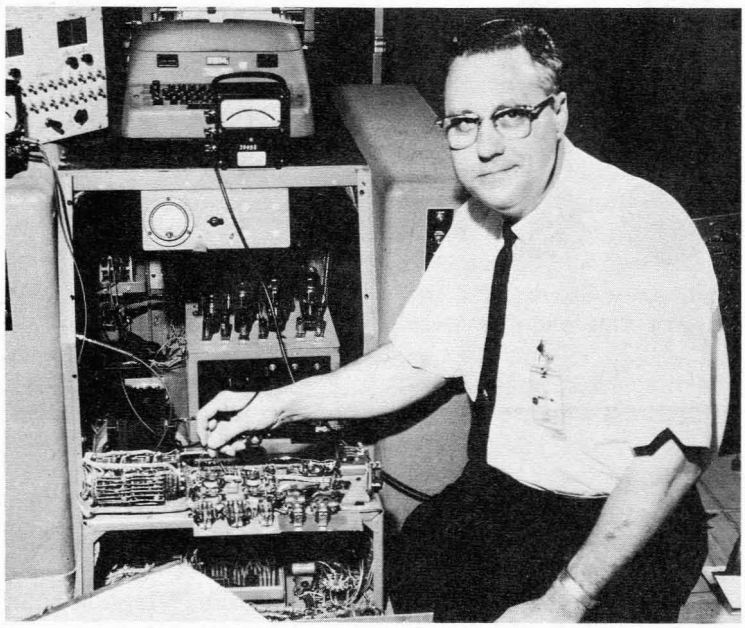
WANTED: Alternate driver from Tuckahoe area to E.A. on 8 shift. Goble, 596-5176.

FOR SALE: 3-bedroom brick and frame rancher in Foxbridge. Peterson, 851-3039.

FOR SALE: 1961 Falcon, 2-door. Feryn, 877-3706.

Langley Researcher

VOLUME 5, NUMBER 4 LANGLEY RESEARCH CENTER FEBRUARY 25, 1966



Edward A. Hudgins, Analytical and Computation Division, was instrumental in the rescue of three crew members of a Navy H-34 helicopter which crashed into the foggy Chesa-Bay on the morning of Saturday, February 12.

CENTER EMPLOYEE ASSISTS IN RESCUE OF THREE IN HELICOPTER CRASH AT SEA

Edward A. Hudgins, experimental electronics mechanic in the Analytical and Computation Division, was instrumental in the rescue of three crew members of a Navy H-34 helicopter which crashed into foggy Chesapeake Bay the morning of February 12.

Hudgins, who is in the Input-Output Equipment Development Section of the Data Systems Branch, was at his home at 628 West Ocean View Avenue, Norfolk, when he heard a helicopter flying overhead - then go suddenly silent.

Sensing that something was wrong, Hudgins rushed to the beach outside his house and called out across the bay. Through the fog came the answering sounds of the downed crewmen who were out of the helicopter and struggling for survival in the water, about 700 feet off shore.

Hudgins and a neighbor launched a 12-foot aluminum dinghy into the 36-degree water and began paddling out into the bay, all the while using the voices of the fliers to guide them on their mission of mercy. Visibility was described by Hudgins as just about zero.

There were four survivors swimming in the water when Hudgins and his companion arrived.

A fifth crew member, whose body was recovered later that day, lost his life in the crash of the helicopter - which was submerged in the water except for a portion of the tail section.

One of the four survivors was rescued, with some dif-

(Continued on page 3)

SCOUT REENTRY TEST AT WALLOPS PROVIDES DATA ON HEAT SHIELD

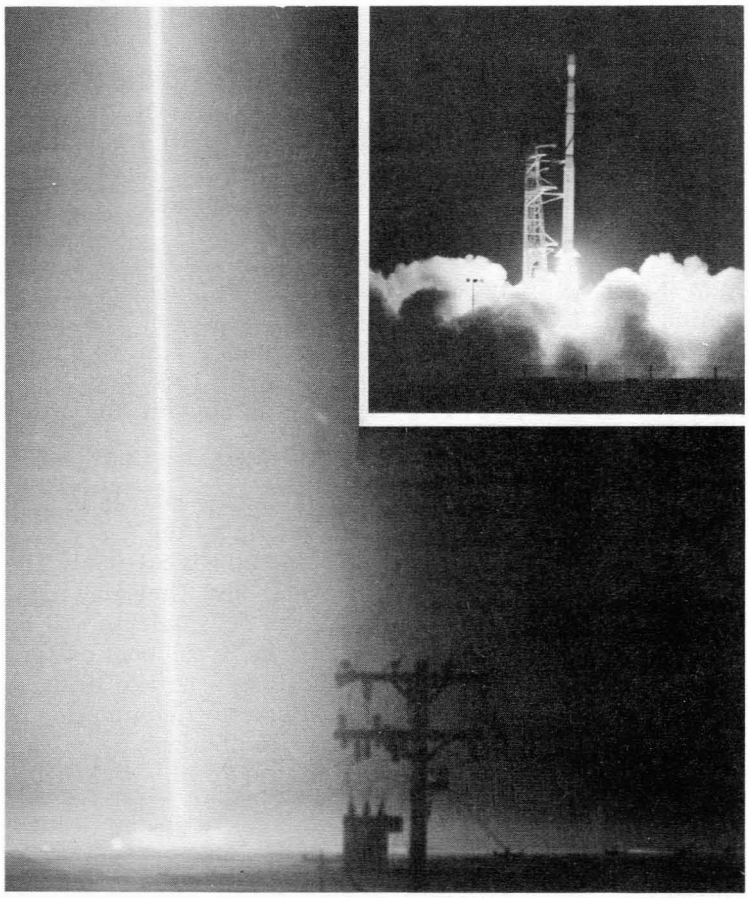
A four-stage Scout rocket blasted off from Wallops Island at 7:55 p.m. on February 9 for a 112-mile trip into space before splashing down 10 minutes later southeast of Bermuda.

It was the 15th consecutive success for the solid-fuel Scout rocket. The flight was a test of a new spacecraft heat shield material devised by scientists at Langley Research Center.

The experimental payload, intended to verify results of an extensive series of laboratory tests, was fired back into the atmosphere at more than 18,000 miles an hour to subject the protective coating to conditions that can be simulated only partly on the ground.

The phenolic nylon material under test is a type of plas-

(Continued on page 3)



The fifth Scout reentry heat experiment was successfully launched from Wallops Island on February 9. The purpose of the flight was to determine how well phenolic nylon spacecraft heat shield material performs under actual reentry conditions. The above photograph shows the Scout liftoff from Wallops. The experiment was designed and managed by scientists of the Langley Research Center.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW ARRIVAL. . .Weighing in at nine pounds, nine ounces on February 3 was Matthew Stephen, new son of Robert W. Feldhousen, Research Models and Facilities Division.

NOTE OF THANKS. . .A note from Joseph Stora, formerly of Research Models and Facilities Division, has been received at the Center thanking his many friends and associates for their kind expressions and for the mementos given him on the occasion of his recent retirement.

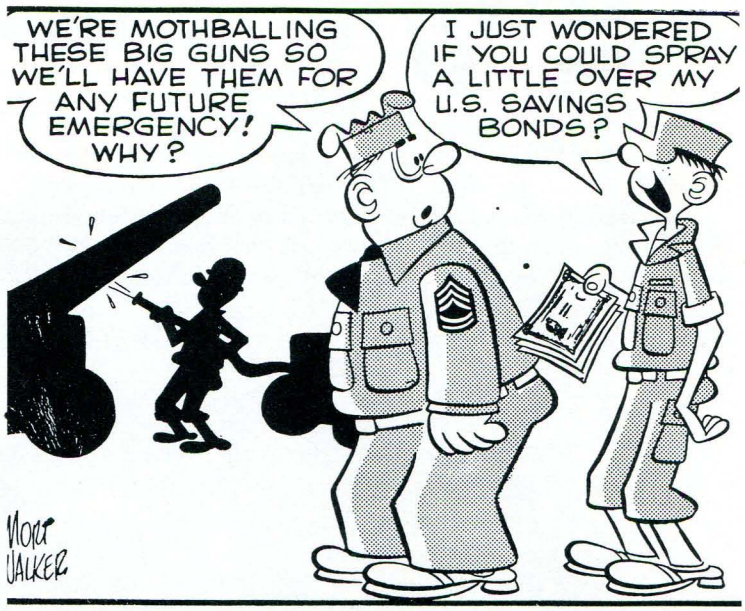
IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, March 1 at 7 p.m. at the Central Labor Union Hall, Newport News.

REPRESENTATIVE TO VISIT HERE. Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on March 8 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

AUTO TAGS. . .Starting March 15, State and Hampton City Auto Licenses may be purchased at the Phoebus Amoco Station located at 201 E. Mellen St., Phoebus. The office will be open Monday through Saturday from 8 a.m. to 6 p.m. Individuals who have not received their 1966 Auto Registration by March 17 are requested to contact the office immediately.

BOATING COURSE. . .A free eight-lesson course in safe boat handling will be given to the public by the U.S. Coast Guard Auxiliary Flotilla 61 at Hampton High School. The lessons will be given each Tuesday and Thursday night from 7 p.m. to 9 p.m. starting March 15. Students will be accepted through March 17. The course is for boat owners and non-boat owners and their families - no age limit. A certificate will be awarded upon satisfactory completion of the course. Further information may be obtained by calling the following numbers between 6 p.m. and 8 p.m. - 722-4708, 723-8860 or 722-8401.

FIGURING OUT SPACE JARGON. . .That the space-age vocabulary is having a strong influence on our language was emphasized in a rundown on beauty contestants for NASA's Jet Propulsion Laboratory "Queen of Outer Space." In the JPL house publication, one entrant was described this way: "This shapely craft, 5 feet, 6 inches in height, has undergone 21 years of dynamic testing and carries a payload of 120 pounds of well-designed equipment."



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of February 28:

Monday - Cream of tomato soup, baked Virginia ham, chopped sirloin steak, breaded veal cutlet, fish cakes.

Tuesday - Chicken-noodle soup, roast ribs of beef, shrimp Newburg, chicken shortcake, western omelette.

Wednesday - French onion soup, half-dozen fried oysters, grilled pork chops, braised beef tips on noodles, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, corned beef brisket, fried chicken, tuna-noodle casserole.

Friday - Clam chowder, Spanish pot roast, fried fish sticks, broiled fish, baked fish.

The menu for the week of March 7 is as follows:

Monday - Puree of bean soup, braised shortribs over rice, two stuffed shrimp, chicken, beef patties, wieners and sauerkraut.

Tuesday - Tomato-barley soup, fried clams, Polish sausage, liver and onions, cheeseburger.

Wednesday - Chicken-noodle soup, roast beef, seafood supreme, fried chicken, cheese ravioli.

Thursday - Vegetable-beef soup, grilled steak, fried fantail shrimp, smoked pork sausage, barbecued sandwich.

Friday - Clam chowder, baked Canadian bacon, salmon loaf, fried fish, chili con carne.

PROFESSOR TO VISIT HERE

Dr. James B. Eades, Head of the Aerospace Engineering Department, Virginia Polytechnic Institute, will visit the Center on Thursday, March 3 to discuss thesis and dissertation work and programs of study with graduate students in Aerospace Engineering. He will be accompanied by Dr. Fred W. Bull, Dean of the Graduate School.

Employees wishing to confer with Dr. Eades may call the Training Office, telephone 2611, for an appointment.

FOR SALE: 1957 8 x 47 Magnolia mobile home. Richards, 595-2935.

SCOUT REENTRY TEST AT WALLOPS

(Continued from page 1)

tic, the density of which is made quite low by mixing in it millions of microscopic plastic spheres known as micro-balloons. It is classified as a charring-ablation material.

NASA officials reported the experiment provided essential test data by radio to downrange ships and aircraft.

A continuous real-time telemetry channel furnished data before and after the one-minute communications blackout period caused by reentry. The aircraft photographed the visible portion of the reentry.

A delay telemetry system, used successfully on previous reentry flights to transmit blackout-period information, failed to operate, apparently due to a transmitter malfunction. However, the continuous channel, by furnishing data on post-blackout conditions (temperatures and measurements of material consumption) will permit evaluation of total performance and correlation with previous ground tests.

This was the fifth flight in the Langley Center's Scout Reentry Heating Project sponsored by NASA's Office of Advanced Research and Technology. (OART).

Langley staff members who served as key officials for the Scout Reentry Heating Project were:

Reentry Heating Experiment - Joseph M. Hallissy Jr., Project Manager; William A. Brooks Jr., Experimenter; Marvin B. Dow, Experimenter; Milton L. Williams, Technical Project Engineer; Charles E. Feller, Instrumentation Project Engineer, and John N. Daniel, Tracking and Data Acquisition Engineer.

Scout Launch Vehicle - Roland D. English, Head of Scout Project Office, and James D. Church, Operations Manager.

CENTER EMPLOYEE ASSISTS IN RESCUE

(Continued from page 1)

ficulty, by another helicopter. The other three were pulled into two small boats - the most severely injured crewman rode in the boat operated by Hudgins and his neighbor and the remaining two were pulled aboard another small boat which had reached the scene.

To enhance their chances of success, the two small boats remained together during the rescue and while they were on the way home. Before reaching the shore, they met up with a motor boat with three Norfolk policemen who were proceeding to the scene to offer assistance.

Together, the three boats headed for the safety of the shore - guided through the fog with the help of a compass which Hudgins had borrowed for the purpose from one of the fliers, who had thoughtfully included it in his survival kit.

CIVIL SERVICE EXAMS OPEN

The Board of U.S. Civil Service Examiners has announced the opening of an examination for Clerk-Tpyist, GS-3. The closing date for filing is March 21.

Persons interested in applying may obtain application forms from the NASA Board of U.S. Civil Service Examiners, telephone 4681.

FOR SALE: Siamese kittens. Harris, 898-6512.

FOR SALE: 1959 Ford, 6 cylinders, 4-door sedan, radio and heater, automatic transmission. Shideler, 826-5955.

Robert L. Girouard, President of the Langley Federal Credit Union, signs the contract for a 4,000 square-foot Credit Union Building to be erected by the Cochran Construction Company. Looking on with interest are five members of the Board of Directors. They are (from left): A. W. Carter, B. T. Deem, Secretary; Bernard Ellis, Chairman of the Building Committee; James C. Tingle Vice-President, and A. L. Braslow. Construction details were discussed at the 30th Annual Membership Meeting on February 21. The completion date has been set for August 30, 1966.

NASA COVERTS APOLLO CONTRACT

NASA announced the conversion of its contract with Grumman Aircraft Engineering Corp., Bethpage, New York, for development of the Lunar Excursion Module to a cost-plus-incentive agreement.

Under terms of the new four-year contract, Grumman will deliver 15 flight articles, 10 test articles and two mission simulators. This adds four flight articles to the contract. The contract, ending December 31, 1969, will complete the Lunar Excursion Module (LEM) requirements for the Apollo Moon-landing program. Total cost is $1.019 billion.

The contract provides profit incentive for outstanding performance, cost control and timely delivery as well as potential profit reductions if performance, cost and schedule requirements are not met.

Grumman was selected by NASA in November 1962 to develop the LEM, the vehicle designed to carry the first Americans to the lunar surface. Cost of the work, added to the new agreement, totals $1.42 billion.

This conversion marks the second major Apollo contract conversion by NASA within the past two months. The agency announced January 21 that it had signed a contract conversion with North American Aviation, Inc., for development of the Apollo Command and Service Modules.

That contract conversion was in the amount of $671,300,000 and covered a one year period ending in December this year. Total cost of the NAA contract is $2.2 billion.

CREDIT UNION AUCTION: Two repossessed automobiles will be sold at auction on Tuesday, March 1 at 1:30 p.m. just outside NASA Gate 4. Up for sale will be a 1963 Ford Galaxie 2-door hardtop and a 1965 red Chevelle Malibu Sport Coupe with four-on-the-floor.

SECRETARY WIRTZ TERMS WORK INJURIES AND DEATH TOO MANY

The nearly 200 work deaths and 40,000 disabling work injuries among Federal employees are too many, Secretary of Labor W. Willard Wirtz said recently.

Compensation costs run almost $40 million yearly and total costs of these accidents mount considerably every year, he declared.

Addressing the 20th annual conference of the Federal Safety Council in Chicago, Secretary Wirtz noted that President Johnson's Mission Safety-70 goal is helping Federal agencies to reduce the number of work deaths and injuries. The Mission's target is to cut Federal employee work injuries and costs 30 percent by 1970 - an annual decline of 5 percent.

In 1964, he said, 16 Federal agencies reduced their injury-frequency rates by more than 5 percent, but the Government-wide reduction was only 2.5 percent. Two agencies, Farm Credit Administration and National Capital Housing Authority, showed reductions of 100 percent. Three large agencies showed sizable cuts. Army's rate declined about 10 percent and Post Office and Air Force had reductions of more than 6 percent.

Nine agencies, however, showed increases of more than 5 percent.

SINGLETON CLUB ELECTS OFFICERS

At a recent organizational meeting of the Singleton Club Tom Foughner, Dynamic Loads Division, was elected president. Other officers are Sharon Huggett, Flight Mechanics and Technology Division, corresponding secretary; Barbara Hixon, Analysis and Computation Division, recording secretary, and Don Findley, Dynamic Loads, treasurer. Dick Davis, Flight Instrumentation Division, and Dick Crocker, Aero-Physics Division, were appointed co-chairmen of the publicity committee.

All single NASA employees are eligible for club membership. The prime purpose of the club is to provide social activities for members and their guests.

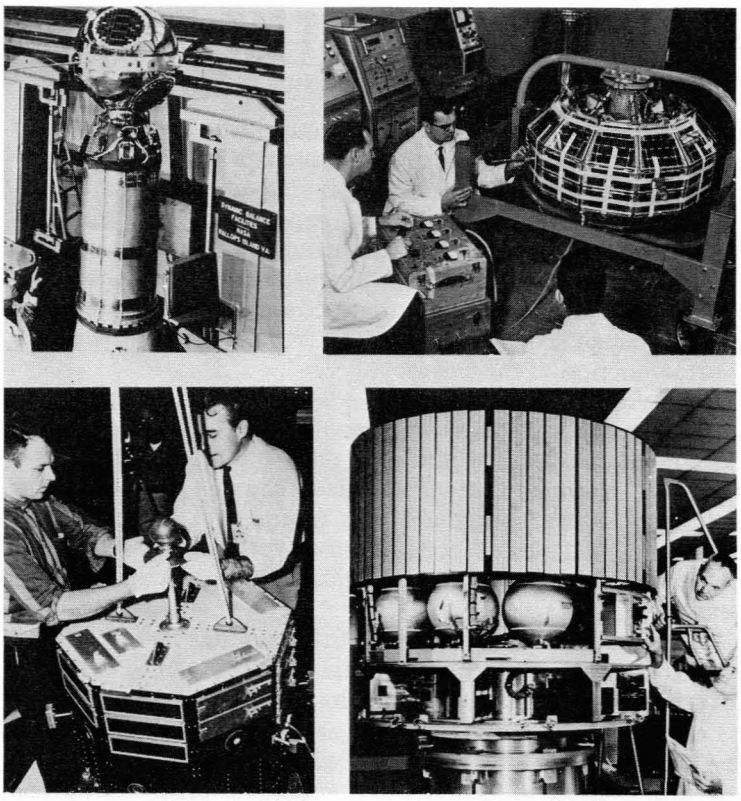
EARTHLY ORGANISMS EXPOSED TO SPACE

The possibility of life existing on other planets has intrigued man through the ages. If it does exist, what kind of life is it? Can earth life in any form survive on other planets?

To find the answers, NASA has a comprehensive program under way to simulate planetary atmospheres and environments and to study their effects on a variety of terrestrial organisms.

The planetary simulators were designed as a result of theories which evolved from scientific observations. The organisms exposed to these artificially-created environments include various bacteria, plants and some small animals selected from the extremes of our terrestrial environment such as tundra, desert, mountain tops and timber line, seashores, volcanic craters, and even sewers.

At Ames Research Center scientists have constructed a simulator to identify the types and kinds of earth life that will most likely be able to exist, grow and reproduce on Mars. Permafrost and freeze-thaw cycles, believed by astronomers to characterize the Martian environment, were worked into the simulator.



Sizes and shapes of man-made satellites vary greatly. Round, oval, drum-shaped or multi-sided, each "bird" either built or launched by NASA is uniquely designed to carry out a specific job in space. Here are four satellites, each of a different shape, as they undergo testing or final preflight checkouts. Top left - IQSY Solar Explorer Satellite built by the Naval Research Laboratory and launched by NASA to monitor solar X-ray and ultraviolet emissions. Top right - Canadian-built Alouette II recently launched to study top-side structure of the ionosphere. Launched on the same Thor-Agena rocket with Alouette was the Direct Measurement Explorer (DME), lower left, for a variety of studies in near-earth areas 300 to 1,400 miles out. Bottom right - Full-scale structural model of NASA's Applications Technology Satellite which will seek to advance technology in communications, meteorological studies and satellite stabilization.

Under these severe environmental conditions, two types of anaerobic bacteria survived.

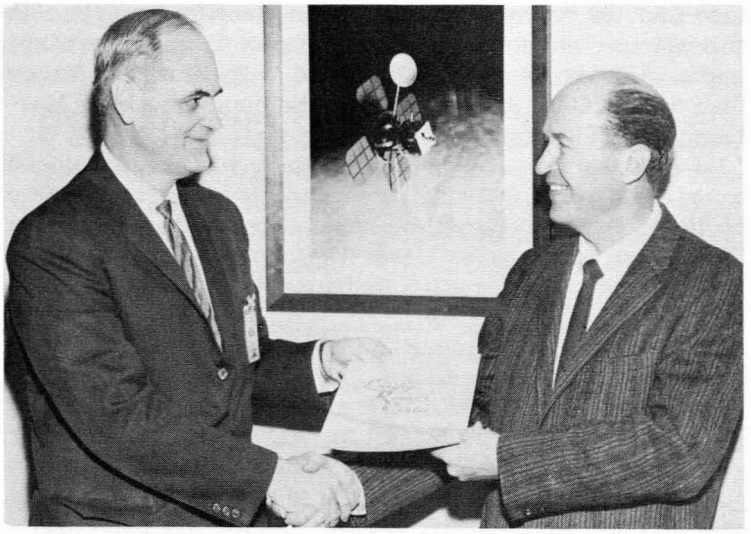
Subsequent studies have shown that some species of bacteria, fungi, mosses and lichens, as well as certain desert micro-organisms, survived in an artificial Martian environment.

Concurrent with these studies are experiments on the growth, development and reproduction of different bacteria, plants and animal life in extreme environmental conditions that exist naturally here on earth.

These are providing new understanding of the adaptive processes that have resulted in terrestrial life. They will prove invaluable in analyzing evolutionary trends on other planets when instruments and men can bring back samples from other bodies in the solar system.

WANTED: Driving combination from Holly Ct. area to W.A. on 8 shift. W. L. Wells, 4871 or 851-5742.

FOR SALE: Portable Zenith stereophonic with 5 speakers and table - $65. Deans, 245-5857 after 5 p.m.



Six employees have received cash awards for applications that might result in the granting of patents. Top left - Weymouth B. Crumpler (left) receives his award from John L. Hudson, Assistant Chief of Research Models and Facilities Division. Top right - I. E. Garrick (left), Chief of Dynamic Loads Division, congratulates Wilmer H. Reed. Lower left - George B. Graves (left), Chief of Flight Instrumentation Division, presents checks to William F. Croswell, Melvin C. Gilreath, and Charles A. Gurtler while James E. Stitt, Assistant Chief, looks on. Lower right - Eugene C. Draley (left), Assistant Director for Flight Projects, presents an award to Clifford H. Nelson.

EXCUSES WON'T EARN EXTRA MONEY

Following is a list of sure-fire ways to kill ideas on how to improve Federal Government operations. Read carefully - but don't use these familiar rationalizations:

We tried that before.
We don't have the time.
That's beyond our responsibility.
We've never done it before.
Why change? We're getting along.
The front office would squelch it.
Let's shelve it. Maybe it will die of old age.
Employees don't like change.
Has anyone else tried it?

Instead think positively. Find better, simpler, more economical ways to do the job - and earn extra money through adopted employee suggestions.

SIX RECEIVE INVENTION AWARDS

Six employees recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Melvin C. Gilreath and William F. Croswell, both of Flight Instrument Division, shared a $700 award for their invention entitled "An Omnidirectional Microwave Spacecraft Antenna."

Weymouth B. Crumpler, Research Models and Facilities Division, received $400 for his "All-Directional Fastener."

William H. Reed, Dynamic Loads Division, was awarded $900 for his suggestion concerning "Viscous-Pendulum-Damper."

Charles A. Gurtler, Flight Instrumentation Division, and Clifford H. Nelson, Manager of Lunar Orbiter Project Office, shared a $500 award for an "Ablation Sensor."

NASA DEFERS VOYAGER MISSION

NASA has deferred the first unmanned Voyager planetary exploration mission until 1973 and scheduled three Mariner flights to Venus and Mars.

The first Voyager missions had been planned to orbit Mars in 1971 and to orbit and land instrumented capsules in 1973. No further Mariner missions had been scheduled.

The changes in the planetary exploration program are being made to obtain the greatest possible return from the funds available for Fiscal Year 1966, those anticipated for FY 1967, and from the store of information now available from previous missions.

Missions to Venus can be undertaken during a month-long period which occurs once every 19 months; Mars opportunities come once every 25 months.

Here is how the missions are now planned:

1967 - The flight spacecraft which backed up the highly successful Mariner IV mission to Mars in 1965 will be modified for launch to Venus in mid-year. The spacecraft, to be launched by an Atlas-Agena, will take about three to four months to reach Venus. The scientific experiments will be improved versions of those flown on previous Mariners. The Mariner will be aimed to fly closer to Venus than the 21,600 mile approach to the planet made by Mariner II in 1962 after a 109-day journey.

1969 - A somewhat heavier Mariner will be developed based heavily on the technology of previous Mariners. Two of these spacecraft will be launched early in the year on nine-month missions to Mars. The launch vehicles will be Atlas-Centaurs. Scientific instruments have not been determined.

1973 - Although Voyager missions will not be finally committed until a decision is made to proceed to hardware development, NASA is considering the launch of two identical Voyager spacecraft to Mars early in the year with a single Saturn V launch vehicle. According to this plan, both spacecraft would orbit Mars and release large capsules onto Mars' surface to search for evidence of life which may exist there and make other scientific studies of the planet's surface.

NASA will continue to concentrate on studies of the Voyager capsule design, and plans to initiate phased capsule procurement late in 1966 or early in 1967 with requests for industry proposals on preliminary design contracts. Capsule concept studies are being made by Jet Propulsion Laboratory with support from the Langley and Ames Research Centers.

NASA will continue its studies of details of the overall Voyager launch vehicle.

The Mariner '67 and Mariner '69 projects will be managed by the Jet Propulsion Laboratory which also manages the Voyager project.

The Mariner and Voyager programs are managed by NASA's Office of Space Science and Applications.

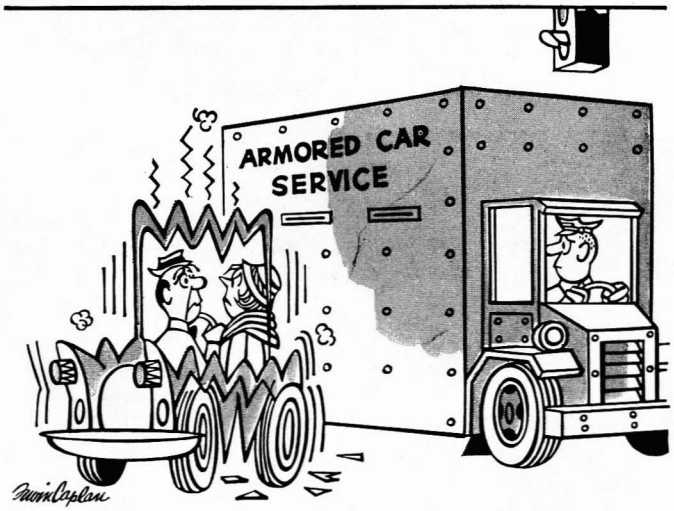
FOR SALE: 3-bedroom, 1-1/2 bath house on wooded lot in Museum area. Bryant, 9 White Oak Dr., 596-8703.

FOR SALE: 1958 Chevrolet - 2-door sedan - $250. Kahlbaum, 642-4118.

WANTED: Driving combination from Hampton Terrace to W.A. on 8 shift. Hayduk, 3524.

LOST: Gun-type sonic leak detector, inventory number 126680. Meidinger, 2515.

"RELAX, I CAN MAKE IT EASY... IT'S JUST STARTING TO TURN RED."



EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center last week and staff members donated a total of 179 pints of blood.

Charles W. Miller, Mechanical Service Division, set a new individual record at the Center by completing his quota for 7 gallons. James Fay, also of Mechanical Service, reached the 6-gallon mark and Theodore Larson and Paul Culotta, both of Instrument Research Division, were credited with 5 gallons.

Reaching the 3-gallon mark were Richard Dingeldein, Ralph P. Bielat, Marvin Lambert, and H. G. Cunningham. Two-gallon pins were presented to Carlton Holleman, Ralph Maston, Jack Ashe, Thomas J. Carrol, and William Vonwald.

Andronicos G. Kantsios and Jerry Caldwell received one gallon pins.

Assisting during the visit were Dr. F. A. Carmines and Dr. Maurice Frazier.

The next visit of the Bloodmobile has been scheduled for April 13. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

WANTED: Ride from Northampton area to W.A. on 8 shift. Walker, 4815 or 826-1619.

FOR RENT OR SALE: 3-bedroom brick rancher located at 208 Manchester Dr., Contact Thomas, 209 Cellardoor Ct., Hampton, after 5 p.m.

Four staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Left photograph - Barbara J. Durling (right) receives a cash award from Vera Huckel, Head of the Computing Section, Dynamic Loads Division. Barbara's suggestion concerned "Sheets for United Fund Drive." Right photograph-William B. Mayo (right), Chief of Mechanical Service Division, presented awards to James Joyner Jr. for "Screens for Wind Tunnel," Percy T. Howerton for "Aligning Tool," and Gideon T. Hagood Jr. for "Pins for Test Vehicles."

EXPLORER I MARKS ANNIVERSARY

Explorer I, the United States' first satellite, marked its eighth anniversary in space on January 31.

The small, stovepipe-like package - 80 inches long and six inches in diameter - sailed into space in a big loop reaching 1,585.2 miles at apogee and 223.7 miles at perigee that historic day in 1958. The first orbit required 114.9 minutes.

As of January 15, Explorer I's apogee was 956.9 statute miles and its perigee was 211.9 statute miles. Its orbit period was 11 minutes shorter, or 103.9 minutes.

The satellite was launched by a Jupiter C rocket developed by the Wernher von Braun group, now serving with the Marshall Space Flight Center, and the Jet Propulsion Laboratory. The rocket booster, a modified Redstone using a special fuel to boost its thrust to 83,000 pounds, thundered away from its Cape Kennedy pad at 10:48 p.m. EST, more than three months after the launch of Sputnik I.

Explorer I chalked up an extremely important achievement immediately - it discovered the Van Allen radiation belt, the most important discovery of the International Geophysical Year. Its voice went silent, as expected, later that year.

Scientists, figuring a decay rate based on Sputnik information, predicted that Explorer I would not stay in orbit five years. It has now been there eight years and shows no inclination to return soon. Mathematicians expect it to reenter in 1968.

BETTER SUGGESTIONS SERVE PUBLIC

Many years ago, the story goes, the librarian of the Harvard University Library appeared before the Board of Overseers to ask for money for book stacks.

One of the board members leaned back in his overstuffed chair and snorted. "A waste of money," he said. "I'll bet half the books in those stacks will never be looked at."

The librarian agreed but added, "The only trouble, sir, is that we haven't found a way of determining which half it will be."

This is equally true in the development of new ideas and concepts, of new ways of approaching and solving problems. Many will be proposed for each one that will eventually gain acceptance. There just is no sure way of telling in advance which ideas are certain to succeed.

But it is good for everyone - employees, the Government, and the general public - that Federal employees more and more are questioning the existing ways of doing things on the job, and suggesting new ways that are better and more economical.

Just because a suggestion is new, however, does not make it better. Every idea must stand the test of time. On the other hand, let's not back the theory that it is unwise to disturb present methods, that we may ruffle a few feathers by presenting new thoughts.

After all, the primary function of Federal workers is to help our Government serve the 195 million Americans who own it lock, stock, and barrel. And this means service that is most effective at the lowest possible cost.

One of the best ways to put the public first, to really serve it, is to help employees be more effective in their jobs through provocative work suggestions.

Things are changing. The pat way of doing things is going out of the window. Suggest better, cheaper, and more effective ways of doing the job. Do it now.

FOR RENT: 2-bedroom house in Deep Creek area. Leffel, 596-3880.

FOR SALE: 3-bedrooom, 1-1/2 bath rancher with garage, air conditioned, fenced yard, located in Walden area - pay small equity and assume G.I. loan. Hilley, 877-3923.

FOR SALE: Fold-up camping trailer, sleeps 4, equipped with 1 double mattress, 2 single mattresses, gas bottle, portable stove and ice chest - mounted on trailer with 2 large storage compartment under trailer - $300. Yates, PA 2-7753 after 5 p.m.

FOR SALE: 12-foot Barbour boat with 30 hp Mercury engine and trailer - $95 as is - or will trade for radio telephone. Barritt, CH 5-1754.

NASA BOWLING LEAGUES

Strike Outs lead Group B in the NASA Tenpin Bowling League with 52.5 wins and 27.5 losses. West Gate Grill is in second with 52 wins and 28 losses and Question Marks are in a close third with 51 wins and 49 losses. High scores were rolled by Charles Breckinridge with a 248 game and 636 set.

HMS leads Group C with 57 wins and 23 losses. ACD is in second place with 54.5 wins and 25.5 losses and Greenhorns are in third with 53 wins and 27 losses. Top scores were bowled by Bill Woods with a 246 game, Tom Truman with a 603 set, Marna Cordle with a 210 game and Edith Moen with a 564 set.

GROUP B			GROUP C		
Strike Outs	52.5	27.5	HMS	57	23
West Gate Grill	52	28	ACD	54.5	25.5
Question Marks	51	29	Greenhorns	53	27
Southeastern Tile	47	33	Trackers	44	36
Galaxies	45	35	Mets	43	37
Misfits	44	36	Latecomers	42	38
Cee Pees	39	41	RPM	39.5	40.5
Hampton Scien.	36.5	43.5	Sparkys	38	42
Flight Engineers	35	45	C-Scouts	37	43
Payloads	34	46	Gliders	35	45
Flight	33	47	Bowling Belles	33	47
Pinwigglers	32.5	47.5	Dillys	32	48
A-OK's	30.5	49.5	Chargers	38	52
Pussy Cats	28	52	Hits & Misses	24	56

NASA BASKETBALL LEAGUE

Misfits lead Group A in the NASA Basketball League with a perfect record of 9 wins. Buckets are in second with 6 wins and 3 losses and Boozers are in third with 3 wins and 6 losses.

ACD leads Group B with 9 wins and 1 loss. Structures are in second with 6 wins and 3 losses, X-Raiders are in third with 6 wins and 4 losses and Short Circuits are in fourth with an even record of 5 wins and 5 losses.

Scores in games played last week were: ACD 47 - Exciters 39, Short Circuits 48 - X-Raiders 43, Misfits 44 - Buckets 37, Boozers 50 - Packers 35, Short Circuits 51 - X-Raiders 31, Buckets 56 - Packers 33, ACD 43 - Exciters 36, Structures 39 - Fire 27, Exciters 36 - Fire 19, Structures 50 - Short Circuits 35, ACD 67 - X-Raiders 57, Buckets 46 - Boozers 33.

APPRENTICE HONOR ROLL

Training officials announced that 14 apprentices completed the fall semester with an average of 97 of better. Members of the honor roll are as follows:

William E. Anspach, Material Processing and Development; Tucker A. Clark Jr., Radiation Laboratory; Charles E. Cockrell, James F. Garvin, Ralph R. Stoddard, and Davis B. Wright Jr., Research Projects and Models; George C. Firth, Space Vacuum Laboratory; Stephen Irick, Dynamic Vehicles; James J. Kiss, Structures Laboratory; Carter F. Lewis, Magnetoplasmadynamics; James E. Pierce, High-Pressure Shock Tube; James R. Smith, Light Machine; James R. Tyeryar, Polymer Laboratory, and George R. Whitehurst Jr., High-Temperature Materials Branch.

WANTED: Alternate drivers from Gloucester area to E.A. on 8 shift. Kurtz, 2203.

Thomas A. Harris (right), Office of the Director, was happy to step back into his recently completed role of chairman of the Center's United Fund campaign long enough to accept a check from Edwin M. Russell, technical representative of the Hampton office of Ling-Temco-Vought of Dallas, Texas. The check was the final payment on a pledge of $1,052, which represented 100 per cent participation by the 55 persons in the local office of LTV and an average contribution of $19.13.

ASM CHAPTER MEETS MARCH 1

Dr. John Convey, National Vice-President of the American Society for Metals, will be guest speaker at a meeting of the Hampton Roads Chapter of ASM on Tuesday, March 1 at the Gourmet Inn, Jefferson Avenue, Newport News.

Dr. Convey will speak on "Impressions on Metallurgical Research Obtained During Recent Visit to Russia."

Dr. Convey is presently the Director of the Mines Branch of the Department of Mines and Technical Surveys, Ottawa, Ontario, Canada. He was born in County Durham, England where he completed his secondary education. He graduated from the University of Alberta with a degree in honor physics and later obtained an M.Sc. in physics at the same university. He received his doctorate in atomic physics in 1940 from the University of Toronto.

Dr. Convey became Associate Professor of Physics at the University of Toronto in 1946. He joined the Mines Branch of the Department of Mines and Technical Surveys as Chief of the Physical Metallurgy Division in 1948 and assumed his present position in 1951.

The meeting will be preceded by a social period at 6:15 p.m., followed by dinner at 7 and the meeting at 8.

FOR SALE: 6-room brick rancher in Hidenwood area. J. R. Elliott, LY 6-9766.

WANTED: Ride from Shenandoah Rd., Wythe, to W.A. on 8 shift. Krulwich, 4724.

Langley Researcher

VOLUME 5, NUMBER 5 LANGLEY RESEARCH CENTER MARCH 11, 1966

AMOLE HEADS JOINT DRIVE

A. Bruce Amole, Activities Coordinator, Personnel Division, has been appointed chairman of the joint fund raising campaign for the National Health Agencies and the International Service Agencies. He will be assisted by Joyce M. Anthony, Personnel Division Office, and Ruth A. Verell, Langley Researcher.

A. Bruce Amole

The campaign will be conducted at the Center from March 15 through April 30.

Included in the campaign will be nine health agencies and four service agencies.

The health agencies include United Cerebral Palsy Associations, American Cancer Society, American Heart Association (Heart Fund), Muscular Dystrophy Associations of America, National Multiple Sclerosis Society (Hope Chest), National Society for Crippled Children and Adults (Easter Seals), National Cystic Fibrosis Research Foundation, National Foundation - March of Dimes, and National Society for the Prevention of Blindness.

The service agencies include American-Korean Foundation, CARE, Radio Free Europe, and Project HOPE.

The campaign is conducted annually in compliance with an Executive Order establishing rules and regulations on Federal fund-raising.

The funds will be collected in the various sections and division by attendance clerks. All donations to both efforts should be turned in to attendance clerks who will send them to division monitors.

President Johnson has urged Federal personnel to give generously to the National Health Agencies Campaign to "provide better health for all Americans."

In supporting the health agencies, President Johnson said, "In the continuing effort to provide better health for all Americans, the National Health Agencies are longtime leaders in the fight against wasteful disease and disability... The participation of Federal personnel is valuable support for continuation of the voluntary programs of community services to patients, information and medical research by these agencies. . .Generosity is a proud tradition of the Federal service in support of such worthy works and I am confident that tradition will be proudly upheld in the campaign this year."

Concerning the International Service Agencies the President stated, "Millions in the world today are captive to hunger, sickness, ignorance and fear. In our struggle to keep men free, it has been our purpose to bring material

(Continued on page 4)

GEMINI 8 SCHEDULED FOR LAUNCH FROM CAPE KENNEDY MARCH 15

The launch of Gemini 8 from Cape Kennedy has been scheduled for no earlier than March 15, according to NASA officials.

Command pilot for the three-day mission is Neil A. Armstrong and pilot is David R. Scott. Backup crew members are Charles Conrad Jr., command pilot, and Richard F. Gordon.

Gemini 8 will be boosted into orbit by the two-stage Titan II Gemini launch vehicle, generating 430,000 pounds of thrust. Scheduled liftoff is 11:40 a.m. EST.

The mission will include rendezvous with a Gemini Agena Target Vehicle (GATV - modified Agena D), extravehicular activity by Scott, and 11 o' board experiments.

The Agena will be launched into a 185-statute-mile circular orbit by an Atlas Standardized Launch Vehicle approximately 100 minutes before Gemini 8 liftoff, or at 9 a.m. EST.

Gemini 8 will go into a 100 by 168-statute-mile elliptical orbit and rendezvous is planned during the fourth revolution, approximately five and one-half hours after liftoff.

(Continued on page 4)

These are the astronauts who are in the final leg of training for NASA's upcoming Gemini 8 mission. Seated are the prime crewmen, David R. Scott (left) and command pilot Neil A. Armstrong. Behind them are the men who serve as backup crew, Richard F. Gordon (left) and Charles Conrad Jr., command pilot.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DIAPER LINE...Announcing the recent birth of a daughter is Dr. George F. Pezdirtz, Applied Materials and Physics Division...Celebrating the birth of a daughter on February 25 is William L. Grantham, Flight Instrumentation Division.

SINGLETON CLUB...The NASA Singleton Club will sponsor a dance tomorrow night at 8 o'clock at the Riverdale Community Room. Refreshments and music will be provided. The dress will be casual and admission will be one dollar per person.

NEWLY WEDS...Wedding bells rang on March 3 when George T. Malley, Office of Chief Counsel, took his vows with Sally A. Estes, Hampton...Cheryl Johnson, Lunar Orbiter Project Office, was married on February 25 to Herman P. White, Newport News.

BUSINESS CARDS...Officials of the Activities Association announced that business cards ordered by staff members have been held up at the printers and will not be delivered until later this month. Persons who ordered the cards will be notified as soon as they arrive.

OPERATIC SOCIETY...The Newport News Operatic Society will present "Pagliacci" on March 18 and 19 at the Newport News High School. Starring in this story of a group of strolling players will be Frannie Wilson as Nedda, Robin Roark as Canio, Capt. Robert Van Wagenen as Tonio, Gene Christman as Silvio, and Gary Young as Beppe. Conductor will be Stevenson Barrett of New York City. Singing in the chorus will be Florence Leonard, wife of Dr. Robert Leonard of Structures Research, and Gloria Thomas, wife of James Thomas, Mechanical Service Division. Admission tickets may be obtained by writing the Newport News Operatic Society, Inc., Box 1634, Warwick Station, Newport News, or by calling LY 6-6212.

REPRESENTATIVE TO VISIT HERE...Beverly Beale, Government-wide Service Plan representative, will visit the Center on March 16 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

FESTIVAL OF HARMONY - The Newport News Chapter of S.P.E.B.S.Q.S.A., Inc., announces it third annual parade of barbershop quartets featuring the Main Street Four from Livingston, New Jersey; the Citations from Louisville, Kentucky, and the Forefathers, America's funniest foursome, from Fairfax, Virginia. The concert will be held on Saturday, March 19 at 8:15 p.m. at Hampton High School. The show will also feature the Hampton Roads Chorus. A number of Langley employees and contractor representatives are involved in the production and tickets may be obtained from Jim Youngblood, 4528; Bruce Fowler, 4891; Jim Brabrand, 4717; Milt Cox, 4691; John McFall, 4895.

Popsie by Zeke Zekley

"NOW, THERE'S A SENSIBLE PROGRAM"

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 14:

Monday - Cream of tomato soup, fried scallops, pepper steak, tamale pie.

Tuesday - Beef-vegetable soup, beef stroganoff on buttered noodles, veal chop, cheese sandwich, chicken pot pie.

Wednesday - Chicken-vegetable soup, half-pound chopped steak, fried chicken, hamburger, baked ham.

Thursday - Split pea soup, grilled steak, corned brisket of beef, cheese omelette, fried fish.

Friday - Clam chowder, roast beef, broiled perch, hot turkey sandwich, western omelette.

The menu for the week of March 21 is as follows:

Monday - French onion soup, Swiss steak, grilled Canadian bacon, Austrian ravioli, knockwurst.

Tuesday - Cream of tomato soup, pot roast of beef, liver and onions, cheese ravioli, fried fish sticks.

Wednesday - Chicken-noodle soup, grilled pork steak, fried chicken, hot dog, ham and noodle casserole.

Thursday - Vegetable-beef soup, grilled steak, roast veal with dressing, clam croquettes, chicken chow mein.

Friday - Clam chowder, roast beef, fried fish, chili con carne, smoked pork sausage.

JET SHOES SEEN FOR SPACE WALKS

In future space missions requiring extravehicular activities, the well-shod astronaut may outdo the mythical god Mercury who moved through the heavens on winged sandals.

The astronaut's footwear may be jet propelled. With jets on his shoes, he would not only be able to move more swiftly but also more surely, according to David F. Thomas, Space Mechanics Division.

This kind of mobility would be essential for missions where repair and maintenance of the spacecraft is part of basic operations.

Such missions include the Manned Orbital Telescope (MOT), Manned Orbiting Research Laboratory (MORL), and Manned Orbiting Laboratory (MOL).

The length of time of such missions may well depend on repair and maintenance capabilities while in space. Therefore, "it becomes mandatory that a device be provided that incorporates a high degree of mobility, ease of use, and that does not encumber the user, so that he is able to perform necessary tasks," Thomas says in a report on his "jet shoes" prepared for the National Conference on Space Maintenance and Extravehicular Activities held in Orlando, Florida, March 1-3.

The jet-powered shoes would leave the hands of the astronaut wholly free for repair work. Unlike the hand-manipulated thruster used by Astronaut Ed White in the Gemini 4 flight, the jet shoes provide control of balance and movement with "reasonable precision" by the instinctive and reflexive movements of the feet and legs.

The jets, set on the soles of the shoes, are activated by a switch mounted in the toe of each shoe so that a downward flexing of the tips of the toe switches on the jet. The jet on each shoe is independently controlled.

Tests with a pair of 2-1/2-pound thrust jets on the shoes were made and the jet shoe concept appears feasible. Thomas points out, however, that with a full pressure suit needed for the walk in space, a more elaborate switching and mounting arrangement might be required.

The idea for the jet-powered shoes came, in part, Thomas said, from watching skin divers.

He observed that skin divers maneuver in a medium that simulates to some extent the "free-fall" doncition of space utilizing the small thrust developed by flippers attached to their feet. This suggested the concept of placing jets on the shoes of a subject in a free-fall.

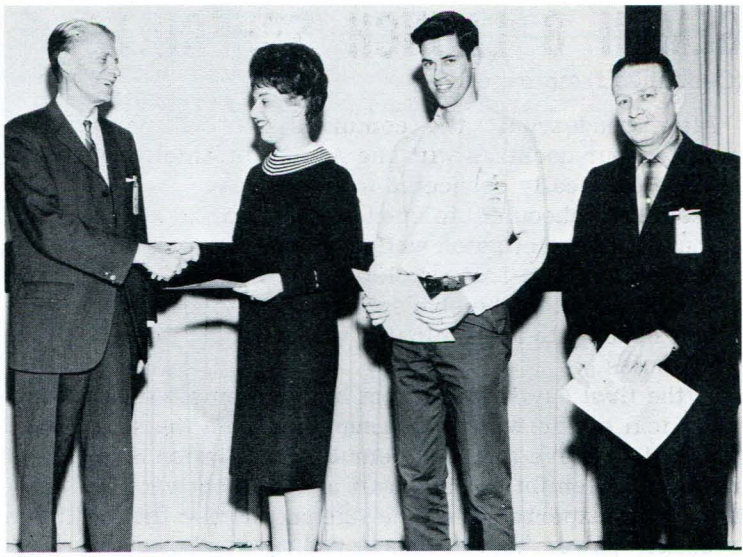
The best place for the jet thrusters was found to be under the ball of the foot. They were angled off vertically to the sole of the shoe to provide a built-in forward pitching motion.

The angling position makes possible movement and direction using only knee and hip motions if the ankles are immobilized.

DID YOU KNOW? 48,000 Americans were killed in traffic accidents last year. During the same period, more than 2 times that many Americans died of diseases of the heart and blood vessels.

FOR SALE: Double bed with bookcase headboard - white with colored insertable panels - $20. Zanks, 851-0746.

FOR RENT: 3-bedroom brick rancher - $110 per month. Snyder, 851-3548 or 851-3642.



In ceremonies held recently, Dr. Floyd L. Thompson, Director, presented checks to the three winners in the Center's Safety Slogan Contest. Receiving congratulations from Dr. Thompson is first place winner Barbara W. Sain, Personnel Division. Runner-up winners were Earl P. Conkling (second from right), Mechanical Service Division, and Eldon E. Pettigrew, Photographic Division. Barbara won $50 with the slogan "Workers who think first - last!"

NINE RECEIVE HONORARY AWARDS

Nine employees recently received Honorary Suggestion Awards under the Center's Incentive Awards Program. The award is in the form of a certificate which becomes a permanent part of the employee's personnel record. It gives recognition to an individual who has made a suggestion that has been accepted and put into use. The Honorary Suggestion Award is presented when a cash award is inappropriate because the suggestion is related to the employee's regular duties.

The following members of the Mechanical Service Division received awards: Thomas G. Meador Jr., George L. Meidinger, and Raymond L. Clark for their joint suggestion concerning "machining of difficult materials;" Linwood K. Outlaw for "notification of performance rating;" Percy T. Howerton for "Schlieren scale," and Merriman E. Call for "flexible quick adjusting clamp."

Robert L. Hunt, Photographic Division, was honored for his suggestion on "Auricon cameras to photograph TV screens."

Robert L. McArthur, Flight Systems and Vehicles Division, received an award for a "radius block."

Frederick O. Allamby, Flight Instrumentation Division, was recognized for his suggestion on "intern training lectures."

FOR SALE: Baby carriage, play pen, kiddie koop, and car seat; Noble 120 bass accordion; portable Smith-Corona typewriter with substandard keyboard and miniature type - $20. Lansing, 596-6978.

WANTED: Alternate drivers from Tuckahoe-Deep Creek area to W.A. on 7:30 shift. Shultz, 3701, or Smith, 4851.

FOR SALE: 1958 Volkswagon sedan - $400. Mattson, TW 8-3912.

FOR SALE: Baby crib, springs and mattress - $12.50. Driver, PA 3-4258.

GEMINI 8 LAUNCH SCHEDULED

(Continued from page 1)

After rendezvous, the command pilot will perform the first of four dockings with the Agena, in which the Gemini will be physically connected to the Agena.

Scott is scheduled to open the hatch at 20 hours and 25 minutes into the mission while the vehicles are docked and spend one and a half revolutions, about two hours and 15 minutes, outside the spacecraft. Total elapsed time from hatch opening to hatch closing will be about two hours and 51 minutes.

In the first daylight segment he will remain on a 25-foot umbilical tether, with oxygen supplied from the spacecraft. He will retrieve a nuclear emulsion radiation experiment from the Gemini 8 spacecraft adapter, activate a micrometeoroid experiment on the Agena, and use the minimum reaction power tool to loosen and tighten bolts on a work panel on the adapter.

During the night, Scott will don a backpack contained in the spacecraft adapter. With the backpack is a 75-foot tether which he will attach to the original 25-foot tether.

He will remain in the adpater section of the spacecraft until daylight before continuing the extravehicular activities. (Gemini 8's adapter section, which is jettisoned before reentry, is an unpressurized instrumented ring at the aft end of the spacecraft.)

At daylight, Armstrong will undock the spacecraft and fly formation on the Agena at distances up to 60 feet.

Scott will then use a hand-held maneuvering unit which fires bursts of freon-nitrogen gas to control his movements. This unit is similar to the one used by Astronaut Edward H. White during the Gemini 4 mission.

Approximately four hours after the completion of extravehicular activity, the Gemini 8 will maneuver into a different orbit from that of Agena and then attempt to rendezvous with the target vehicle.

Five scientific, five technological and one medical experiment will be carried on Gemini 8. Technological experiments include mass determination, UHF-VHF polarization, night image intensification, power tool evaluation and meteor observation. Scientific experiments are zodiacal light photography, frog egg growth, cloud top spectrometer, nuclear emulsion, and micrometeorite collection. The medical experiment is the bioassays of body fluid.

Landing of the spacecraft is scheduled in the West Atlantic Recovery Zone at the beginning of the 45th revolution, approximately 71 hours of flight, on the morning of March 18.

JOINT CAMPAIGN PLANNED

(Continued from page 1)

and spiritual aid to sustain the faith and courage of our fellow men. The four private International Service Agencies maintain voluntary programs to relieve suffering, to renew hope, and to carry on the ceaseless struggle for human dignity and freedom. You can help significantly in this battle against causes of human misery around the world by supporting the four service agencies."

FOR SALE: 1964 Corvette hardtop. Sealey, 826-2679.
FOR SALE: 2 reserved seat tickets for Community Concert (Roger Williams and Company) for performance tomorrow - $6. Youngblood, 877-1224.

James E. Bright, who retired from the Center on February 25, was honored by his friends and associations at a retirement held on February 23 at the Activities Building. In the above picture he looks at a scroll which was signed by his co-workers. The presentation was made by Martin J. Brennan (left), Head of Technical Service Contract Support Unit.

JAMES BRIGHT RETIRES FROM NASA

James E. Bright, Planner and Estimator, Technical Service Contract Support Unit, retired from the Center on February 25 after 23 years of Federal Service.

Bright was born February 3, 1904 in Oriental, North Carolina. Before starting his Government career, he was self-employed as a general contractor in Portsmouth. He entered on duty at the Norfolk Navy Shipyard in Portsmouth in December 1942 and transferred to the Center on September 3, 1946 as a Planner and Estimator.

FOR SALE: Gray walnut dining room set with table and 4 chairs - $25. Thomson, 596-2832.
FOR SALE: 1964 Rambler Classic - assume payments. Eledge, 176-A Little Florida Rd., Poquoson.
FOR SALE: Piano. Robinson, 851-2783 after 5 p.m.
FOR SALE: 1964 Volkswagon bus - $1300. Satterthwaite, Chesapeake 484-4530.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
FEBRUARY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	APRIL 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1	2	3	4	5
6	7	8	9	10	11 Transportation Party	12 Space Vehicle Party
13	14 Basketball	15 Bridge Club	16 Basketball Playoffs	17 Basketball Playoffs St. Patrick's Day	18 St. Patrick's Dance - featuring Chas. Johnson	19
20	21 Basketball Playoffs	22 Bridge Club	23	24 Payday Game Night	25 Supervisors Club	26
27	28 Inspectors Party	29 Bridge Club	30 Personnel Reception	31		

1966 MARCH 1966

The above events have been scheduled to take place in the Activities Building during the month of March.

NASA BOWLING LEAGUE

Hampton Scientific leads Group A in the NASA Tenpin League with 66.5 wins and 21.5 losses. Top scores were rolled by Miles Lockard with a 245 game and Bill Martz with a 596 set.

West Gate Grill leads Group B with 57 wins and 31 losses. Top bowlers for the week were Sam Sokol with a 239 game, Bill Weaver with a 647 set and Cynthia Polk with a 224 game and 591 set.

HMS is in first place in Group C with 62 wins and 26 losses. Top scoring laurels were won by John Wilson with a 241 game, Andy King with a 664 set, Linda Edwards with a 213 game and Lois Moore with a 598 set.

GROUP A

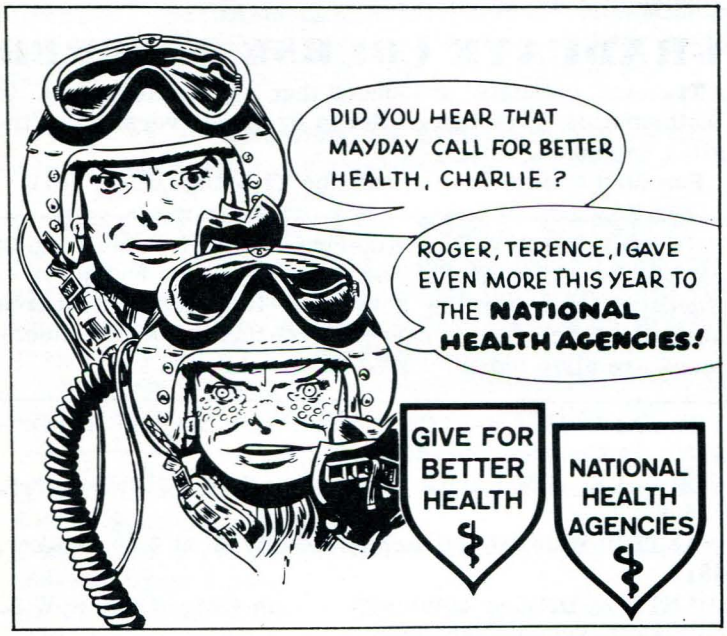
Hampton Scien.	66.5	21.5	Phantoms	41.5	46.5
Filter Queen	54	34	Hornets	39	49
Mexicali	50	38	Unitary	37	51
Flyers	50	38	Odd Balls	28.5	59.5
Alley Cats	47	41	Short Circuits	25.5	62.5

GROUP B			GROUP C		
West Gate Grill	57	31	HMS	62	26
Question Marks	54	34	Greenhorns	57	31
Strikeouts	53.5	34.5	ACD	56.5	31.5
Southeastern Tile	53	35	Trackers	50	38
Misfits	52	36	Mets	47	41
Galaxies	49	39	C-Scouts	44	44
Hampton Scien.	43.5	44.5	Latecomers	43	45
Payloads	42	46	Gliders	42	46
Cee Pees	41	47	RPM	40.5	47.5
Pinwigglers	38.5	49.5	Sparkys	40	48
Flight Engineers	37	47	Dillys	39	49
Flight	34	54	Chargers	33	55
A-OK's	33.5	54.5	Bowling Belles	33	55
Pussy Cats	28	60	Hits & Misses	29	59

FOR SALE: 1957 Bel Air Chevrolet - 4-door sedan. Taylor, CH 4-3892 after 5 p.m.

FOR SALE: Trailer hitch for 1965 Plymouth - Fury models, $5. Garrison, 826-7081.

Terry **By George Wunder**



Charlie Johnson (left) and his band will furnish music for the Activities Association's St. Patrick's Day dance on Friday, March 18 at 9 p.m. at the Activities Building.

ST. PATRICK'S DAY DANCE MARCH 18

The Activities Building will be the scene for a dance on Friday, March 18 in honor of St. Patrick's Day. The festivities will begin at 9 p.m. and continue until 1 a.m. Dress for the occasion will be informal and the wearing of green will be appropriate.

Music will be furnished by Charlie Johnson and his band. Charlie is well known in the area and especially here at Langley - having played for the last three New Year's Eve dances at the Center. The group was organized in 1947 and the band is composed of six instruments and vocalist Margie Warner. Charlie believes the recent addition of the vibraphone has improved the musical quality of the band.

Tickets may be obtained from District Representatives to the Activities Association or at the door. Price will be three dollars per couple and will include setups.

Reservations for party groups may be made by purchasing tickets in advance and calling Bruce Amole, 4583.

PLAN AHEAD TO PREVENT ACCIDENTS

Following the February snowstorms, a number of employees experienced falls at the Center. One fall resulted in hospitalization of the employee with a painful back injury and may result in several weeks of total disability.

In investigating the accident it appeared that the fall could have been prevented if snow had been cleared from the walkway or if snow-type footwear with slip-resistant soles had been worn.

What are the lessons to be learned from this accident? Before starting on a job -

a. Be sure the area is clear and safe.

b. Do you have the proper tools and equipment at hand?

c. Are you properly clothed with proper shoes, hat, gloves, etc.

d. Do you know what your plan of action is?

LOST: Two 8-inch diameter, moderately dense star field film records. Negatives are cut radially at several points. If found, please contract R. L. Goodrich, 4591.

FOR SALE: 1959 Ford Country sedan station wagon - $350. Goudy, 898-6176.

FREE: Sections of picket fence. Richardson, 723-5509.

SPACEMOBILE IN FOREIGN COUNTRIES

The spatter of tropical rain and sounds of the jungle have often been the natural backdrop for NASA's overseas Spacemobile lectures on space science presented in many countries.

Not so last month. Amid the winter snows of Vienna, in the grand hall of the Austrian Parliament Building, a Spacemobile lecturer looked out over an array of model spacecraft and launch vehicles and fielded questions from the 165-member National Assembly.

The lecture-demonstration was one of many delivered in Austria since last September when the Spacemobile began a tour which took it to all Austrian universities and secondary schools, under sponsorship of the Austro-American Society. The display before the National Assembly marked the completion of the tour.

Five other Spacemobiles are operating in Latin America, Africa and Australia, and 27 in the United States. Overseas, foreign organizations sponsor the Spacemobile visits and supply foreign lecturers who are trained by NASA.

They describe the U.S. space program together with the activities of their own country in space research in the language of their native countries.

Audiences in 39 countries have reacted with universal astonishment as the lecturer ignites a vial of liquid oxygen, demonstrating the basic principle of thrust-power for launch vehicles.

Similarly, there is quick recognition as a model telemetry receiver - on command from the lecturer - suddenly begins to emit the familiar "beep-beep" of satellite signals, reporting on spacecraft temperature, radiation levels or micrometeorite impacts.

Moments later the lecturer transmits a real signal from a transmitter to a small-scale Echo communications satellite suspended overhead. The signal is bounced off the satellite and is received by another "earth station" elsewhere in the lecture hall.

Models of NASA's launch vehicles, including the Saturn V moon rocket, standing tall on the lecture platform, are disassembled and their component parts explained by the demonstrator in easily understood terms.

So great has been the enthusiasm of some audiences, according to a report received by NASA, that the lecturer was literally mobbed by admirers and autograph seekers. In Africa, one student audience refused to go home after the lecture was over, but remained until early morning asking questions and examining models.

NASA initiated the Spacemobile program in 1961 to stimulate interest in space science and to promote an understanding of its cooperative space activities with other countries. Scientists and agencies in 69 countries have participated in the program.

★★★★

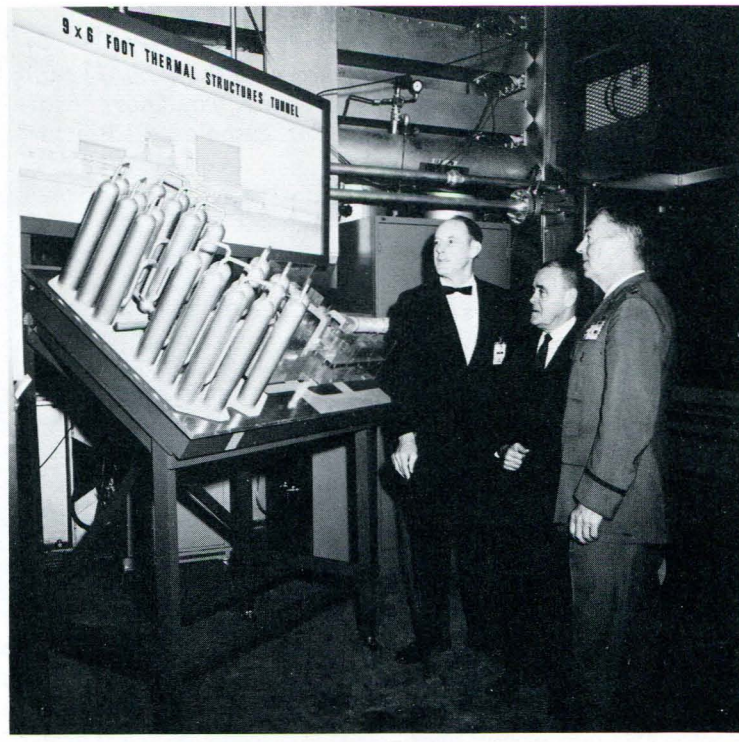
FOR SALE: Boy's 20-inch bicycle - $10. Darnell, 596-8133.

FOR SALE: 1959 Ford Galaxie, 4-door sedan - $450, 1958 1/2-ton pickup truck - $550. Blanks, 838-1572.

FOR SALE: Radio amateur single side band equipment. Lingle, 838-1528.

FOR SALE: 1961 Falcon - 4-door, standard shift, 6-cylinder - $485. Getzinger, 723-1981.

FOR SALE: 1957 Chevrolet convertible with power steering, automatic transmission - $400. Hill, 245-3482 after 4.



Approximately 23 community and civic leaders from North Carolina visited the Center on March 2. Shown in the 9 x 6-Foot Thermal Structures Tunnel are (from left): Douglas H. Foland, Structures Research Division, Tom Robinson, Mayor of Goldsboro, North Carolina, and Major General Don O. Darrow, Commander, 19th Air Force, Seymout-Johnson Air Force Base, North Carolina.

GENTRY TO PRESENT LECTURE

Dr. Richard Gentry, Los Alamos Scientific Laboratory will present a paper on "Numerical Solutions to Hydrodynamic Problems" on March 22 at 10:30 a.m. in the Eas Area Projection Room, Building 587.

The talk will deal primarily with compressible flov methods, including the particle in cell or P.I.C. metho developed at Los Alamos. A highlight will be the showing of an eight-minute documentary film entitled "Compute Studies in Fluid Dynamics."

GRADUATE COURSE OFFERED

Training officials announced that a graduate course i Mathematics I is being offered by the University of Virginia extension.

For further information call the Training Office, 2611.

DID YOU KNOW? The American Cancer Society fight cancer on three fronts: research, education and service Education and service help save lives today. Researc seeks final victory over cancer. More than 1,300,000 Americans are alive today - cured of cancer.

FOR SALE: 1956 V-8 Chevrolet station wagon - 4-door $ 50. Vandenbree, 596-4105.

FOR SALE: 1964 Karman Kia convertible - $1850. Murry 596-9329.

WANTED: Ride to Northampton from W.A. at 4:30. Walker 4815.

WANTED: Driving combination from Green Oaks to W.A on 7 shift. Schoonover, 4535.

Ronald F. Hoyt

Robert F. Hill

Collis P. Moore

Willard A. Bauserman

Donald A. Johnson

SEVEN RECEIVE CASH AWARDS

Seven staff members recently received letters of commendation and cash awards from the Langley Incentive Awards Committee for sustained superior performance.

Receiving the awards were: Ronald F. Hoyt, Instrument Research Division; Robert F. Hill, Electrical Systems Division; Collis P. Moore, Mechanical Service Division; Willard A. Bauserman, Instrument Research; Donald A. Johnson, Mechanical Service; William F. Perdue, Instrument Research, and Ben Price, Plant Maintenance Division.

The citations read as follows:

Hoyt - "For his outstanding performance in carrying out experiments used in the development of gauges which operate at extremely high vacuums."

Hill - "For superior performance in all aspects of his assigned duties as an Experimental Electronic Mechanic Apprentice."

Moore - "For his overall excellence in the performance of duties and for his notable contributions in bringing the 150 ft.^{3} Space Vacuum Facility into research operation."

Bauserman - "For outstanding performance as a vacuum system consultant while working on the evaluation and acceptance of the Space Radiation Effects Laboratory."

Johnson - "For superior performance of assigned duties during the period May 1, 1965 through November 1, 1965."

Perdue - "For outstanding performance in accomplishing support and development activities required for digital readout instrumentation in LRC environmental test facilities."

Price - "For outstanding job performance in servicing vehicles and assisting in classified mail delivery."

William F. Perdue

Ben Price

PROFESSOR TO VISIT CENTER

Dr. Robert W. Truitt, Head of the Mechanical Engineering Department, North Carolina State University, will visit the Center on Monday, March 28 to discuss the graduate program at North Carolina State.

Employees wishing an appointment with Dr. Truitt are requested to call the Training Office, telephone 2611.

SATTERTHWAITE NAMED CONSULTANT

Joseph C. Satterthwaite, former ambassador and career foreign service officer, has joined NASA as a consultant to Administrator James E. Webb.

Satterthwaite, who retired from the State Department in 1965, will advise the Administrator in the field of international affairs in the general area of Western Europe.

A native of Tecumseh, Michigan, he received his bachelor and master's degrees from the University of Michigan and is an overseas Army veteran of World War I. He joined the Department of State in 1924 in Germany and served in a number of diplomatic posts around the world before becoming director general of the Foreign Service in 1957. He served subsequently as assistant secretary for African Affairs and his last assignment was ambassador to the Republic of South Africa.

DID YOU KNOW? Cerebral palsy demands a lot of courage from a child for he must learn through painstaking effort how to walk, talk and eat. The brain injury which deprives him of muscular control often damages his sight, hearing, speech and intelligence. United Cerebral Palsy provides programs tailored to help the 600,000 children and adults with CP so they have their chance at a near normal life.

WANTED: Alternate drivers from Ivy Farms to W.A. on 8 shift. Spaulding, 4817.

FOR SALE: Boy's 26-inch Derby bicycle - $30. Sherwood, 596-8933 after 5 p.m.

WANTED: Ride from Bethel Park area to W.A. on 7:30 shift. Joslin, 3703.

WANTED: Ride from Mercury West Apts. to W.A. on 7:30 shift. Hurt, 4807.

FOR SALE: 1955 Chevrolet station wagon. Wilson, 868-9284.

FOR SALE: 1962 Corvair, 4-door Monaz. Hamlet, 877-9053.

NASA BASKETBALL LEAGUE

Misfits lost their first game of the season in the Basketball League when Buckets defeated them by a narrow 43-42. However, Misfits continue to lead Group A with 12 wins and 1 loss. Buckets are in second with 10 wins and 3 losses, Boozers are in third with 4 wins and 9 losses and Packers bring up the bottom position with 0 wins and 13 losses.

ACD leads Group B with 13 wins and 1 loss and Structures are in second with 10 wins and 4 losses. X-Raiders are in third place with 8 wins and 6 losses and Short Circuits rank fourth with 6 wins and 7 losses. Bringing up the rear are Exciters with 4 wins and 10 losses and Fire with 0 wins and 13 losses.

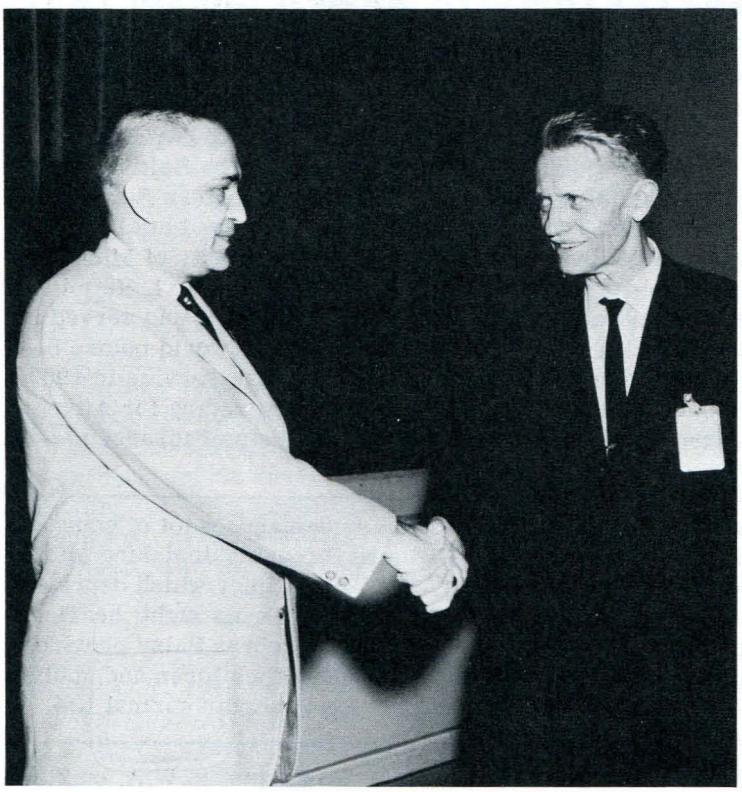
Scores in games played recently were: Buckets 36 - Packers 9, Misfits 52 - Boozers 37, Short Circuits 48 - Exciters 24, Structures 2 - Fire 0, Misfits 61 - Packers 34, ACD 45 - Short Circuits 39, X-Raiders 72 - Fire 36, ACD 55 - X-Raiders 48, Structures 60 - Exciters 33, Buckets 40 - Boozers 33, Structures 51 - Short Circuits 40, Exciters 35 - Fire 33, Misfits 54 - Boozers 34 - Buckets 42 - Packers 26, X-Raiders 55 - Exciters 25, ACD 49 - Structures 47, ACD 49 - Fire 15, Boozers 72 - Packers 29, Buckets 43 - Misfits 42, Structures 56 - X-Raiders 47.

FOR SALE: 1963 16-foot Shasta Cabover trailer - sleeps eight. Has stove with oven and icebox - $1,000. Richard Cutler, LY 6-1768.

FOR SALE: 12 x 18 rug and pad, DuPont 501, mint green-$110. Ellis, 595-3090.

WANTED: Ride from Beechmont in Denbigh to W.A. on 8 shift. Goodwin, 4815.

FOR SALE: 3-bedroom brick rancher located at 5 Courtney Av., Bruton Park. Mangum, 595-2009.



Dr. Floyd L. Thompson (right), Center Director, greets Dr. M. Pinson Neal Jr., Medical College of Virginia. Dr. Neal and approximately 95 radiologist toured a number of Center facilities during a visit on March 3.

Vera Huckel, Chairman of the Langley Research Center United Fund organization, holds the Outstanding Citizenship Award which was presented to Center employees at the annual meeting of the Peninsula United Fund. Dr. John E. Duberg (right), Langley Assistant Director and Chairman of the Peninsula United Fund Drive for 1965, presented the award to T. Aubrey Harris, Chairman of the Center's 1965 campaign.

METTA GRAHAM DIES AT AGE 60

Metta H. Graham, who retired from the Center on December 8, 1965, died Friday at her home in Hampton after a short illness.

Mrs. Graham was born January 27, 1906. She attended Virginia Intermont College and the College of Hampton Roads. She was employed by the Department of Public Works in Hampton before joining the Center staff on February 13, 1950 as a clerk-typist. At the time of her retirement she was assigned to Research Models and Facilities Division.

She is survived by a son, Dr. Walter H. Graham Jr., of Hampton, and a daughter, Jenny C. Graham, Bronx, N.Y.

VPI PROFESSORS TO VISIT CENTER

Dr. J. B. Jones, Dr. H. L. Wood, Dr. H. H. Mabie, Dr. R. A. Comparin, and W. F. O'Brien Jr., all of the Department of Mechanical Engineering, Virginia Polytechnic Institute, will visit the Center on Friday, March 18 to discuss their graduate program in Mechanical Engineering.

Employees wishing an appointment with any of the visitors should the Training Office, telephone 2611.

DID YOU KNOW? More than 1,000 Easter Seal centers and programs provide care and treatment to 225,000 crippled children and adults every year.

FOR SALE: Mahogany AR-2 speaker. Huber, 596-8597.

FOR SALE: 6-room brick rancher in Hidenwood area. Elliott, LY 6-9766.

FOR SALE: Hot Point washing Machine - $40. Miller, 851-3081.

Langley Researcher

VOLUME 5, NUMBER 6 LANGLEY RESEARCH CENTER MARCH 25, 1966

AMERICAN ASTRONOMICAL SOCIETY TO MEET IN HAMPTON MARCH 28-31

One of the nation's oldest scientific groups, the American Astronomical Society, will meet in Tidewater Virginia from March 28-31 with the cooperation of the Langley Research Center.

The gathering will attract outstanding astronomers from the United States, Canada, and several European countries, and is the Society's 121st. It will mark the first occasion on which NASA has sponsored a technical meeting of the group and a number of prominent NASA scientists and officials will appear on the program.

Dr. Homer E. Newell, NASA's Associate Administrator for Space Science and Applications, will be the principal speaker at the society's dinner at the Hotel Chamberlin on Wednesday evening, March 30. He will speak to the members on the "NASA Space Astronomy Program." At the dinner a prominent German astronomer, Dr. Erika Bohm-Vitense, will receive the Society's Annie J. Cannon Prize for 1965.

On Thursday, March 31 the AAS group will hold a special session of technical papers on infrared Astronomy, to be followed in the afternoon by a tour of selected facilities of the Langley Research Center. (Continued on page 3)

MONITORS NAMED FOR CAMPAIGN

The annual fund raising campaigns for the National Health Agencies and the International Service Agencies is being conducted at the Center through April 30. A. Bruce Amole, Personnel Division, has been appointed chairman and he will be assisted by Joyce M. Anthony, Personnel Division Office, and Ruth A. Verell, Langley Researcher.

Included in the campaign will be nine health agencies and four service agencies.

The health agencies include United Cerebral Palsy Associations, American Cancer Society, American Heart Association (Heart Fund), Muscular Dystrophy Associations of America, National Multiple Sclerosis Society (Hope Chest), National Society for Crippled Children and Adults (Easter Seals), National Cystic Fibrosis Research Foundation, National Foundation - March of Dimes, and National Society for the Prevention of Blindness.

The service agencies include American-Korean Foundation, CARE, Radio Free Europe, and Project HOPE.

Employees will be given contributions envelopes. All donations should be turned in to the attendance clerks who will send them to the following division monitors:

Connie Parker, Office of Director and Associate Director; Margaret Strickland, Research Reports; Pauline Rushing, Lunar Orbiter; Gloria Alto, MORL: Carol Anderson, Scout; Anges Dunkley, Applied Materials and Physics; Nancy Holt, Analysis and Computation; Miriam Hall, Instrument Research; Brenda Spencer, Flight Instrumentation; Myrtle

(Continued on page 8)

FILM PRODUCED BY LANGLEY WINS INTERNATIONAL AWARD

A motion picture produced at the Langley Research Center and which has been viewed by audiences throughout the world has been awarded a first prize in the category of engineering at an international film festival in Italy.

The award was made at the 1965 International Festival of Scientific and Didactic Film held at the University of Padua under the auspices of the Venice International Exhibition of Cinematographic Art.

The film, "Hazards of Tire Hydroplaning to Aircraft Operation," is in sound and color and is 15 minutes in length.

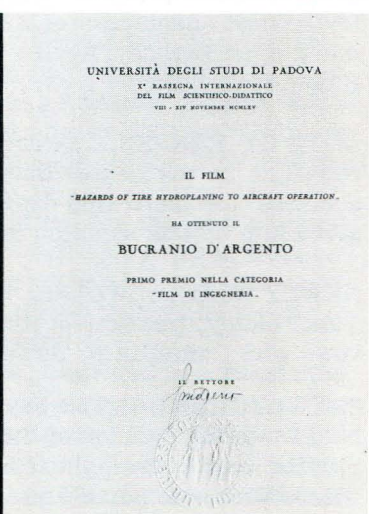
The motion picture explains the phenomenon of tire hydroplaning, under what conditions it occurs, and the resulting hazards to aircraft operations.

In addition, it calls attention to the fact that hydroplaning is a hazard in the operation of motor vehicles on highways.

In view of the dual application of its message, the technology utilization film has been used not only in the training of aircraft operators and flight safety personnel in the United States and many foreign countries, but has been of vital interest to individuals and groups concerned with the reduction of accidents on the highways.

A silver bucranium award and certificate have been received at the Center. The judges cited the film "for the

(Continued on page 7)



UNIVERSITÀ DEGLI STUDI DI PADOVA
X^a RASSEGNA INTERNAZIONALE
DEL FILM SCIENTIFICO-DIDATTICO
VIII - XIV NOVEMBRE MCMLXV

IL FILM
"HAZARDS OF TIRE HYDROPLANING TO AIRCRAFT OPERATION"
HA OTTENUTO IL
BUCRANIO D'ARGENTO
PRIMO PREMIO NELLA CATEGORIA
"FILM DI INGEGNERIA"

IL RETTORE

A motion picture, "Hazards of Tire Hydroplaning to Aircraft Operation," produced at the Langley Center has been awarded a first prize in the category of engineering at an international film festival in Italy. The award was made at the 1965 International Festival of Scientific and Didactic Film held at the University of Padua under the auspices of the Venice International Exhibition of Cinematographic Art. The award consisted of a silver bucranium plaque (left) and a certificate.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENT. . .Making plans to join the ranks of newly weds are Ellen G. Evans and Sam A. Morello, both of Flight Mechanics and Technology Division. The wedding will take place in June.

DIAPER LINE. . .Weighing in at seven pounds, one ounce on March 1 was Daniel Scott, new son of Ruben L. Jones, Space Mechanics Division. . .Announcing the birth of a daughter on February 16 is Royce Toni, Flight Vehicles and Systems Division.

WINS TRIP. . .Congratulations to Judy Perdue, daughter of Joseph D. Perdue of Lunar Orbiter Project, for winning a trip to Italy under the International Farm Youth Exchange program. The Exchange program is an extension of the 4-H Club. The winners of the trips were selected for their activities in the 4-H Club over a period of several years. Judy will leave for her six-month tour of Italy on April 11. She graduated from York High School and is a junior at Virginia Polytechnic Institute.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, April 5 at 7 p.m. at the Central Labor Union Hall, Newport News.

NOTE OF THANKS. . .A note from James Bright has been received at the Center thanking his many friends and associates for their kind expressions and for the mementos given him on the occasion of his recent retirement.

NEWLY WEDS. . .Wedding bells rang on March 5 when Tom Findley, Instrument Research Division, took his final vows with Camellia N. Howell.

SKYWATCHERS. . .The Skywatchers Astronomy Club will hold a viewing session of the moon and one or more major planets tomorrow night from 7 to 11 o'clock. The viewing will be with both small and large telescopes located on the lawn in front of the Activities Building. Interested persons are invited to attend.

PROFESSOR TO VISIT CENTER. . .Dr. John Cell, Head of the Mathematics Department, North Carolina State University, will visit the Center on April 12 to discuss the school's graduate program. Persons interested in talking with Dr. Cell should call the Training Office, 2611.

--Buy U.S. Savings Bonds--

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		MARCH 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	MAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		1 Equipment Maintenance Service Sec.	2
3 PALM SUNDAY	4	5 Bridge Club	6 Personnel	7 Payday Game Night	8 Electronic Shop Good Friday	9 Easter Egg Hunt
10 Easter	11	12 Bridge Club Model Club	13 Bloodmobile	14 Training Branch	15 Maintenance	16 Dynamic Stability
17	18 8-Foot	19 Bridge Club	20 EMIB Game Night	21 Payday Game Night	22 Supervisors Club	23
24	25	26 Bridge Club	27	28	29 Transportation	30

AMSTERDAM CO. AMSTERDAM, N. Y.

1966 APRIL 1966

The above events have been scheduled to take place in the Activities Building during the month of April.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 28:

Monday - Minestrone soup, seafood supreme, baked ham cheeseburger, baked lasagna.

Tuesday - Tomato-rice soup, roast beef, veal cutler tuna-noodle casserole, pepper-topper steak.

Wednesday - Puree of bean soup, barbecued spareribs meat balls and spaghetti, grilled cheese and bacon sandwich, ham loaf.

Thursday - Vegetable-beef soup, grilled steak, stuffe pepper, baked hash, shrimp gumbo.

Friday - Clam chowder, half-dozen fried oysters, broiled perch, barbecued sandwich, braised beef tips on noodles

The menu for the week of April 4 is as follows:

Monday - Chicken-noodle soup, chicken and dumplings baked meat loaf, western omelette, corned brisket of beef

Tuesday - Cream of tomato soup, Spanish pot roast, liver and onions, franks and beans, fried shrimp.

Wednesday - Consomme julienne, grilled pork chops fried chicken, tamale pie, grilled Canadian bacon.

Thursday - Vegetable-beef soup, grilled steak, chicken croquettes, hot dogs, hot roast beef sandwich.

Friday - Clam chowder, roast ribs of beef, fried fish, hamburger, shrimp Newburg.

NEW MASTER'S DEGREE OFFERED

Officials of the College of William and Mary have announced that a graduate program of study leading to the degree of Master of Business Administration is being inaugurated at the college in June.

The MBA degree program is designed to provide an academic background for the development of broad managerial capacities. The program may be entered by qualified individuals holding non-business or business undergraduate baccalaureate degrees. Prerequisites are 6 semester credits in Principles of Accounting, 6 in Principles of Economics, and 3 in Principles of Statistics.

Charles L. Quittmeyer, Head of the College's Department of Business Administration, will be at the Center on March 29 to meet with interested staff members. The meeting will be held at 9 a.m. in the Conference Room, Building 587. Persons planning to attend are requested to call the Training Office, telephone 2611.

LANGLEY CENTER MAKING AWARDS AT 16 STUDENT SCIENCE FAIRS

Langley Research Center is presenting awards this spring in 16 regional and state science fairs in Virginia, North Carolina, South Carolina and Kentucky as part of the annual participation of NASA in the National Science Fair-International.

Up to five certificates of outstanding achievement in aeronautics and space related categories are being awarded by NASA in the participating science fairs, including five regional competitions in Virginia - to be held at Yorktown, Arlington, Fairfax, Roanoke and Hopewell.

NASA awards are being presented by Langley at science fairs at Charlotte and Raleigh, North Carolina; Columbia, Florence, Orangeburg, Spartanburg and Greenville, South Carolina; and Morehead, Williamsburg, Jeffersontown and Lexington, Kentucky. Other NASA centers will take part in regional fairs in their areas.

Langley scientists will serve as judges in the Tidewater Science Congress tomorrow at York High School. Four of them - John P. Mugler Jr., Applied Materials and Physics Division; E. Brian Pritchard, Aero-Physics Division; George W. Jones Jr., and Thomas J. Foughner Jr., both of Dynamic Loads Division - will represent Langley in the selection of NASA award winners and also will be representing the Hampton Roads Section of the American Institute of Aeronautics and Astronautics as a part of the AIAA's educational activities on the Peninsula.

Don D. Davis Jr., Head of the High Temperature Materials Branch of the Applied Materials and Physics Division, will be a Langley judge in the NASA competition tomorrow at the South Piedmont District Science Fair at Charlotte, North Carolina.

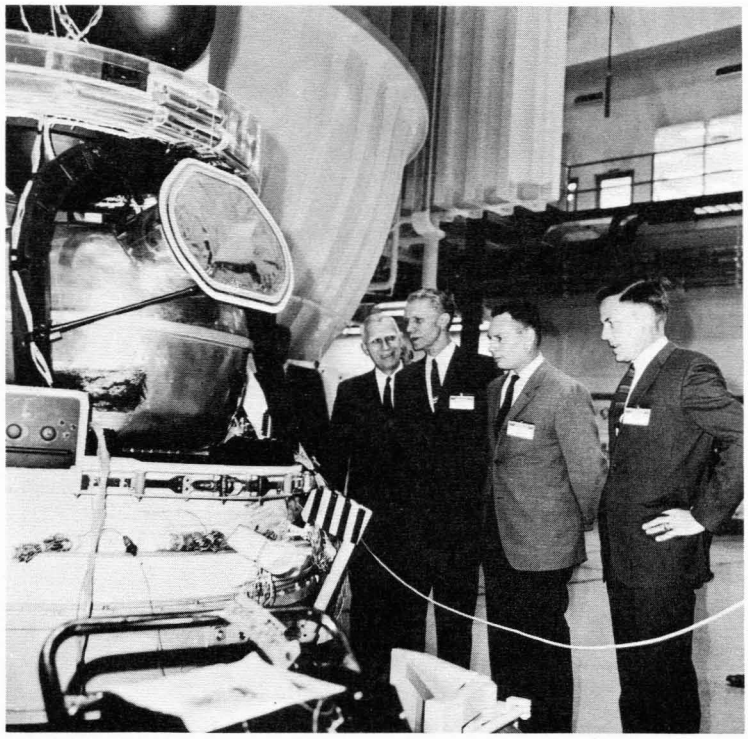
Another Langley scientist, a member of the staff of the Dynamic Loads Division, Dr. E. Carson Yates, will judge the competition at the North Carolina State Science Fair at Raleigh, North Carolina, on April 1 and 2.

The 1966 National Science Fair-International will be held in Dallas, Texas, on May 11-14, where winners of regional and state science fairs in the United States and Canada will compete for international honors. Axel T. Mattson, Langley's research specialist for manned spacecraft projects, has been named for the fourth successive year as a judge for the NASA awards program at the NSF-I.

NASA awards at Dallas will include certificates of merit to six student winners in aerospace categories. The prizes will be invitations to them to visit a NASA research center selected on the basis of the interests of the individual winners. Each student will be permitted to select a teacher to accompany him on the NASA tour, which will include visits to center research facilities and an opportunity to consult with scientists engaged in aerospace activities.

In addition to the Langley scientists who will serve as judges for the NASA awards in the Tidewater Science Congress tomorrow at York High School, the following staff members will serve as judges for other awards which will be presented at the same event:

Dr. George W. Brooks and D. William Conner, Dynamic Loads Division; Clifford L. Fricke, Goetz K. Oertel, Leo B. Staton, and George P. Woods, Aero-Physics Division; S. Walter Hixon, Personnel Division; Dr. Samuel Katzoff, Office of the Director; William F. Leonard, Duncan McIver, A. R. Sinclair, Cary R. Spitzer and Dr. Donald R. Ulrich, Instrument Research Division.



During the quarterly review of the Lunar Orbiter Program, Dr. Floyd L. Thompson (second from right), Director of the Langley Center, inspected a portion of the Lunar Orbiter under construction at the Boeing factory in Seattle, Washington. Shown with Dr. Thompson are (from left): Robert Helberg, Boeing's Lunar Oribter Program Manager; Oran W. Nicks, Director, Lunar and Planetary Programs, NASA's Office of Space Science and Applications, and Lee R. Schere, Program Manager, Lunar Orbiter Office. NASA Headquarters.

AMERICAN ASTRONOMICAL SOCIETY

(Continued from page 1)

Three scientists of the Langley Center will be represented on the program of technical papers. Windsor L. Sherman, Assistant Head of the Space Analysis Branch, Space Mechanics Division, will present a paper entitled "Uniform, Zero Pressure Relativistic Models of the Universe and Observational Data." Sherman is also serving as Chairman of the Arrangements Committee for the AAS meeting.

The second Langley paper, written by Frank Hohl and Dr. Marc R. Feix, Magnetoplasmadynamics Branch. Aero-Physics Division, concerns "Numerical Experiments on Collective Effects in Stellar Dynamics."

Both Langley papers will be presented in a session on March 30 which will begin with a review paper on "The NASA Program in Space Astronomy" by Dr. Nancy G. Roman, Chief of Astronomy, and Dr. Henry J. Smith, Chief of Solar Physics, both of NASA Headquarters Office of Space Science and Applications.

Other technical papers on the program have been prepared by NASA scientists from the (Goddard Space Flight Center, Greenbelt, Maryland, and the Goddard Institute of Space Studies, New York.

FOR SALE: 1958 Volkswagon, 2-door - $550. Hudgens, LY 6-1997.

HUNT AND SPECK SYSTEM KEEPS ROCKETS FLYING

The most careful spic-and-span housekeeper would find that her living room is actually filthy when compared to the "cleanroom" at the Marshall Space Flight Center.

The glistening cleanroom in the Center's Manufacturing Engineering Laboratory is used to disassemble, clean and inspect a variety of gauges and other rocket parts.

Foreign matter as small as a speck of dust, as small as the diameter of a hair, can cause a rocket component to malfunction. The size of these minute villains which technicians search out and destroy is measured in microns. A micron is 0.000039 of an inch.

The Laboratory's interests range from particles 20 to 2,500 microns in size, depending upon the type of component being cleaned.

To illustrate the exactness with which the contamination controllers must search, the period at the end of this sentence, about 100 microns in size, could foul up a working rocket part.

"Even the breath of a smoker, which emits particles about 2 to 5 microns in size by the millions soon after a smoke, can cause contamination problems in some industrial areas," says Fred Beyerle of MSFC.

Beyerle points out that a Jupiter rocket many years ago exploded simply because it had a contaminated two-inch stainless steel line. That is the reason behind MSFC's ultra cleanliness.

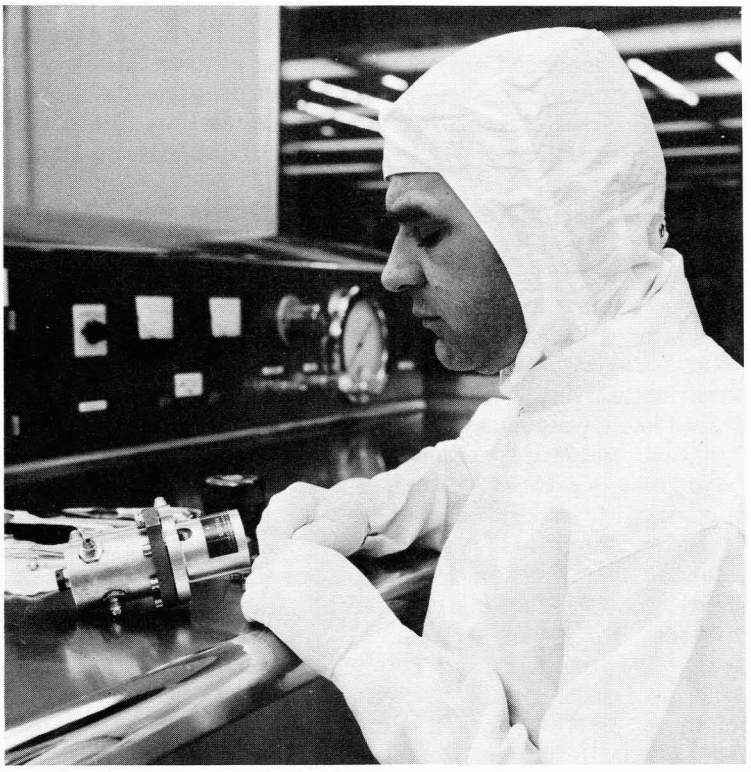
The Lab's hunt for conglomerate dust particles, tiny oil deposits from fingerprints, and other such contaminants among small rocket components is carried out in a little room of white paint and stainless steel. The room is cleaner than a hospital operating room. The cleanroom technicians look like Arabian shieks in their long white dress and hoods.

When a visitor enters the room, his shoes are given a shine by an electric buffer; he steps on a "tacky mat" that picks up additional dirt, enters an air lock and, as he slowly makes one complete revolution, is blasted with "scrubbed air."

Donning a specially laundered "bunny suit," which leaves only face and hands uncovered, one enters another air lock and tracks across a second "tacky mat." Then, out of the lock into the cleanroom where the ceilings are washed periodically with deionized water, blueprints are laminated with protective plastic, and one must write with only ballpoint pens. In short, one feels really clean.

"We use a variety of cleaning methods for these parts," said Beyerle. Ultrasonics is one of these methods. Here a liquid cleaning agent is shattered into thousands of high speed particles by sound vibrations. Battering themselves relentlessly against the rocket parts, the ultrasonic molecules remove foreign materials.

In addition to this method, well-trained cleanroom technicians use sprays, immersions, and other methods to insure the cleanliness of the metallic patients they doctor.



HUNTING SPECKS - A technician of Marshall Space Flight Center demonstrates how valves and other small components are cleaned in the Manufacturing Engineering Laboratory's cleanroom - an area so clean it would make a spotless living room seem dirty by comparision. In this room foreign matter smaller than a speck of dust is detected and removed. Such cleanliness is a necessity in rocketry.

SPACECRAFT CONTRACTOR FOR SCOUT REENTRY HEATING EXPERIMENT NAMED

NASA has selected the General Electric Company, Missile and Space Division, to build a 13-foot conical spacecraft for a flight reentry heating project to be launched on a Scout vehicle.

Langley Research Center will negotiate an incentive-type contract valued at approximately $3,000,000 with the General Electric Company, and the contractor will build one flight spacecraft plus a prototype and one back-up.

The experiment will be the sixth in a series of Scout-launched reentry heating flights which form an important part of an overall program sponsored by NASA's Office of Advanced Research and Technology to complement extensive experimentation in government and industrial laboratories with selected flight projects.

This sixth experiment is designed to measure in actual flight the heating rates associated with turbulent air flow close to the vehicle surface. Such conditions cannot be simulated with ground equipment.

OART is responsible for advancing reentry technology as applied to space vehicles. The information to be obtained will provide valuable knowledge for aircraft, missile, and spacecraft designers.

WANTED: Ride from East Area to Stuart Gardens at 4:30. Coburn, 262- or 245-8118.

FOR SALE: Transmitter, receiver and accessories. Myers, PA 3-4490.

FOR SALE: 4-bedroom frame house, riparian rights, 120 feet on Mill Creek at 117 E. Virginia Ave. Bloch, PA 31600.

WANTED: Folding, portable ping pong table. Berryman, 596-3988.

FOR SALE: Garrand automatic turntable with accessories-$40. Lindsey, 245-7419.

HONEYWELL NAMED FOR HORIZON DEFINITION EXPERIMENT STUDY

NASA has selected Honeywell, Inc., Minneapolis, Minnesota, to conduct a study to define possible flight experiments for gathering information on the characteristics of the Earth's horizon. The contract is expected to cost approximately $230,000 and will be managed by the Langley Research Center.

The study is intended to determine alternate approaches and concepts for measuring horizon radiance characteristics over a major portion of the Earth's surface. Results of the study will be used to determine requirements for a possible extension to the current Project Scanner rocket flight tests.

Knowledge of the infrared spectrum of the Earth's horizon is essential in the design of space vehicle guidance and control systems which will use the horizon to establish an attitude reference or in making distant measurements. This knowledge can be gained only by a comprehensive measurement program which would determine the radiative properties of the horizon as viewed from space over a wide range of geographic, seasonal and atmospheric conditions.

During the study, Honeywell will be required to investigate factors affecting horizon radiance profiles, analyze the measurements needed to obtain statistically significant data, and prepare an initial evaluation of flight techniques which might be used to obtain this information.

In further support of Project Scanner, NASA has been launching spacecraft on ballistic flights from Wallops Island using Javelin sounding rockets. A series of Trailblazer rocket launches is scheduled to begin later this year. Honeywell is also engaged in these flights with contractor responsibility for the design of the experimental spacecraft.

The contract studies are under the general direction of NASA's Electronics and Control Division, Office of Advanced Research and Technology.

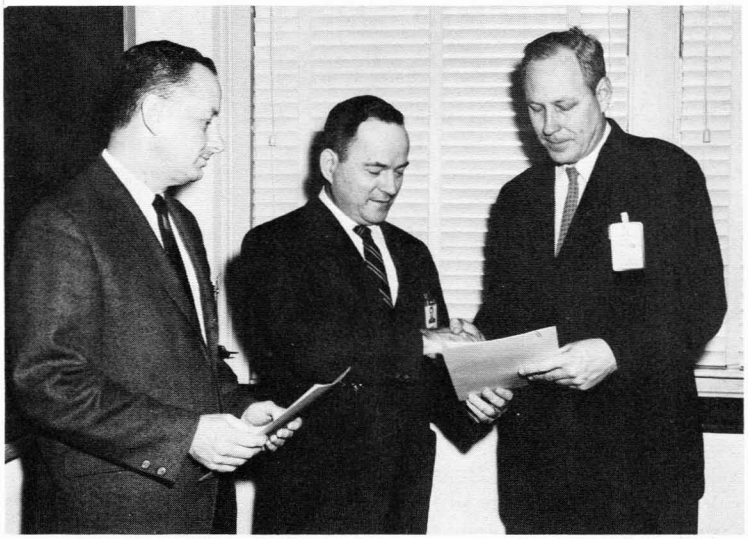
FOUR RECEIVE INVENTION AWARDS

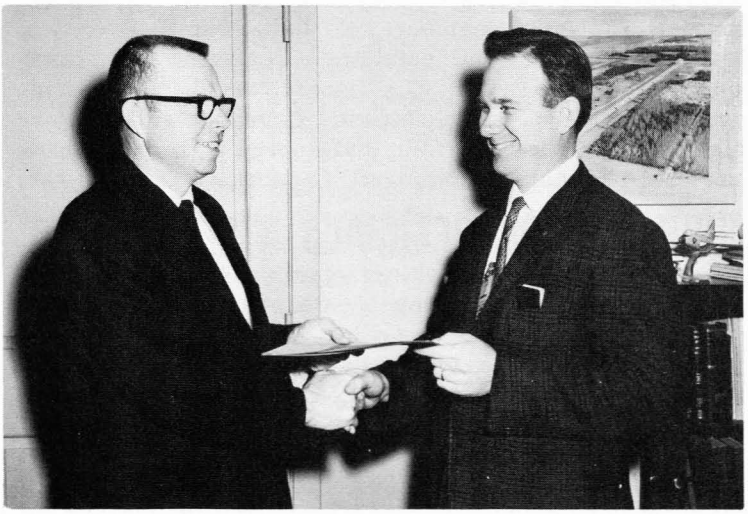
Four employees recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Edward C. Polhamus and Alexander D. Hammond, both of Full-Scale Research Division, shared a $400 award for their invention entitled "Variable Sweep Aircraft."

Ralph W. Stone Jr., Space Mechanics Division, shared a $200 award with Clinton E. Brown, former Assistant Director. The title of their invention was "G Conditioning Suit."

James E. Pleasants, Dynamic Loads Division, received $100 for his "Inflatable Support Structure."





Four employees have received cash awards for applications that might result in the granting of patents. Top photo - Edward C. Polhamus (left) and Alexander D. Hammond receive awards from Mark R. Nichols, Chief of Full-Scale Research Division. Center photo - William H. Phillips (right), Chief of Space Mechanics Division, congratulates Ralph W. Stone Jr., Assistant Chief of Space Mechanics, upon receiving his award. Bottom photo - James E. Pleasants (right), receives his check from Dr. George W. Brooks, Assistant Chief of Dynamic Loads Division.

FOR RENT: 6-room Colonial house on LaSalle Ave. - $95 per month. Lawson, PA 3-9941.

WANTED: Trumpet or cornet teacher. Prior, 4840.

FOR SALE: 14-foot Whirl-wind with windshield, controls and Teenee boat trailer - $200. Verser, UN 8-4731.

WANTED: Two alternate drivers from Whealton Rd. and Roberta Dr. to W.A. on 8 shift. Ashe, 4753.

FOR SALE: 1953 Ford station wagon, V-8, two snow tires included - $120. Penland, 596-3776.

VERA HUCKEL NOMINATED FOR CIVIL SERVICE AWARD

Vera Huckel, Head of the Computing Section, Dynamic Loads Division, was one of twelve nominees from the Tidewater area for the Eighth Federal Civil Service Employee of the Year Award.

Selection of nominees is based upon their job performance, job related activities, self-development and community service. The program serves to inform the public of the missions and quality of service being rendered by the 25-30 governmental agencies and departments.

Ralph L. Barnes, Bureau of Naval Weapons, Naval Air Station, Norfolk, was elected as this year's winner. Last year's recipient of the award was S. Walter Hixon Jr., Head of the Training Branch, Personnel Division.

Vera was born in Philadelphia, Pennsylvania, and received her B.S. degree in Mathematics from the University of Pennsylvania. Since joining the Center staff in June 1939 she has consistently provided a high level of productivity in mathematical computational work in the fields of unsteady aerodynamics, flutter, aeroelasticity and compressible field theory. Working closely with pioneers and authorities in these fields, she has developed and acquired stature as an authority in the solution of mathematical and computational problems in flutter, buffeting and gust of aerodynamic configurations.

In addition to her technical contributions, Vera has served for the past few years as Chairman of the Langley Center United Fund organization.

Other nominees for the award included: Lawrence Lee Hewitt, U.S. Naval Ammunition Depot, St. Juliens Creek, Portsmouth; Madeleine Hayes Wright, Norfolk Naval Shipyard, Portsmouth; Aaron A. Parsons, Naval Air Station, Oceana, Virginia Beach; Elizabeth F. Jesse, Armed Forces Staff College; Larry M. Hewin, U.S. Army Aviation Materiel Laboratories, Fort Eustis; William H. Tamm, Norfolk District, Corps of Engineers, Norfolk; John H. Dressler, Headquarters, U.S. Continental Army Command, Fort Monroe; Samuel L. Evans, U.S. Coast Guard Base, Portsmouth; A. C. Marquess Jr., Internal Revenue Service, Norfolk Branch Office, Norfolk, and George R. Hayes, Headquarters, Tactical Air Command, Langley Air Force Base.

HIGH SCHOOL OFFICIALS VISIT CENTER

A group of high school principals and guidance counselors from the local high schools were guests of the Cent- on March 9.

The purpose of the visit was to familiarize school officials with the type of work being carried on at the Center in order that they might be better prepared to counsel students who wish to enter the aerospace field.

Edward T. Maher, Chief of Administrative Service Division, welcomed the group and discussed employment possibilities in clerical, skilled trades, and professional occupations.

High schools represented included Warwick, Carver, Ferguson, Berkeley, James W. Johnson, Kecoughtan, Hampton and Huntington.

A special guest at the meeting was Charles J. Fullwood, Personnel Office, NASA Headquarters.

FOR SALE: 1956 Plymouth hardtop, V-8, 2-door - $90. Egan, 595-1772.

NASA BOWLING LEAGUE

Hampton Scientific leads Group A in the NASA Tenpin League with 74.5 wins and 21.5 losses. Top scores were rolled by Larry Edwards with a 229 game and 580 set.

West Gate Grill leads Group B with 63 wins and 33 losses. Following in a close second are Question Marks with 62 wins and 34 losses. Top bowlers for the week were Joe Twigg with a 242 game, Harper Gerringer with a 244 game and 717 set and Ann Bell with a 215 game and 568 set.

HMS leads Group C with 69 wins and 27 losses. Top bowling honors went to Wayne Kitchen with a 241 game, Owen Schrader with a 658 game, Peggy Mayo with a 212 game and Doris Hodge with a 598 set.

GROUP A

Hampton Scien.	74.5	21.5	Phantoms	44.5	51.5
Flyers	55	41	Unitary	40	56
Filter Queen	54	42	Hornets	40	56
Mexicali	53	43	Odd Balls	35.5	60.5
Alley Cats	52.5	43.5	Short Circuits	30	66

GROUP B			GROUP C		
West Gate Grill	63	33	HMS	69	27
Question Marks	62	34	Greenhorns	65	31
Southeastern Tile	60	36	ACD	62.5	33.5
Misfits	57	39	Mets	52	44
Galaxies	56	40	Trackers	52	44
Strike Outs	54.5	41.5	RPM	47.5	48.5
Hampton Scien.	48.5	47.5	Gliders	46	50
Payloads	46	50	C-Scouts	46	50
Cee Pees	43	53	Latecomers	45	51
Pinwigglers	41.5	54.5	Dillys	42	54
Flight Engineers	39	57	Sparkys	40	56
A-OK's	35.5	60.5	Chargers	37	59
Flight	35	61	Bowling Belles	35	61
Pussy Cats	31	65	Hits & Misses	33	63

PART-TIME ROSTER TO BE ESTABLISHED

Employment officials announced that plans are being made to establish a roster of former Government employees who are interested in temporary jobs on a day-to-day basis.

The roster may include former NASA as well as other Government employees who are eligible for employment by reinstatement in the positions of typists, stenographers, and math aides.

Officials. hope to build up a roster of about 20 qualified persons who may be called to duty during peak work load situations. The appointments will be made on an 8-hour-day basis for short periods of time. If the eligible person is not available when called, her name will remain on the roster for future vacancies.

Persons interested in being considered for these positions may contact Fred Heath, Employment Branch, Personnel Division, telephone 2583.

WANTED: Ride from Shore Park area to W.A. on 7:30 shift. Yager, 4796.

FOR SALE: 1951 Willys, 4-door - $75. Camp, 725-5089.

FOR SALE: 1959 MG convertible - $450. Phillips, 595-1248 after 4 p.m.

FOR SALE: 1960 Ford Country sedan, Moul, 898-5516.

LOST: Large gold cuff link with "Persues" mounted on Pegasus. Glenny,.3308.

FILM PRODUCED BY LANGLEY

(Continued from page 1)

thorough scientific knowledge with which all problems concerning flight safety are faced."

A number of individuals and activities at Langley were instrumental in the production of the award-winning motion picture.

Some of the individuals who played important roles in the making of the movie and the divisions they represented are listed alphabetically:

Robert C. Dreher, Walter B. Horne, Upshur T. Joyner, and Trafford J. W. Leland, Landing and Impact Branch of the Dynamic Loads Division.

William Chard, Harry H. Hamilton, Robert L. Hunt, Murrell T. Landrum, and Marvin W. Saunders, Photographic Division.

Charles C. Shufflebarger, Technology Utilization Office.

Bobby E. Silverthorn and David A. Willment, Technical Illustration Section of the Research Reports Division.

Ambrose O. Christian, Wilton J. Miller, and David S. Vohringer, Research Facilities Service Section of the Mechanical Services Division.

Millard E. Babb, Field Instrumentation Unit of the Instrument Research Division.

In addition to its wide distribution by the Technology Utilization Office for viewing by groups interested in air and highway safety, the film is included on the official NASA list of publicly released motion pictures.

Through this list, which includes about 65 motion pictures on various aeronautical and space projects, the hydroplaning film is made available for showing at schools and at meetings of civic clubs and similar groups by the public affairs offices of NASA Headquarters and the various centers in their respective geographical areas.

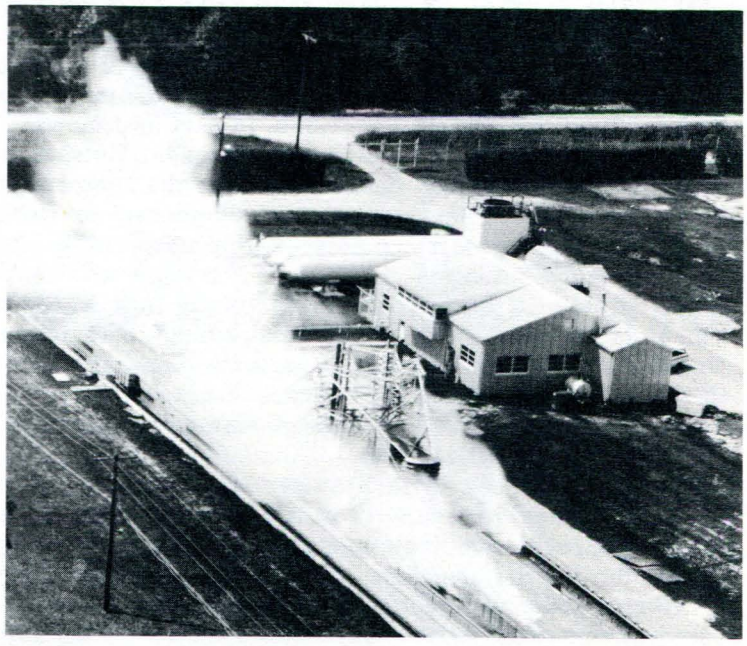
Much of the motion picture concerns research conducted at the Landing Loads Track, where the phenomenon of hydroplaning of tires on wet surfaces can be vividly illustrated.

The facility has been operated the past several years in research on problems of landing impact, taxiing, braking, and ground handling of aircraft and spacecraft. It includes a 50-ton test carriage which is catapulted along a 2,200 foot track by a hydralic jet. The carriage is propelled up to 150 mph in three seconds in a distance of 300 to 400 feet.

The carriage carries a test specimen such as an aircraft landing gear, which is impacted on a concrete runway as the transport vehicle travels in free roll along the track. All actions aboard the carriage, which is halted by cables stretched across the track, are automatically controlled. Research information is recorded on board for later analysis by NASA scientists.

The track has been used to study landing gears, the action of tires on the runway, skids, brakes, loads developed in the craft when encountering bumps on the runway, and the character of the takeoff and landing surface itself.

Because of the high-speed, straight-run capability of the facility, Langley has been able to conduct research on shimmy on the X-15 nose gear on dry, wet, and sand-covered concrete; study skid materials for application to reentry vehicles; investigate the important effects of tire tread pattern and tire wear on the braking effectiveness of a tire on a wet runway; and scientifically probe the retarding effect on tires of a deposit of slush on the runway and the hydroplaning of tires on wet surfaces.



Mist from the water jet of the Landing Loads Track catapult system envelopes part of the 50-ton carriage as it is propelled down the 2,200-foot track during research on hydroplaning problems. After the carriage is up to test speed, the research specimen - an aircraft tire - is impacted on a water-covered section of the concrete runway. The research is accomplished as the test tire runs through the water trough while the carriage travels in free roll along the track. The carriage is finally stopped by five arresting gear cables stretched across the track.

Hydroplaning may occur at a certain speed in heavy rain-with the tire riding on a film of water and acting like a water ski. Hydroplaning speed is proportional to the square root of the tire inflation pressure. For an aircraft tire at an inflation pressure of 100 pounds, the hydroplaning speed is approximately 104 miles per hour; at 25 pounds, typical of today's motor cars, the hydroplaning speed is about 52 mph.

When a tire hydroplanes, braking or traction friction drops to a low value, as does the vehicle directional control, or steering. The results: the airplane or highway vehicle has a great increase in braked stopping distance. In addition, both would be more adversely affected by crosswinds and experience a loss in steering. A hydroplaning tire frequently stops rotating completely without application of brakes, which become useless under such conditions.

DID YOU KNOW? One out of every thousand babies is born with cystic fibrosis, a crippling and life-threatening disease which primarily attacks the lungs and digestion. Not so long ago, most C/F youngsters did not survive infancy. Today, through early diagnosis and improved treatment, many are reaching their teens and beyond.

WANTED: Two alternate drivers from Whealton Heights or Forrest Pk. area to W.A. on 8 shift. Williams, 4432.

WANTED: Girl to share apartment. Hazel, 898-6354.

WANTED: Alternate driver from Beaconsdale or Green Oaks to W.A. on 7:30 shift. Haley, 4691.

FOR SALE: 1960 Peugeot - $350. Thomas, 722-5789.

REPORT ON MISSION SAFETY-70

On the recent anniversary of the initiation of Mission Safety-70, President Lyndon B. Johnson commented on Federal Employee Safety Programs, in part as follows:

"One year ago today I called upon this administration's department and agency heads to reduce the number and cost of injuries to Federal employees 30 percent by 1970.

"The first year of Mission Safety-70 brought widespread and increased attention to safeguarding those who serve their country in the civilian service of the United States. This is as it should be - there must be constant and vigilant concern for the welfare of the men and women who serve their Nation in the Federal service.

"Secretary of Labor Wirtz has given me an interim report of some 1965 highlights:

"We have reduced from 5 to over 20 percent the injury frequency rates in a number of larger Federal agencies. These improvements took place in the 9 months immediately following the launching of Mission Safety-70.

"We have reduced disabling injuries in 13 of the 19 largest agencies and preliminary figures indicate a 2.4 percent reduction in the overall Federal injury rate.

"In the Atomic Energy Commission we reduced its already low frequency by 30 percent and its private contractors reported a 22 percent reduction last year.

"These examples demonstrate that waste in manpower and resources can be reduced and must be attacked relentlessly. Agency efforts separately, and jointly with the Federal Safety Council, have given strength and meaning to Mission Safety-70.

"I congratulate and commend all agencies on their achievements during the first year of Mission Safety-70, but, as we enter the second year of this long-range program to cut the number and costs of accidents, our course is clear.

"We must see that our Federal programs bear fruit and stimulate greater safety efforts throughout our Nation and in every community.

"On this, the first anniversary of Mission Safety-70, I again call upon Federal administrators and employees to provide the necessary leadership and that full measure of support so essential to success."

In commenting on the President's remarks, T. A. Harris, Chairman of the Langley Executive Safety Committee, stated, "While there has been an improvement in Federal Employee Safety Programs generally as a result of Mission Safety-70, the record of Langley Research Center in 1965 was not as good as we would like it to be. There has been a substantial improvement thus far in 1966 and I trust that each staff member will work toward a continuation of this improvement through individual interest and participation in the safety program."

FOR SALE: Fold-up camper trailer, 2 full size bed design, 95 percent complete, never used. Gas stove and light equipment with trailer. Yates, PA 3-5248 after 6 p.m.

WANTED: Ride or driving combination from Tide Mill Farms to W.A. on 7:30 shift. Boulter, 3446.

WANTED: Set of World Book Encyclopedias. Bradshaw, 826-2643.

FOR SALE: Apartment size crib and mattress - $25. Schiess, 723-8393 after 4 p.m.

FOR SALE: 28-inch x 16-inch x 41-inch, 5-drawer maple chest. Straehley, 877-3766.

Astronaut Donald "Deke" Slayton finds time in his busy life to speak for the East Seal Society. Here, with niece Barbara, a post-polio victim who has received care and treatment at a Wisconsin Easter Seal center, he discusses the Society's programs with C. D. Rejahl, National Easter Seal trustee.

MONITORS NAMED FOR CAMPAIGN

(Continued from page 1)

Wells, Space Mechanics; Vera Huckel, Dynamic Loads Frances Arnn, Structures Research; Mary Carlett, Aero-Physics; Rosemary Neubaum, Flight Mechanics and Technology; Doris Vandeveer, Full-Scale Research.

Catherine Chamberlin, Office of Engineering and Technical Services; Polly Redmon, Electrical Systems; Virginia Vohringer, Flight Vehicles and Systems; Louise Griggs and Sarah O'Keefe, Mechanical Service; Myrtle Buchanan, Plant Maintenance; Thelma Jones, Research Models and Facilities; Barbara Hogge, Office of Assistant Director for Administration; Carolyn Wilt, Administrative Services; Elsie Olive, Fiscal; Joyce Anthony, Personnel Ruby Felker, Photographic; Betty Shelton, Procurement and Edith Sprizter, Flight Reentry Programs Office.

EASTER EGG HUNT APRIL 9

The Activities Association's Annual Easter Egg Hunt for children of Center employees will be held on Saturday, April 9 at 1:30 p.m. on the grounds of the Activities Building.

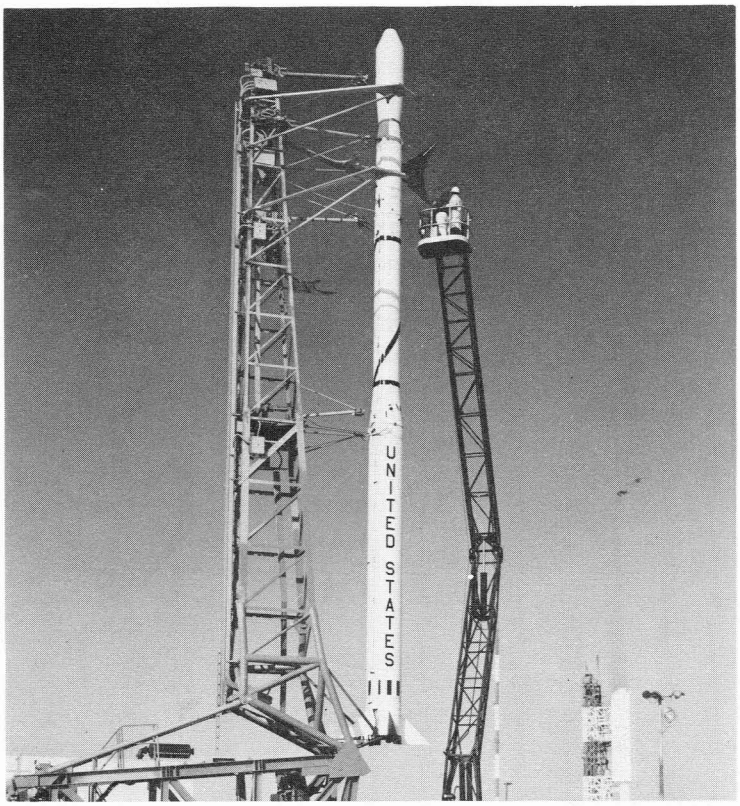
The annual event is free for NASA children. Two areas will be marked off - one for the smaller children and one for the larger children. Six "goose" eggs will be hidden and prizes awarded to the children who find them.

Parents are requested to stay out of the hunting vicinity and let the children have the pleasure of finding the eggs.

The hunt will continue until the supply of eggs have been exhausted.

Langley Researcher

VOLUME 5, NUMBER 7 LANGLEY RESEARCH CENTER APRIL 8, 1966



A new addition to the Aerospace Park on Mercury Boulevard, Hampton, is a NASA Scout launch vehicle. The Scout vehicle, which is a project of the Langley Research Center, was erected in the Aerospace Park last week.

FEDERAL SAFETY COUNCIL MEETS AT LANGLEY CENTER APRIL 14

Langley Research Center will be host on April 14 to the Hampton Roads Area Federal Safety Council. Dr. Floyd L. Thompson, Center Director, is General Chairman of the Council this year and Duane McSmith, Safety Officer, is Executive Chairman.

The luncheon meeting will be conducted in the West Area Cafeteria. Trafford J. Leland, Landing and Impact Branch; Dynamic Loads Division, will present a program on hydroplaning of tires and the cross-braking concept.

During the meeting Dr. Thompson will present a report on Langley's safety record for this year. The 1966 record is much better than the 1965 experience for the same period of time. When Langley was host last year to the group, the Center's frequency rate was near three accidents average per million-man-hours worked. Through extra safety efforts on the part of each Langley employee, the rate to date for 1966 is less than one accident per two-million-man hours worked.

With the continued support of Langley staff members this record can be maintained throughout 1966.

ASTRONAUTS DEVELOP FLIGHT TECHNIQUES IN SIMULATORS

Astronauts have made more than 1,000 flights in the Rendezvous Docking Simulator and other facilities at the Langley Research Center to help develop techniques for the operation of vehicles in space.

At Langley, where Project Mercury was conceived and nutured to become the nation's first manned space effort, scientists and research pilots work with astronauts in virtually all phases of a manned space flight project - from launch to return to earth.

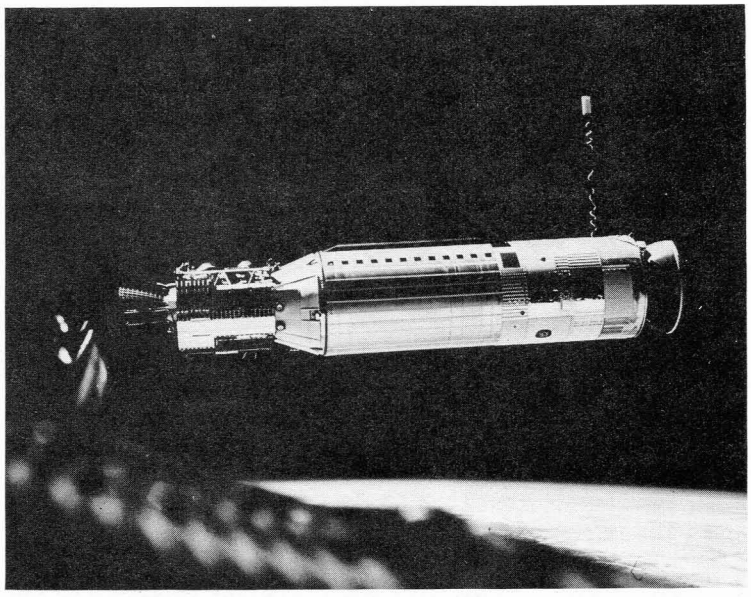
The technological influence of Langley's laboratory and flight research extends to such areas as space vehicle dynamics, stability and control, navigation and guidance, space flight problems in general, lunar landing, human locomotion on the Moon's surface, takeoff from the Moon, reentry, and earth landing.

Neil A. Armstrong and David R. Scott, the Gemini 8 crew which performed the first docking maneuver in space, were among the astronauts who carried out rendezvous and docking studies at Langley.

Armstrong, command pilot, participated in Gemini-Agena rendezvous and docking research during a visit to Langley in November 1963.

Scott, Gemini 8 pilot, operated the facility in a simulation which brought together full-scale research models of the

(Continued on page 4)



The Agena Target Docking Vehicle as seen from the Gemini 8 spacecraft during the latter's approach for rendezvous and station keeping. Astronaut David Scott took this picture at an approximate distance of 45 feet using a Hasselblad camera. The Gemini 8 mission was terminated during the sixth orbit. Probable cause was due to an electrical short circuit in a yaw thruster.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Only articles for sale or rent without regard to race, creed, or national origin may be advertised herein.

ANNOUNCEMENTS

FAMILY MOVIE NIGHT. . .The Activities Association will sponsor a Family Movie Night on April 22 at 7:30 p.m. in the Activities Building. Two films showing the achievements and operations of NASA will be shown. Titles of the films are "The Four Days of Gemini 4" and "The Universe." No admission will be charged.

SOFTBALL NOTICE. . .The NASA Softball League will hold an organizational meeting on April 13 at 4:45 p.m. in the Activities Building. The purpose of the meeting will be to establish rules and elect officers. All teams are requested to have a representative present. For further information call Marvin Burgess, 4807.

LECTURE PLANNED. . .Dr. Eugene Lefferts, Martin Co., Baltimore, will visit the Center on April 14 as a lecturer-consultant on time-varying and nonlinear problems in the stability of aero-spacecraft. He will give a lecture on the fundamentals of Liapunov stability theory, including examples of its application, at 10:30 a.m. in the Projection Room, Building 587. Langley personnel interested in dynamic stability problems are invited to attend.

DIAPER LINE. . .Announcing the birth of a son is Robert S. Freeman, Flight Vehicles and Systems Division. The proud grandfather is Robert E. Mixson, former head of Mechanical Reproduction Division and now retired. . . Weighing in at eight pounds, twelve ounces on March 24 was Andrew Thomas, new son of James Townsend, Full-Scale Research Division. . .Passing out cigars and candy is Rodney F. Lauer, Full-Scale Research. He became the father of a son on March 22. . .Celebrating the birth of a son on March 12 is Irving Abel, Dynamic Loads Division.

ENGAGEMENT. . .Making plans for a July wedding are S. R. Barringer, Research Models and Facilities Division, and Pamela Graves, Auburndale, Massachusetts.

NEWLY WEDS. . .Diane German, Special Files, and Carl E. Horne, Electrical Systems Division, took their final vows on March 19. . .Herbert S. Moffitt, Mechanical Service Division, deserted the bachelor ranks on March 17 when he was married to Beatrice R. Woodson.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on April 12 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on April 20 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

TENNIS DIRECTORY. . .A new Tennis Directory is being compiled. The directory will include the player's name, NASA extension number, home address and telephone number, and other pertinent information such as interest in singles, doubles or mixed doubles play. A copy of the directory will be sent to each contributing individual. All interested tennis players are requested to send the information to A. W. Mueller, Mail Stop 239, or Bryce Kepley, Mail Stop 258.

EASTER EGG HUNT TOMORROW

Center employees are reminded that the Activities Association's Annual Easter Egg Hunt for children of NASA staff members will be held tomorrow at 1:30 p.m. on the grounds of the Activities Building.

The annual event is free and two areas will be marked off - one for the smaller children and one for the larger children. Six "goose" eggs will be hidden and stuffed bunnies will be awarded to the children who find them.

Parents are requested to stay out of the hunting vicinity and let the children have the pleasure of finding the eggs.

The hunt will continue until the supply of eggs have been exhausted.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 11:

Monday - French onion soup, Swiss steak, stuffed shrimp, chili con carne, roast leg of lamb.

Tuesday - Puree of bean soup, sliced turkey with dressing and cranberry sauce, spaghetti and meat balls, fish cakes, half-pound chopped sirloin steak.

Wednesday - Tomato-barley soup, roast beef, grilled ham slice, macaroni and wieners, flounder stuffed with crab meat.

Thursday - Vegetable-beef soup, grilled steak, chicken pie, Austrian ravioli, braised short ribs of beef on rice.

Friday - Clam chowder, fried clams, broiled fish, barbecued sandwich, Spanish pot roast.

The menu for the week of April 18 is as follows:

Monday - Cream of tomato soup, baked Virginia ham, veal cutlet, grilled cheese and bacon sandwich, smoked pork sausage.

Tuesday - Split green pea soup, roast ribs of beef, liver and onions, hamburger, hot turkey sandwich.

Wednesday - Chicken-noodle soup, grilled pork chops, fried chicken, baked hash, beef pot pie.

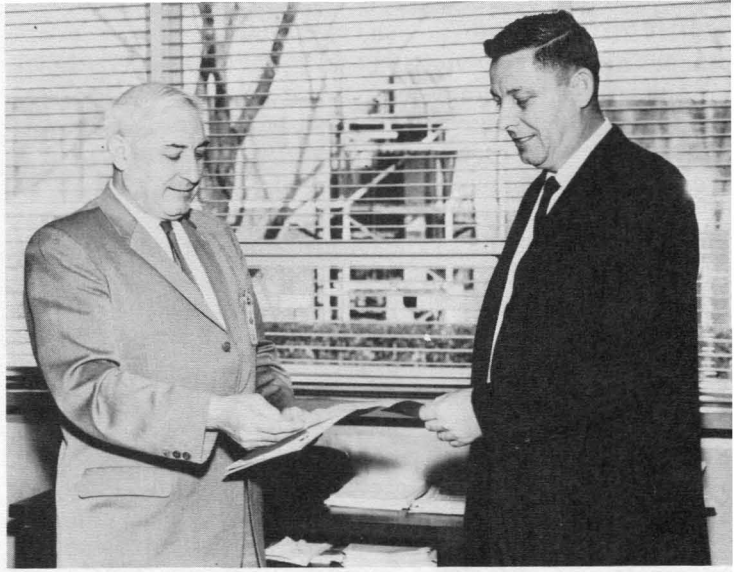
Thursday - Vegetable-beef soup, grilled steak, chicken chow mein, wieners and sauerkraut, stuffed cabbage.

Friday - Clam chowder, hot roast beef sandwich, broiled fish, cheeseburger, fried fish sticks.

FOR SALE: 3-bedroom rancher. Stoddard, PA 3-1396.

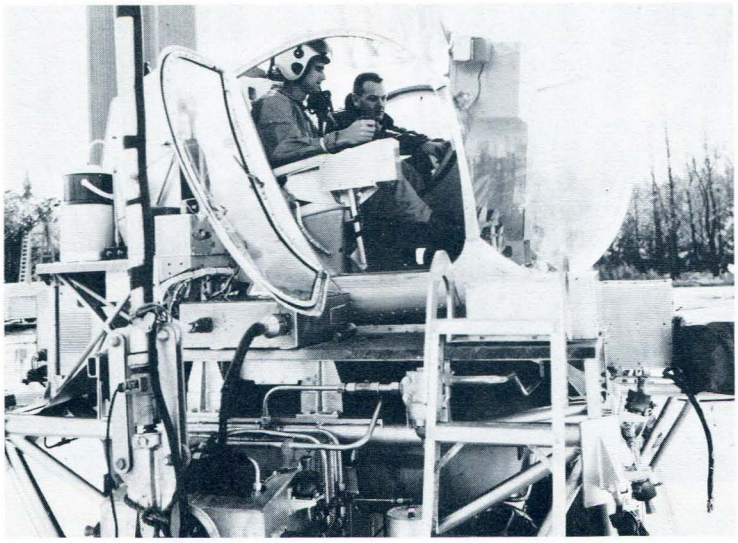
FOR SALE: Two 24-inch bicycles for girls - $10 each. Rumsey, 898-3591.

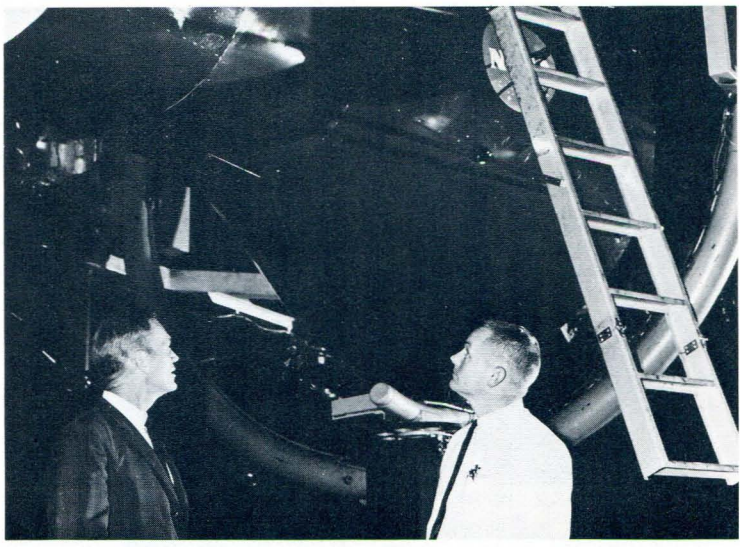
FOR SALE: 5-drawer maple chest - $25. Strehley, 877-3736.

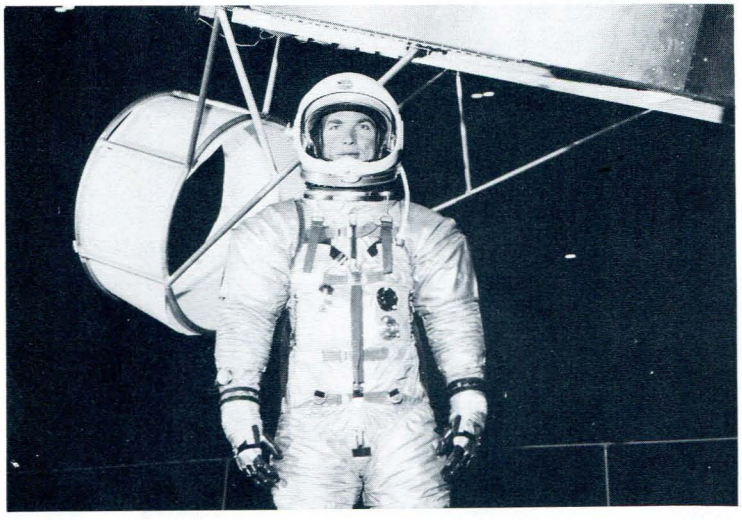


Twelve staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Top left photo - Herbert A. Wilson, Chief of Applied Materials and Physics Division, presents a check to Bruce Conway for his suggestion concerning "Parking." Top Top right photo - Howard B. Edwards (left), Chief of Instrument Research Division, presents awards to Earl S. German for "Modification of Electronic Equipment;" Marvin L. Brown for "Electrical Cabling;" Ronald F. Hoyt for "Co-axial Vacuum Feed-through," and Issac L. Miller for "Gage Balances." Center left photo - Richard R. Helden-

suggestion concerning "Line Engraver Transcriber." Cent right photo - Joseph Getsug, Chief of Electrical System Division, presents a check to Harold R. Long for "Thermo couple, Vacuum Penetration Plug." Long shared the awar with Ernest W. Johnson. Lower left photo - Charmain Leffel receives a check from John Munick, Assistant Chie of Procurement, for her suggestion concerning "Elimin ation of distribution sheets from Amendments, CCN's, an Task Orders on contracts." Lower center photo - Edwar A. Howe, Chief of Fiscal Division, presents an award t Mercedes K. Halsey for "Form Change." Lower righ







Astronauts have made more than 1,000 flights in the Rendezvous Docking Simulator and other facilities at the Langley Research Center. Top left photo - Astronaut Roger B. Chaffee (left) receives instructions from Maxwell W. Goode, Space Mechanics Division, on the operation of the Lunar Landing Research Facility. Chaffee is one of several astronauts who flew the rocket-powered research vehicle to obtain data on the problems of lunar landing. The vehicle is partially supported from a 250-foot high, 400-foot-long gantry structure to simulate the one-sixth gravity of the Moon. Top right photo - James B. Whitten (left), Assistant Chief of Space Mechanics Division, discusses the Rendezvous Docking Simulator with Astronaut Neil A. Armstrong. Armstrong operated the facility in a research program to develop Gemini-Agena flight techniques. Bottom left photo- Astronaut David H. Scott is shown at the Rendezvous Docking Simulator at Langley. He operated the facility in a simulation which brought together full-scale research models of the Apollo and the Lunar Excursion Module in rendezvous and docking studies under lunar orbit conditions. Bottom left photo - A system of slings supports most of the weight of Astronaut James A. McDivitt and allows him to walk and jump on the inclined platform at right under conditions simulating lunar gravity. Amos A. Spady Jr., Space Mechanics Division, instructs McDivitt on the use of the apparatus.

FLIGHT TECHNIQUES DEVELOPED

(Continued from page 1)

Apollo and the crew section of the Lunar Excursion Module (LEM) in rendezvous and docking investigations under lunar orbit conditions. He visited Langley for this purpose in November 1964 and January 1965.

The simulator was developed by Langley scientists to explore under controlled laboratory conditions man's ability to complete a rendezvous in either earth or lunar orbit during the final 200 feet of the intricate space docking maneuver.

In Gemini studies at Langley, a full-scale model of the two-man spacecraft and the Agena target vehicle were suspended by a cable system from an overhead track located in the NASA Flight Hangar. Pilots rode in a full-scale model of the Gemini spacecraft, and by operating its controls brought it into gentle, final contact with the target vehicle.

During research at the facility, the target Agena moved vertically and laterally, while the simulated Gemini spacecraft was capable of all six degrees of freedom of mechanical motion. An analogue computer formed an integral part of the simulator system.

Following the Gemini-Agena research program, which was completed in 1964, a similar project for developing rendezvous and docking techniques in lunar orbit - through use of models of the Apollo and LEM suspended from the

(Continued on page 6)

LOCAL INSTITUTIONS SERVING PENINSULA AREA

This is the first in a series of articles which Langley Researcher will carry on institutions or facilities which serve the Peninsula area. The initial article covers an institution of higher learning located very close to the Langley Research Center - Hampton Institute.

Hampton Institute is a private four-year co-educational college fully accredited by the State of Virginia and approved by the State University of New York. It is a member of the Southern Association of Colleges and Secondary Schools, the Association of American Colleges and the American Council on Education. With a total enrollment of 2,000, Hampton Institute is one of the largest independent predominantly Negro institutions in the nation and the strongest in private endowment.

Dr. Jerome H. Holland

Founded in 1868 by General Samuel Chapman Armstrong, the college is located in Hampton on the Southeast coast in the Tidewater area. Its 210-acre waterfront campus accommodates 150 buildings, some of which are remarkable in that they were built by early students of the school.

An interracial faculty of 175 men and women, under the direction of Dr. Jerome H. Holland, President, serves in eight divisions and thirteen departments. In addition to participation in domestic faculty exchange programs, faculty members have participated in exchange programs in France, India, Africa, Denmark, West Germany, Japan Poland and Spain. All have returned to Hampton to share their experiences with the campus community. From 1953 to 1963, Hampton Institute faculty members operated an in-service teacher training program for public school teachers of the Virgin Islands and currently operates two rural training institutes in Sierra Leone, West Africa, under an A.I.D. contract.

Undergraduate courses prepare students to enter professional and graduate schools of every kind. The college's post-graduate program awards the Master's degree in Education to future elementary and secondary school teachers, administrators, supervisors and guidance personnel. Bachelor's degrees are awarded in Fine Arts, Languages, Literature, Mathematics, Natural Sciences, Social Science, Home Economics, Technology, Nursing, Teacher Education and Business.

Hampton Institute conducts evening courses at the college level for persons regularly employed in the Tidewater area. A number of staff members of the Langley Research Center have served as instructors in these courses. Hampton Institute also offers a summer program and pre-college summer institutes for talented Social Science, Music and Humanities students.

Performances by world-renowned artists, singers, dancers and musicians in Armstrong Communications Center attract integrated audiences. The college's laboratory schools for primary and intermediate grade levels, as well as other public services, are supported by all groups in the neighboring communities. More and more, Hampton Institute is becoming known not just as an outstanding Negro college but simply as an outstanding College.

Hampton Institute's enrollment is expected to increase significantly during the next decade. It is expected to reach 2,400 by 1974. Over 90 percent of the student body resides on campus, 60 percent of the current freshmen were in the top quarter of their high school graduating class and more than 60 percent are from out of state. Thirty-two percent receive either loan or scholarship assistance.

In order to maintain Hampton Institute's position of leadership among the colleges of this country, an $18 million National Centennial Fund-raising Campaign was recently started. Target date is 1968, when the college will celebrate a century of progress.

Of the $18 million nation-wide goal, $9 million is earmarked for construction and renovation, $6 million is slated for endowment, faculty salaries and student scholarships, and $3 million is allotted to program enrichment.

The importance of the undertaking in the context of the times has attracted the patronage of numerous prominent Americans who serve on the National Sponsors' Committee. A. Albert Giese, Vice-President of the Newport News Shipbuilding and Dry Dock Company, is heading the Peninsula Sponsors' Committee in an effort to raise $200,000 from business and industry as this area's contribution to the Hampton Institute fund. Corporate and individual friends who may wish to subscribe to the Hampton Centennial Fund should make checks payable to the Hampton Centennial Fund of Hampton Institute.

Dr. Floyd L. Thompson, Director of the Langley Research Center, has been appointed a member of the fund-raising committee. In endorsing the campaign, he stated, "The community has profited by Hampton Institute's scholastic standards, its adult education programs, and its many offerings in the arts and cultural fields which have attracted many of our fellow citizens each year. Langley has benefited by being able to employ a number of well qualified graduates in the professional areas. The Centennial Fund Raising Campaign for the future growth of Hampton Institute is, therefore, worthy of community support."

The constant objective of Hampton Institute is to reach such marked standards of excellence in education that it will draw to its student body highly-qualified young men and women seeking to make their contribution in the future of our American society.

ENGINEERS' CLUB MEETS APRIL 14

The Engineers' Club of the Virginia Peninsula will meet on Thursday, April 14 at Eli's Restaurant in Hampton.

Lt. Col. John R. Stoner

Lt. Col. John R. Stoner, USAF, who recently returned from Viet Nam as Air Liaison Officer with the Army's 1st Cavalry Division (Airmobile), will be guest speaker. He will discuss "Tactical Air Operations in Southeast Asia."

Lt. Col. Stoner will cover several interesting aspects of operations in Viet Nam in which close tactical air support is provided for ground troops by the Air Force. From his experience as an air controller operating sometimes on the ground with troops and sometimes in the air, he will tell of problems encountered and methods in effect to achieve the extraordinary quick response needed to get the combat airplanes to the area where their firepower is required in order to give timely support to the fighting troops. He will give some interesting highlights of combat conditions prevailing in Viet Nam today including slides taken at the front.

Col. Stoner and his twin brother, also an Air Force Lt. Col., were born at Langley in 1924 while their father, a pioneer service aviator, was stationed here.

The meeting will be preceded by a social hour at 6 p.m. followed by dinner at 7 and the meeting at 8. Reservations may be made by calling one of the following by Wednesday noon: F. W. Schmidt, CH 5-1714; A. W. Robins, TW 8-5495, or J. E. Robins, 327-0385.

GRADUATE COURSE OFFERED

The Training Office is planning to offer a graduate course in Statistics at the Center under the direction of the Virginia Polytechnic Institute as follows:

Statistics 419-429-439 - Theoretical Statistics - Introduction to the theory of statistical inference; sampling theory and tests of significance; correlation, least squares, contingency tables, and tests of goodness of fit. Prerequisite: Calculus - lecture 3 hours, 3 credits each quarter.

Admission to graduate studies at VPI is a requirement. If there is sufficient interest in this course, it will begin as soon as final approval is obtained. Employees interested in the course should call the Training Office 2611.

In addition to the current M.A. program, the Department of Mathematics at the College of William and Mary is offering a Master of Science degree in Mathematics. Under this program a student may take an additional 8 semester hours at the 500 level in place of the thesis requirements. This would make a total of 32 semester hours including at least 20 hours at the 500 level.

FOR RENT: Room for gentleman, also 3-bedroom house. Wary, 722-7335 after 5 p.m.

FOR RENT: 2-story, 2-bedroom house at 320 Center St., Hampton, $75 per month. Parker, 851-4781 after 5 p.m.

FOR SALE: 1964 Jaguar 3.4 - 4-door sedan, 4-speed with overdrive, 19,000 miles - $2500. Tynan, 877-2642.

FLIGHT TECHNIQUES DEVELOPED

(Continued from page 4)

cable system - was begun to provide scientific information in support of the manned lunar mission.

It was during the Apollo-LEM rendezvous and docking research that Scott participated, donning a space suit to add realism to the simulation studies and to determine his ability to maneuver under flight conditions.

As one indication of the complexity of the manned lunar mission and the importance of research to its ultimate success, the lunar vehicle will be about 365 feet high - taller than a 30-story building - and weigh six million pounds poised for launch from Cape Kennedy.

This includes the 90,000 pound Apollo spacecraft consisting of the command module housing three astronauts, a service module providing midcourse correction and return-to-earth propulsion, and a lunar excursion module - sometimes referred to as LEM; a launch escape system similar to one used on Mercury; and the three-stage Saturn V booster, which generates 7.5 million pounds of thrust at liftoff.

METAL SOCIETY TO HEAR HAMBLEY

William A. Hambley

William A. Hambley, Consultant, Krause Milling Co., Birmingham, Michigan, will be guest speaker at a meeting of the Hampton Roads Section of the American Society for Metals on April 15 in West Cafeteria.

The subject of Hambley's talk will be "Casting Defects." He will begin with a general discussion of defects and then talk about who has the responsibility for preventing them. Now a consultant, he was a service engineer with Krause Milling Co. Before that he was vice-president and foundry manager, Wilson Foundry and Machine Company. He was graduated from Queen's University, Canada, with honors in metallurgy.

The meeting will be preceded by a social period at 6:15 p.m. followed by dinner at 7 and the meeting at 8. Reservations may be made by calling F. W. Schmidt, CH5-1714.

CHEMICAL SOCIETY MEET APRIL 30

The annual spring meeting of the Virginia Section of the American Chemical Society will be held at the William Small Physical Laboratory, Williamsburg, on Saturday, April 30 at 4:15 p.m.

Dr. E. R. Van Artsdalen, Chairman of the Department of Chemistry, University of Virginia, will speak on "Chemistry of Fused Salts."

A social hour and dinner will follow the meeting. Further information may be obtained from Dr. George D. Sands, telephone 4420.

WANTED: Ride from Riverdale to W.A. on 8 shift. Dotty Jo Keller, 4505.

FOR SALE: Guild electric guitar with case and amplifier- $150. Keller, 838-1905 after 4 p.m.

HOTEL ON ROAD TO OUTER SPACE

You wouldn't find it listed in any of the current innkeepers' directories, but there is a hotel located on the road to outer space.

It caters to a select clientele, and reservations for the general public are virtually nonexistent. In fact, unless you've been checked out in the latest model of spacecraft, you probably wouldn't get through the front door.

No mystery about it; the reference is made to the Astronaut Quarters at NASA's John F. Kennedy Space Center.

Sometimes lightly referred to as the "Lunar Lodge" or "Motel Mars," the third floor hostelry in the Center's Manned Spacecraft Operations Building is more than a place to spend the night; it's an integral part of the pre- and post-launch program.

And, if for no other reason, the facility would have to exist to counteract absurdity. . .for whoever heard of an astronaut checking in at a local motel and telling the desk clerk, "Wake me early, my rocket leaves at 6:30."

The Astronaut Quarters consist of three, three-bedroom apartments coordinated with other related facilities that dispense comfort and guarantee the meeting of strict health requirements that are essential to men about to embark in space.

Entry to the quarters leads through a reception room where the astronauts' personal secretary screens callers, answers the phone and attends to correspondence.

The apartments themselves are tastefully styled in what could best be termed contemporary furnishings. Neither plush nor Spartan, the quarters might appear entirely too earthbound and ordinary to the casual observer, but much of the decor has been done in keeping with the tastes of the astronauts themselves.

Just off the main living quarters is the astronauts' private dining room, and, beyond that, a kitchen where perhaps the world's strictest diet is prepared. And, according to the men who journey to outer space, it's also one of the best.

Opposite the reception area is a large conference room where briefings, meetings, and a few friendly pinochle games take place.

A fully equipped exercise room, actually a small gymnasium, fronts on the main hallway. It's here that the astronauts take off, not pounds, but those last critical ounces before squeezing into their spacecraft. And, if barbells and bicycles aren't enough, there's an adjoining steam bath that peels off the last ungainly gram of weight.

Latest addition to the Astronaut Quarters is a fully equipped medical facility. In this area, physical examinations can be given before and after flights. From an X-ray room to tongue depressors, the facility is geared to give precise attention to the health of the astronauts.

Whether it precedes a casual orbit or trip to the moon, the Astronaut Quarters are, all-in-all, a pretty nice place to put up for the night.

HOTEL ON ROAD TO OUTER SPACE - Sometimes lightly called the "Lunar Lodge" or "Motel Mars," Astronaut Quarters at Cape Kennedy is more than just a place to spend the night. It's an integral part of NASA's pre-launch and post-launch activities. Gemini VII Astronauts Frank Borman and Jim Lovell (facing camera) and back-up crew Ed White and Michael Collins use one of the rooms for a conference.

AIAA PLANS NORFOLK TOUR

Commander Richard B. Phillips, Public Affairs Officer at Headquarters, Fifth Naval District, has made arrangements for the Hampton Roads Section of the American Institute of Aeronautics and Astronautics to tour the Norfolk Navy Complex on Wednesday, April 13. The tour will run from 8 a.m. until 4 p.m. and the following itinerary has been planned:

1. Visit aboard a guided missile cruiser (USS Columbus).
2. Command briefing at the U.S. Atlantic Fleet Operational Control Center. This is the operational nerve center for all maneuvers of the entire Atlantic Fleet.
3. Lunch at the Breezy Point Enlisted Men's Dining Hall on the Naval Air Station.
4. A briefing and tour of the Navy's Overhaul and Repair facilities at the Naval Air Station, giving an insight into the complexities involved in keeping the Navy's Air Force in first class operating condition.
5. A full amphibious assault demonstration will be staged by the Little Creek Training Devices Staff. This demonstration will be in the War Games Simulation Room using miniature ships and planes. Operational problems and plans for amphibious countermeasures against enemy attacks are solved in this room.

Busses will leave Riverdale Plaza Shopping Center, West Mercury Boulevard, at 8 a.m. The low price of $2.75 per person will cover all expenses including lunch. For reservations call one of the following: Bob Keynton, 826-5548; Charlie Tynan, 877-2642; Tom Foughner, 722-1587, or Hap Enderson, 596-6702.

FOR SALE: 55-pound Ben Pearson bow - laminated maple and fiberglas, 16 matched fiberglas arrows and 5 hunting arrows - $40. Tillett, 868-6195 after 5 p.m.

FOR SALE: Modified Moth sail boat with new dacron sail- $400. Elder, LY 5-0889.

FOR SALE: 3-bedroom frame rancher on Adwood Court, Hampton, Carson, 826-5046.

FOR SALE: 10-foot aluminum Pram - $20. Lindler, 229-5799.

FOR SALE: 1959 Ford station wagon - country sedan - new tires - $300. Goudy, 898-6176.

WANTED: Driving combination from Buckroe- Phoebus area to W.A. Jordon, 4770.

Poster child Mickey Heinicke, 4, Denver, of the March of Dimes, tries on the hat of General Harold K. Johnson, Chief of Staff, U.S. Army. Mickey visited the general in the Pentagon. The March of Dimes, which has assisted Mickey, is fighting birth defects through research, patient care and education. The Center's Joint Fund Raising Campaign for the National Health Agencies and the International Service Agencies will be conducted through April 30.

DOLLARS AND SENSE

The 20th century has witnessed steady declines in death rates for a number of diseases. Most dramatic, of course, was the almost complete victory over polio through immunizing vaccines.

As a result of improved health standards, the life expectancy of Americans has advanced from 48 years in 1900 to more than 70 years today. It can be demonstrated that this increase has been of material significance in our rising economic standards, too. In 1944, for example, the U.S. gross national product was $211.4 billion, a sum which has been almost tripled as of today.

The National Health Education Committee says that major health advances in recent years are due to the funds voted by Congress to the National Institutes of Health and "the great effort of the voluntary health agencies and the pharmaceutical industry."

Of course, there is much still to be done. The Public Health Service reports that 74,000,000 non-hospitalized Americans suffer from a chronic ailment, and 19,000,000 are limited in their activities because of disease of impairment. In a recent year, 260,400,000 days were lost from work because of acute illness. Estimated private expenditures for health and medical services in that one year were $24.5 billion, while another $3.5 billion in wage loss resulted from the missed work days.

Doesn't it make sense, then, to add your dollars to the fight for better health through the National Health Agencies Campaign? Through programs of research, community services and education, these voluntary agencies attack arthritis, muscular dystrophy, mental illness, retardation, cystic fibrosis, birth defects, multiple sclerosis, crippling, blindness, cerebral palsy, cancer and heart diseases.

The campaign is authorized in the Federal establishment by the President, department heads and military commanders. A designation form permits each contributor to allocate portions of his gift to the agencies of his choice. Langley Researcher offers an unfailing prescription for better health: A Generous Gift from Everyone to the Campaign of the Voluntary National Health Agencies.

NASA ADVISORY GROUP ESTABLISHED

A temporary Science Advisory Committee to advise the NASA on the conduct of future space projects was announced by NASA Administrator James E. Webb.

Webb said the new committee is being formed because in the next generation of space projects, NASA will need new policies and procedures and possibly new organizational arrangements to enable scientists to participate.

The committee will be chaired by Dr. Norman F. Ramsey, a Harvard University physicist. Members will be distinguished astronomers, biologists, physicists, and geologists from eight universities.

The group will work directly with Dr. Homer E. Newell, NASA Associate Administrator for Space Science and Applications.

Dr. Newell emphasized that the committee will study the conduct of future space projects on a NASA-wide basis including manned and unmanned flight programs.

The committee will study how best to conduct such programs as the Voyager planetary spacecraft including the automated biological laboratory, the post-Apollo lunar exploration program, and National Space Astronomy Observatories - a project recommended by astronomers in which 120-inch telescopes would be orbited for space astronomy. These are projects which have been recommended by the Space Science Board of the National Academy of Sciences.

Dr. Newell said that in the case of many of these projects, the package of scientific instruments would in essence be laboratories for scientific experimentation rather than a collection of individual scientific experiments.

The task of the committee, which will terminate upon completion of its work, is complementary to the Space Science Board in that the committee will primarily give attention to how best to carry out the programs which the Space Science Board recommends be undertaken. By contrast the Space Science Board concerns itself largely with advice to NASA and other government agencies on the content of the NASA program.

In addition to Chairman Ramsey, other members are:

Dr. George W. Beadle, University of Chicago; Dr. Leo Goldberg, Harvard University; Dr. Jesse L. Greenstein, California Institute of Technology; Dr. Harry H. Hess, Princeton University; Dr. Howard Johnson, Massachusetts Institute of Technology; Dr. Gordon J. F. MacDonald, University of California at Los Angeles; Dr. Horace W. Magoun, Dean, UCLA's Graduate School; Dr. Nicholas U. Mayall, Kitt Peak National Observatory, Tucson, Arizona; Dr. Colin S. Pittendrigh, Princeton; Dr. Martin Schwarzschild, Princeton; Dr. Charles Townes, Provost, MIT, and Dr. James A. Van Allen, State University of Iowa.

Langley Researcher

VOLUME 5, NUMBER 8 LANGLEY RESEARCH CENTER APRIL 22, 1966

CONTRACTOR SELECTED BY LANGLEY FOR ADVANCED LIFTING BODY STUDY

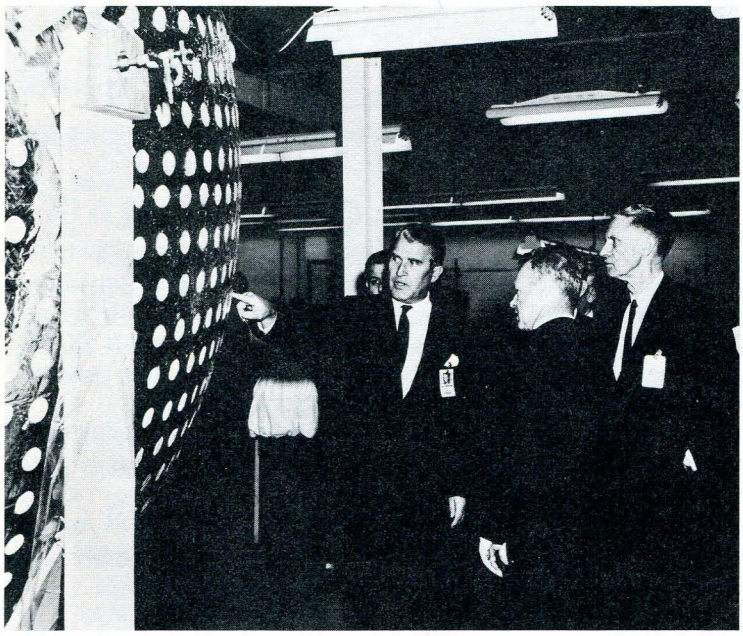
The Martin Company, Baltimore, Maryland, has been selected by NASA to make an 11-month study of the costs, crew size and complexity of a flight research program using a manned lifting body vehicle.

The study contract will be negotiated with Martin by the Langley Research Center. The contract is expected to amount to around $450,000.

Wingless lifting bodies rely on their shape along to provide aerodynamic lift and are being evaluated by NASA's Office of Advanced Research and Technology for possible use in a variety of future manned space missions. Their added lift and maneuverability provide a number of advantages over current vehicles.

In conducting the study, the contractor is required to consider an HL-10 lifting body concept capable of carrying one, two, four, six or eight crew members. The HL-10 is considered representative of advanced lifting entry vehicles. NASA has specified Titan II, Titan III, and Saturn I-B as potential launch vehicles. For the study purposes, the dry lake bed at Edwards, California, home of NASA's Flight Research Center, is to be considered a likely landing site.

Although NASA's approved flight programs do not include such an effort, the research must be performed well in advance to permit freedom of choice if such a program becomes needed. (Continued on page 3)



Dr. Wernher von Braun (left), Director of the Marshall Space Flight Center, visited the Center last week and toured a number of research facilities. Accompanying him on the tour were Charles J. Donlan (center), Associate Director, and Dr. Floyd L. Thompson, Director.

HOMER G. MORGAN SELECTED WINNER OF SLOAN FELLOWSHIP

Homer G. Morgan

Homer G. Morgan, scientist in the Dynamic Loads Division, has been awarded an Alfred P. Sloan Fellowship for a year of study at the School of Management of the Massachusetts Institute of Technology.

Morgan will move with his wife, Norma, and their two young sons, Garth and Neil, to Needham, Mass., in June to join 44 other other Sloan Fellows.

The Sloan Fellows will spend 12 months at MIT studying in depth the fundamentals that underlie sound management decisions and the changes in management and technology. Many will complete MIT's requirements for the degree of Master of Science in Management.

Morgan, an Associate Fellow of the American Institute of Aeronautics and Astronautics, was born January 24, 1928, in Hillham, Indiana. He received a Bachelor of Science Degree in Aeronautical Engineering "with highest distinction" from Purdue University in 1952, and was awarded a Masters Degree in Aeronautical Engineering by Purdue in 1955. Morgan is a member of Phi Eta Sigma, Gamma Alpha Rho, and Tau Beta Pi scholastic honorary fraternities.

A member of the Langley science staff since 1955, Morgan presently heads the Structural Dynamics Branch of the Dynamic Loads Division. In this capacity he supervises pioneering laboratory and flight research concerned with dynamics problems in the design of launch vehicles and spacecraft, and in studies of the environment in which they will operate.

Sloan Fellowship winners, all in their mid-30's, were carefully selected by MIT from a group of exceptionally able executives whose organizations nominated them for admission to the program to accelerate their development into positions of major executive responsibility for the future. (Continued on page 3)

DAYLIGHT TIME STARTS SUNDAY

In accordance with the new Daylight Saving Time bill signed by President Johnson, all clocks in the Tidewater area will be moved forward one hour at 2 a.m. on Sunday, April 24.

Daylight Saving Time will be observed for a period of six months and will officially end at 2 a.m. on Sunday, October 30.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Only articles for sale or rent without regard to race, creed, color, or national origin may be advertised herein.

ANNOUNCEMENTS

SQUARE DANCE CLUB. . .All active and inactive square dancers interested in forming a NASA Square Dance Club which will meet in the Activities Building are asked to call Paul Sandefur, 4485, or Charles Folwell, 2545.

CHEMICAL SOCIETY. . .Members of the Virginia Section of the American Chemical Society are reminded that the spring meeting will be held April 30 at 4:15 p.m. in the William Small Physical Laboratory, Williamsburg. Guest speaker will be Dr. E. R. Van Artsdalen, Chairman of the Department of Chemistry, University of Virginia. A social hour and dinner will follow the meeting.

BASE GYMNASIUM. . .The Commander of Langley Air Force Base has notified the Center that he regrets the Air Force is unable to accommodate NASA personnel in any of their base gymnasium facilities. Utilization of the facilities by military personnel and their dependents has increased to a point where space is not available for civilian employees.

NEWLYWEDS. . .C. Anderson King, Research Models and Facilities Division, took his final vows with Catherine Moore on April 2.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, May 3 at 7 p.m. at the Central Labor Union Hall, Newport News.

VU-GRAPH FORMS. . .Forms for drawing Vu-graphs and slides are again available at the Technical Illustrating Section, telephone 3346.

FOR SALE: 1963 Comet, 2-door, bucket seats, four-in-the-floor. Gardner, LY 6-6204.

FOR SALE: Teenee boat trailer for 14-foot boat - $65, also 14-foot Whirlwind boat with controls, windshield and 2 life preservers - $135. Verser, 153 Pasture Rd.

FOR SALE: Comet class sailboat with fiberglas over cedar plank construction - paddles, anchor, dacron sails and trailer - $600. Tate, 838-0375.

FOR RENT: 3-bedroom rancher with attached garage and air conditioning. Heath. 596-3983.

FOR SALE: 1960 Ford convertible. Sorrentino, 838-3264.

FOR SALE: Two lots in Port Malabar, Fla. Baab, 245-6228.

FAMILY MOVIE NIGHT TONIGHT

Center employees are reminded that the Activities Association will sponsor a Family Movie Night tonight at 7:30 in the Activities Building. Two films showing the achievements and operations of NASA will be shown.

"Universe" is a 28-minute, sound movie in black and white. It explores by animation and special effects the solar system - Moon, Mars, Venus, Mercury, Earth, Saturn and on into the galaxies beyond the Milky Way.

"The Four Days of Gemini 4" is a 28-minute sound movie in color. It is a documentary film covering the spectacular Gemini-Titan 4 mission of Astronauts James A. McDivitt and Edward H. White. It includes beautiful color sequences of pre-launch and launch activities, Astronaut White's spectacular "space walk," and many other experiments conducted on the four-day mission.

No admission will be charged.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 25:

Monday - Minestrone soup, casserole Italiano, broiled slice of smoked ham, chuckwagon steak, western omelette.

Tuesday - Consomme julienne, beef stroganoff on buttered noodles, Polish sausage, clam croquettes, grilled cheese sandwich.

Wednesday - Puree of bean soup, Spanish pot roast, grilled pork steak, stuffed flounder, baked hash.

Thursday - Vegetable-beef soup, grilled steak, ham and noodle casserole, fried chicken, hot dog.

Friday - Clam chowder, baked ham, fried fillet of flounder, broiled fillet of perch, cheeseburger.

The menu for the week of May 2 is as follows:

Monday - Cream of tomato soup, roast beef, grilled pork chops, chili con carne, deep fried chicken livers.

Tuesday - French onion soup, seafood cacciatore, baked meat loaf, grilled liver and onions, fish cakes.

Wednesday - Chicken-noodle soup, corned brisket of beef, Salisbury steak, fried chicken, franks and beans.

Thursday - Vegetable-beef soup, grilled steak, roast fresh ham, beef stew, cheese omelette.

Friday - Clam chowder, half-pound chopped steak, broiled halibut steak, fried flounder, barbecued sandwich.

BRIDGE COURSE OFFERED STAFF

The Activities Association is planning to sponsor a Bridge Class for Center employees and members of their families.

Mrs. Ashby S. Wilson, Hampton, has been named instructor. Mrs. Wilson is a National Life Master of the American Contract Bridge League and she has won numerous sectional and regional tournaments.

The class will meet for two-hour sessions on Wednesday nights at 7:30 in the Activities Building. The course will run for 8 weeks.

The cost will be $8 per person for the course. If all members who sign up for the course attend all meetings, the Activities Association will subsidize the cost.

The first meeting will be held at 7:30 p.m. on May 4 in the Activities Building. Persons interested must register with Bruce Amole, 4583, before the first meeting.

LOST: Textbook "Vacuum Technology." Meidinger, Mail Stop 351.

SCIENCE SEMINAR HELD AT CENTER

Twenty high school students from Virginia, North Carolina, South Carolina and Kentucky were guests of the Langley Research Center last week at a NASA Youth Science Seminar.

Written reports prepared by the 20 students on science projects which they carried out at their respective schools were presented at the seminar.

Five Virginia students participated in the two-day program. Mary Beth Hatten, a Ferguson High School student, opened the technical sessions with a paper on "Production of Mutation in Aerobacter Aerogenes by the Application of Centrifugal Force." W. Joseph Berman, Roanoke, chose "Speech Analysis" as his subject; Robert B. Lambert Jr., Bedford, presented a paper on "A Study of Factors Affecting the Operation of Solar Cells in Space;" Edward C. Svendsen, Arlington, delivered a paper on "A Derivation of the Maxwell-Lorentz Equations," and Clyde Kelley, Chesapeake, presented a paper on "A Study of Various Factors Influencing the Relative Sensitivity of Silver Halides to Electromagnetic Radiations."

North Carolina participants included William H. Blair, Fayetteville; David Grisset, Salisbury; David T. Ligon, Cleveland; Glenn Shaver, Kannapolis, and Michael A. Stroscio, Whiteville.

Kentucky students included Harry P. Arts II, Ashland; John E. Baker, Fort Knox; Marc Luther and Jennie Mather, Louisville, and Katherine Janet Ogden, Richmond.

Representing South Carolina were Nancy Juanita Bradley and Scott A. Martin, Rock Hill; James W. Kronberg, Sumter; Milton Sarlin, Liberty, and William M. Wells III, Columbia.

On the opening day of the seminar, Anshal I. Neihouse, Office of the Director, spoke to the group on "The Scientist and the Space Age." Dr. Floyd L. Thompson, Director, presented certificates of participation to the students.

The students were taken on a tour of a number of research facilities and met with Langley advisors concerning the areas of student interests and plans for future scientific work which the students may pursue.

MORGAN RECEIVES FELLOWSHIP

(Continued from page 1)

The education program will consist of special courses with senior members of the MIT faculty, supplemented by a program of field visits and management seminars in which the Sloan Fellows will have an opportunity to meet outstanding leaders in business and government, here and abroad.

The selection of Morgan was announced by Dr. Peter P. Gil, Director of Executive Development Programs at MIT, who pointed out that the year of residence study at MIT is made possible by grants from the Alfred P. Sloan Foundation, Inc., to promising young executives in government and industry in this country and abroad to provide management resources for the future.

David Buchanan (right), Head of Stores Branch, is shown receiving the key to the new Shipping and Receiving Facility (Building 1206) from William J. Leight, Head of Construction Inspection Section. Buchanan and those personnel associated with the shipping and receiving function have relocated in the new facility (Butler Building, Warehouse Area) from Building 1195. Buchanan states that with the enlarged and more efficient work area, he hopes to be able to provide an improved service to the Center. The telephone number remains the same - 4560. Center personnel are reminded that the Stockroom is still located in Building 1195.

LANGLEY SELECTS CONTRACTOR

(Continued from page 1)

Thus far, all U.S. manned spacecraft have been landed in the oceans, but in the future, mission planners will need the option of landing locations such as large, dry lakebeds, and will want a spacecraft able to fly for several hundreds of miles inside the atmosphere before maneuvering to a safe touchdown under a pilot's control.

Lifting body vehicles are considered potentially useful for a variety of manned missions in space; for example, spacecraft inspection, repair and reconnaissance; logistic and resupply missions for an advanced space station of the future; search and rescue tasks; manned interplanetary missions; and possibly as the upper stage of a recoverable launch vehicle.

The HL-10 concept evolved through extensive experimentation at the Langley Research Center. The letters "HL" indicate the vehicle is capable of horizontal landings, while the numeral 10 indicates the place of the general shape in a series of research models evaluated in Langley facilities.

Extensive research on the lifting body concept has been conducted by Langley Research Center, Ames Research Center and Flight Research Center, to establish a foundation of technology upon which future programs may be based.

FOR SALE: 5-bedroom house at 17 N. Greenfield Ave. Wirt, 838-1499.

FOR SALE: Aeronca 0-58B airplane with partially rebuilt 65 hp Continental motor - $325. Spangler, 596-3983.

FOR SALE: Vacuum cleaner with all attachments. Oliver, 722-1733 after 6 p.m.

FOR SALE: G.E. four-burner drop in electric stove - $35. Fuller, 596-7548 after 5 p.m.

WANTED: Young woman to share apartment in Stuart Gardens. Muckenfuss, 244-1069.

FOR SALE: Lafayette wireless intercom No. 99G4547M, 2 stations - $22.50. Clarke, UN 8-9034.

VACANCIES OPEN AT AID

The Director of Personnel at the Agency for International Development is seeking candidates for employment with the United States Operations Missions in Vietnam and the Far East. Presently, there are over 500 vacancies that must be filled as soon as possible.

Persons selected for these positions currently receive a 25 percent overseas differential and there is legislation now pending to increase this to 50 percent. Tours range from 18 months to 2 years, however, only 3 tours are allowed:

Currently applicants are being sought for the following positions:

Program Economist - Incumbent will work under the direction of the Program Officer in AID Missions abroad in the preparation of large scale economic aid programs and provide the Mission with the input of economic information, analysis and recommendations necessary to formulate changes and evaluate AID programs. Salaries range from $8,500 to $18,000, plus overseas differential, housing allowance, and other benefits.

Assistant Program Officer - Under the direction of the Program Officer, the Assistant Program Officer is responsible for reviewing and analyzing non-project aid and related policies and problems, including the development of a commodity supply program; reviewing and analyzing policies, programs and projects, preparing program documents in close cooperation with one or more of the AID Mission divisions, and reviewing and editing the annual program budget documents. Salaries range from $7000 to $16,000, plus overseas differential, housing allowance, and other benefits.

Program Officer (Operations) - Incumbent will be responsible for converting the USAID proposed program into an operational program in conformance with available funds and legislative and administrative requirements concerning the expenditure of such funds. Salaries range from $8,000 to $12,000.

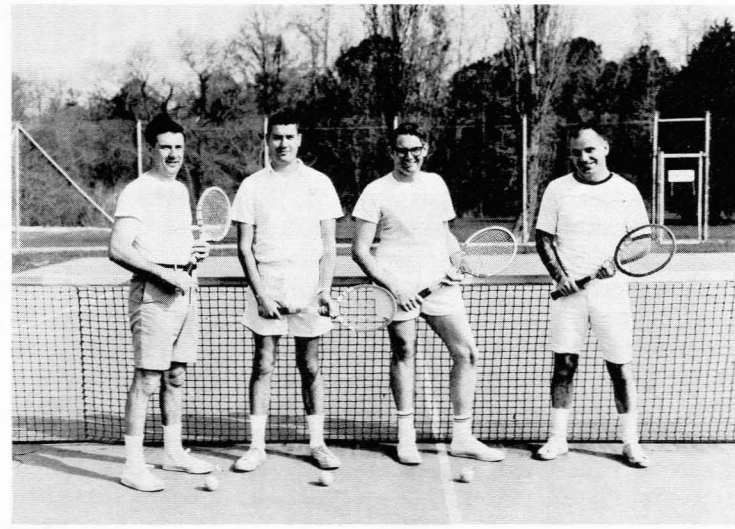
Assistant Program Officer (Evaluation) - Incumbent assists in formulating techniques, criteria, and measuring methods for evaluating programs; makes recommendations to improve the effectiveness of the programs and projects. Salaries range from $10,000 to $18,000.

Public Administration Advisor (Civil Administration) - As a staff member of the Public Administration Division, but under the administrative supervision of the Regional Director, USOM, with latitude for independent action, the Civil Administration Advisor works with and advises the Regional Director on administrative matters of the region, reporting to the Regional Director and the Public Administration Division field director on administrative matters, problems encountered, assistance needed and solution effected. Salaries range from $10,000 to $18,000.

Industrial Advisor - Advises host country industrialists in the fields of industrial engineering and management of medium and small enterprises. Makes recommendations for the development of approaches to marketing, product analyses, costing, design development, equality control, etc. Salaries range from $12,000 to $18,000.

Applications and resumes of qualified candidates should be referred to Bill Howe, Code BPE, NASA, Washington, D.C. 20546, by May 2.

FOR SALE: Craftsman 3 hp compost mill. Stora, 898-6343.



Four members of the Langley Research Center Tennis Club are shown on the NASA courts on the Activities Building grounds. They are (from left): Bryce Kepley, vice-president and ladder chairman of the club; Dave Braski, secretary-treasurer; Arnold Mueller, president, and Tony Parrott.

CLUB OF THE MONTH

Now that spring is here or on its way, thoughts will be turning to "love" of tennis, especially 40 minds who belong to the Langley Research Tennis Club. They will be meeting soon to set up ladder competition for the coming season.

A new Tennis Directory is being compiled which will include the player's name, NASA extension number, home address and telephone number, and other pertinent information such as interest in singles, doubles, or mixed doubles play. A copy of the directory will be sent to each contributing individual.

Officers of the club are Arnold Mueller, president; Bryce Kepley, vice-president and ladder chairman, and Dave Braski, secretary-treasurer. The club meets from time to time to discuss new business, ladder competition, and elect officers. They have access to the tennis courts at the Shell Bank Area belonging to Langley Air Force Base as well as those on the Activities Building grounds. The Tennis Club is interested in starting mixed doubles and women's teams. They are also interested in supporting the Peninsula Tennis Patrons Association.

Members in good standing are entitled to carry a card which enables them to buy tennis supplies at a discount at a local sports shop. All NASA employees are eligible to join and interested persons who would like to be included in the Tennis Directory should send the information to Arnold Mueller, Mail Stop 239, or Bryce Kepley, Mail Stop 258.

NOTICE: Anyone interested in taking square dancing lessons call Sandefur, 4483, or Folwell, 2574.

FOR SALE: Skin diving gear - 18 pieces. Combs, 838-0375.

FOR SALE: One large and one small pony. Wagner, 868-9613.

FOR SALE: Villager dresses size 14. Sabo, 723-5855.

WANTED: Driving combination from Edgehill-Marlbank Farm area to W.A. on 8 shift. Evans, 3451.

CENTER PILOT REACHES RECORD SPEED IN WINGED HELICOPTER

Fastest known helicopter speeds ever flown by U.S. military and government pilots were recently achieved by the first "graduating class" of an advanced Lockheed winged rotorcraft.

Four veteran test pilots, each from a different U.S. government service, flew the XH-51A compound helicopter more than 250 miles per hour in a flight training program conducted by the Lockheed-California Company.

Only other U.S. helicopter fliers known to have exceeded that speed are about a half-dozen aircraft company test pilots, including three from Lockheed.

World's swiftest rotorcraft, this 272-mph XH-51A was developed by Lockheed under a military contract. It is one of only five compound helicopters - rotor-bladed aircraft with fixed wings and forward thrust propulsion - in the U.S. skies today.

Completing the government-funded flight checkout program on the rigid-rotor XH-51A were:

Perry Deal, engineering test pilot, NASA, Langley Research Center.

Duane Simon, research test pilot for the U.S. Army Aviation Materiel Laboratories, Ft. Eustis, and an Army reserve officer.

Lt. Gary Mowery, Navy flight test division project pilot, rotary wing branch, Naval Air Test Center, Patuxent River.

Capt. David Thomas, Air Force engineering test pilot at Edwards AFB, Calif.

They join a select number of pilots - believed fewer than 25 - who have flown compound helicopters.

The turbine and jet-powered XH-51A is equipped with a Lockheed rigid-rotor system that provides this 4500-pound helicopter with the outstanding stability of a conventional fixed-wing plane.

The four men, highly experienced in both fixed-wing and rotary-wing aircraft before being assigned to the XH-51A checkout program, have a total of some 15,000 flight hours.

They were instructed in flying the winged helicopter by Lockheed's Don Segner, world's fastest helicopter pilot. He flew the XH-51A to its top speed last year.

The training flight program took place at Ventura County Airport, Oxnard, California.

A member of the first "graduating class" of the XH-51A compound (winged) helicopter takes off in the rigid-rotor vehicle during a flight training program conducted by the Lockheed-California Company. Among the four veteran test pilots in the U.S. government group was Perry Deal, Pilots Section, Flight Mechanics and Technology Division. They flew more than 250 miles per hour - fastest known helicopter speeds ever achieved by U.S. military and government pilots.

SINGLETON CLUB PLANS DANCE

The Singleton Club will sponsor a dance tomorrow night at the Activities Building. Dancing will be from 9 p.m. until midnight to the music of the Stompers.

All single NASA employees and their guests are invited to attend. Admission will be one dollar per person.

Tickets may be purchased at the door or from one of the following persons: Sharon Huggett, 2245; Tom Foughner, 2661; Barbara Hixon, 4842; Don Findley, 3459, and Dick Davis, 3551.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center last week and staff members donated a total of 170 pints of blood. Of the total collected, 17 pints of type A positive were sent to the Medical College of Virginia for use during heart surgery.

Winfred Arnold Jr., Mechanical Service Division, completed his quota for a four-gallon pin. Reaching the three-gallon mark were Robert Miller, Mike Jurscaga, and Abraham Leiss.

Completing their quota for two-gallon pins were Mark E. Price, Dalma Johnson, Nelson Hicks, Herbert F. Hardrath, and Chester Robbins.

One-gallon pins were presented to Daniel DiCarlo, Bill McMillan, Charles Saunders, Delma Freeman, John Price, and Virginia Shuler.

Assisting during the visit were Dr. Howard Cox and Dr. John Cross.

OBSERVE BASE TRAFFIC REGULATIONS

Center personnel are advised that there has been increased activity on the part of base Air Police in enforcement of traffic regulations. A number of citations have been issued.

All Center personnel are requested to adhere to posted regulations and speed limits to preclude the receipt of a citation, which could result in payment of a fine or restriction of driving privileges on the base.

FOR SALE: 14-foot runabout - needs hull refinishing - $95. Phillips, 595-1248.

FOR SALE: 2-1/2-acre corner, wooded lot in old Quaker Estates, Williamsburg. Piland, 826-0754.

FOR SALE: 15-1/2-foot Barbour boat with 18 hp Evinrude outboard motor - $350; 1951 Jeep station wagon with four-wheel drive - $450. Moore, 229-6086, Williamsburg.

FOR RENT: One-bedroom, unfurnished, downstairs apartment near shopping center and bus line. Braunbeck, 723-6368 after 5 p.m.

FOR RENT: 3-bedroom house in Warwick Village - available May 1. Hurt, 596-2949.

WANTED: Alternate driver from Glendale to W.A. on 8 shift. Fournier or Gainer, 4573.

KINGSPORT ENDS NASA SERVICE

The Grand Old Lady of Space Communications is ending her service with NASA. The USNS Kingsport, first ocean link in America's research in communications by satellite and the ship which relayed western Pacific voice contact with Gemini 8, has finished her job and will now be retired from NASA's networks.

It was Kingsport which relayed voice reports from Astronauts Armstrong and Scott that the Gemini 8 spacecraft had undocked from the Agena.

From Gemini high over the Pacific Ocean, the astronaut's voice and spacecraft telemetry beamed to the instrumentation ship Coastal Sentry north of the Philippines. The Coastal Sentry sent the transmission down to Hawaii from which cable and land line circuits continued to the NASCOM communications center at Goddard Space Flight Center and thence to Mission Control at Houston.

NASA and the Department of Defense's experiment with Kingsport proved the practicality of communications by satellite for manned space missions. As a result, the space agency will use satellite communications with three tracking ships and three land stations for Project Apollo. The Communications Satellite Corporation will provide the service.

Her job completed, the Kingsport will find new assignment by the Department of Defense where studies are now being made for her use.

The Grand Old Lady of Space Communications, as she is called by tracking, telemetry and communications people, has been winning international recognition from the very start of her contributions to space history.

She gave the world's first demonstration of communications by a satellite in synchronous orbit. This was in July 1963, through Syncom II over a 45,000-mile loop from Kingsport to Syncom and back to Kingsport at anchor in Lagos Harbor, Nigeria.

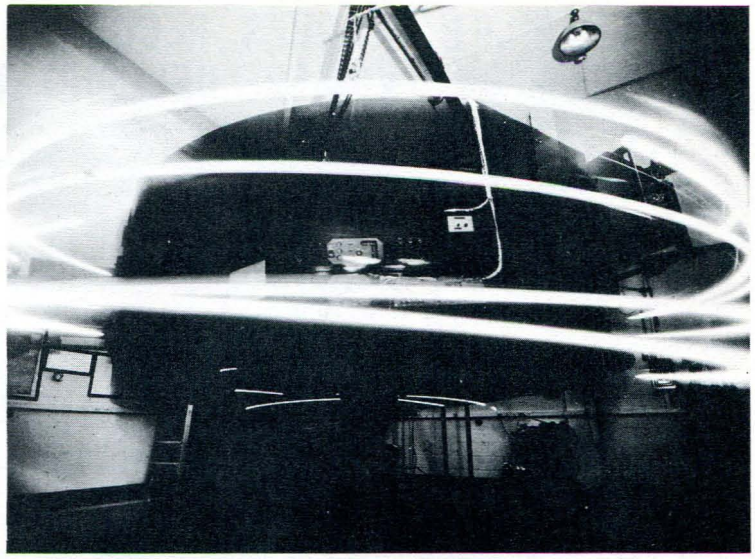
She was part of the first direct exchange of radio messages via satellite between North American and Africa a few days later, linking the terminal station at Lakehurst, N.J., with land circuits at Lagos.

On August 4, Kingsport and Lakehurst transmitted and received via Syncom II the first satellite exchange of news copy and photo facsimile. Photos were exchanged of the late President Kennedy and Nigerian Governor-General Azikewi.

Kingsport then put to sea. Forty miles off shore, although caught in a squall and rolling and pitching in high wind and water, she became the first terminal station to establish satellite communications from the open sea.

Two months later, again with Syncom II, Kingsport made possible the first transocean press conference by satellite. Stationed at Rota, Spain, she connected Syncom communications between United Nations in New York and NASA Headquarters in Washington with the International Telecommunications Union Conference at Geneva, Switzerland. Ambassadors in New York and Washington joined NASA engineers to talk to the national delegations at Geneva. Journalists on both sides of the Atlantic held radio interviews on decisions being made at Geneva on allocation of radio frequencies which would affect the future of space communications.

She was built in Los Angeles in 1944, at the California Shipbuilding Corp., destined for Army Transport Service.



LIGHT STREAKS IN APOLLO TEST - Lights fastened to an air-bearing table produce this effect as the platform rotates and simulates the characteristics of an Apollo spacecraft in flight. The Minneapolis Aeronautical Division of Honeywell, Inc., tests the stabilization and control system of the Apollo for NASA.

With 11,000 tons displacement, she was a big baby, an oceangoing craft of 455 feet overall and 62-foot beam. She was graceful, fast and sturdy, a Victory ship (VC-2), tagged T-AG-164.

In her sixth year on March 1, 1960, the Navy renamed her the USNS Kingsport and transferred her to the Military Sea Transportation Service where as a cargo ship she sailed on a world-wide schedule. Eleven years later - she was now 16 years old - she was chosen by the Bureau of Ships to be the Navy's first communications satellite ship.

And so the Kingsport came of age. She went to Portland, Oregon, for structural modifications by the Willamette Iron and Steel Co. She sailed to Philadelphia where the Naval Shipyard installed electronics to convert her for communications.

Principal feature of her new look was a 30-foot diameter parabolic "dish" antenna within a 54-foot radome which filled her afterdeck like a gigantic toadstool towering some 80 feet above the waterline. This was the antenna with which she was to control, guide and communicate with satellites up to 25,000 miles above the earth.

She was now a member of the MSTS fleet of Special Project Ships in support of scientific research. Her jobs would be in oceanographic surveys, hydrographic, geodetic and underwater acoustic research, and long distance communications.

But NASA needed Kingsport for use with Syncom II.

With a hull gleaming white in concord with her peaceful nature, her civilian crew in non-military sea attire, the Kingsport sailed into Lagos harbor in July 1963 and opened the Africa terminal for Syncom.

Following the Lagos and Rota episodes the ship was returned to Navy assignment for a time. But preparations for the Gemini flights demanded high reliability communications circuits. NASA turned to Kingsport again for the experiments in the western Pacific. As usual she delivered quality performance.

FOR SALE: 1963 Karman Khia - $1600. Tung, 838-0113.

WORKERS NAMED FOR BOY SCOUT DRIVE

Anshal I. Neihouse, Office of the Assistant Director for Flight Projects, Charles C. Shufflebarger, Technology Utilization Officer, and Herbert J. Pelton, Procurement Division, have volunteered to serve off-the-job as co-chairmen to promote participation among NASA families on the Peninsula in the current community campaign to raise funds for the new Boy Scout Reservation and Service Center.

The campaign among NASA families was launched last week at a luncheon attended by group chairmen and officials of the Peninsula Boy Scout organization. Serving as Group Chairmen are:

L. Cornell Burcher, Howard J. Curfman Jr., Howard B. Edwards, Walter E. Ellis, William H. Forrest, E. Barton Geer, George B. Graves Jr., Albert E. Gribble, Donald E. Hewes, Abraham Leiss, William D. Mace, Frank E. Mershon, Kermit G. Pratt, Marion B. Seyffert, and Philip E. Weatherwax.

Speaking for the co-chairmen, Neihouse stated that it is planned to have the solicitation completed within the next few weeks. While it is planned to reach directly a number of NASA employees residing on the Peninsula, it will not be possible to contact all those who might wish to support this community undertaking.

Persons wishing to obtain more information concerning the Boy Scout plans and who may wish to contribute are urged to contact one of the staff members named above at his home.

MIRROR IMAGE? Well, not exactly. Sandy Vilmer of Independence, Missouri, born in 1957 with a heart abnormality and restored to health by heart surgery, looks through an open frame at her identical twin, Cindy. They are the Heart Fund twins. They ask you to support the fight against heart and blood vessel disease by contributing to the Heart Fund through the Federal Service Campaign for National Health Agencies. The Center's Joint Fund Raising Campaign for Health Agencies and the International Service Agencies ends April 30. Bruce Amole, chairman, urged employees to give their contributions to the attendance clerks who in turn will send them to the division monitors.

NASA Photographer William P. Taub has been awarded the National Space Club's Press Award for 1966 "in recognition of his exceptional documentation of the manned space flight program." The prize is presented annually to an individual or group who has "added significantly to public understanding of astronautics and its impact on this nation to all mankind." Taub and his camera have been documenting the U.S. aeronautics and space program for 25 years, including about two decades at the Langley Research Center. He is presently assigned to the NASA Headquarters. Mrs. Robert H. Goddard and Vice-President Hubert H. Humphrey observe as Taub receives the award from General B. A. Schriever.

SOFTBALL NOTICE: The deadline for entering the NASA Slow Pitch League is April 29. Team rosters and the entrance fee must be sent in by this date. A meeting of team captains will be held May 2 at 4:45 p.m. in the Activities Building to establish rules and receive schedules. For further information contact Jim Ellison, 4677.

STAFF MUST USE ZIP CODES

All Government agencies have been reminded by GSA that ZIP Codes must be included in the address of all official mail and in the return address of envelopes, letterheads, and in official publications when addresses are shown.

Applications, questionnaires, and all other forms which contain spaces for inserting addresses must contain the heading "ZIP Code" and space for the insertion of ZIP Codes.

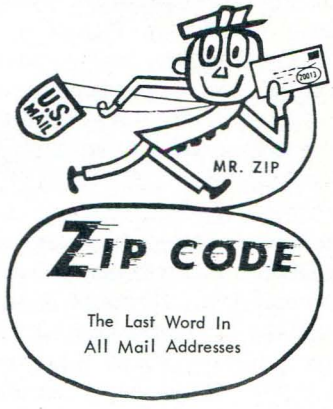
Employees should also include ZIP Codes in their personal mail, both in the address and in the return address.

WANTED: Driving combination from Ivy Farms to E.A. on 8 shift. Downing, 2243.

WANTED: Ride or driving combination from Tide Mill Farms to W.A. on 7:30 Shift. Boulter, 3446.

WANTED: Ride from Ivy Gardens Apts., Adams Dr., to W.A. on 8 shift. Branum, 4487.

FOR SALE: Girl's 24-inch bike. Gilman, 596-3388.



VARC OFFERS GRADUATE STUDY PROGRAM IN PHYSICS

Dr. William H. McFarlane, Director of the Virginia Associated Research Center, will meet with all Center employees interested in graduate work in Physics on Wednesday, April 27 at 11 a.m. in the Projection Room, Building 587 to discuss the details of the program. Graduate students in Physics at all levels are urged to attend.

Dr. McFarlane has issued the following announcement concerning the program:

GRADUATE PHYSICS PROGRAM - The Virginia Associated Research Center, sponsored by the College of William and Mary, the University of Virginia, the Virginia Polytechnic Institute, and the Medical College of Virginia, will offer a resident graduate studies program in Physics, beginning in the 1966-67 session. Students enrolled in the program at VARC earn resident credit toward graduate degrees awarded by the cooperating universities.

FACILITIES AND COURSES - The Center is a contract operator for the NASA's new Space Radiation Effects Laboratory, located in Newport News, approximately five miles distant from Langley Research Center. Through arrangements with NASA, VARC faculty and students are provided research opportunities in elementary particle and nuclear physics. The Laboratory contains the largest proton accelerator in the Southeast (a 600 MeV synchrocyclotron) and two electron accelerators ranging up to 10 MeV. Experimental facilities include proton and electron target areas, and a meson-neutron target area.

The courses of instruction are summarized by title in this article, together with a listing of affiliated faculty. For the 1966-67 session, the listed courses will be offered at the VARC Nuclear Science Building in Newport News or as equivalent courses which exist in the regular curriculum at the College of William and Mary in Williamsburg.

ADMISSION AND DEGREE CANDIDACY - Applicants for admission to the program at VARC must first be admitted to the graduate program of one of the cooperating universities. Approved applicants are then admitted to the program at VARC by the Center's Graduate Studies Advisory Board.

Admission requirements of the cooperating institutions require possession of a bachelor's degree from an accredited college or university, above average achievement as an undergraduate, and other appropriate evidence of ability to do graduate work. The Graduate Record Examination may also be required.

Each student must satisfy the degree requirements of the institution in which he is enrolled. Although particular requirements will vary from institution to institution, each school generally requires a separate application for degree candidacy (to be filed by a stated deadline), approval of the department concerned, and an approved program of study and research. These and other details of degree requirements are stated in the respective catalogues of the cooperating institutions.

ADDITIONAL INFORMATION - Persons interested in applying for the program at VARC may get additional information, catalogues and application forms by writing The Director, Virginia Associated Research Center, 12070 Jefferson Ave., Newport News, Virginia 23606.

Courses of Instruction are as follows:

First Year - First Semester - VP1-VP2 Introduction to Theoretical Physics, 3 semester hours each; VP3 Modern Physics, 3 hours; VP11 Classical Mechanics, 4 hours; VP13-VP-14 Classical Electricity and Magnetism, 3 hours each; VP15-VP16 Mathematical Physics, 3 hours each.

First Year - Second Semester - VP14 Classical Electricity and Magnetism, 3 hours; VP16 Mathematical Physics, 3 hours; VP18 Thermodynamics, 3 hours; VP20 Introduction to Solid State Physics, 3 hours.

Second Year - First Semester - VP21-VP22 Quantum Mechanics, 3 hours; VP23 Introduction to Nuclear Physics, 3 hours.

Second Year - Second Semester - VP22 Quantum Mechanics, 3 hours; VP24 Statistical Mechanics, 3 hours.

Third Year and Beyond - VP31-VP32 Relativistic Quantum Mechanics and Field Theory, 3 hours each; VP33-VP34 Advanced Solid State Physics, 3 hours each; VP35-VP36 Advanced Nuclear Physics, 3 hours each; VP37-VP 38 Elementary Particle Physics, 3 hours each; VP41 Advanced Topics in Physics, 3 hours.

Members of the affiliated faculty are as follows:

Virginia Polytechnic Institute - Kazuo Gotow, Ph.D., University of Rochester, 1959, Associate Professor; Mujaddid Ijaz, Ph.D., Ohio University, 1964, Assistant Professor; Burns MacDonald, Ph.D., University of California, Berkeley, 1965, Assistant Professor; Fujio Ando, Ph.D., Brown University, 1964, Assistant Professor.

College of William and Mary - F. R. Crownfield Jr., Ph.D., Lehigh University, 1953, Associate Professor; Morton Eckhause, Ph.D., Carnegie Institute of Technology, 1962, Assistant Professor; M. Feix, Ph.D., University in Paris, 1958, Visiting Professor; H. O. Funsten, Ph.D., University of Virginia, 1960, Associate Professor; H. R. Gordon, Ph.D., Pennsylvania State, 1965, Assistant Professor; J. D. Lawrence Jr., Ph.D., University of Virginia, 1961, Associate Professor; J. L. McKnight, Ph.D., Yale University, 1957, Associate Professor; D. E. McLennan, Ph.D., University of Toronto, 1950, Professor; G. S. Ofelt, Ph.D., Johns Hopkins University, 1962, Assistant Professor; H. E. Schone, Ph.D., University of California, Berkeley, 1960, Assistant Professor; R. T. Siegel, D.Sc., Carnegie Institute of Technology, 1952, Professor; R. E. Welsh, Ph.D., Pennsylvania State, 1960, Associate Professor; R. G. Winter, D.Sc., Carnegie Institute of Technology, 1952, Professor.

University of Virginia - K. O. H. Ziock, Ph.D., University of Bonn (Germany) 1956, Associate Professor; S. E. Sobottka, Ph.D., Stanford University (California) 1960, Associate Professor; R. G. Minehart, Ph.D., Harvard University, 1962, Assistant Professor.

FOR SALE: Share in Riverdale Recreation Association - $175. Edwards, 898-6638 after 5 p.m.

FOR SALE: Boy's 24-inch bicycle - $10; Bock Honey Bee class fiberglas sloop with dacron sails - $695. Heimerl, TW 8-5543.

FOR SALE: 8-cubic-foot Hotpoint refrigerator; 52-gallon cabinet type electric hot water heater, wind-up floor model phonograph, oval oak table, 4 high back chairs. Deran, 877-2671.

FOR SALE: 13-foot Garway Travel trailer - sleeps four - $925. Burt, 838-1553.

FOR SALE: 6-foot cabin cruiser with 25 hp Sea King outboard motor and trailer - $450. Diggs, 868-3821.

Langley Researcher

VOLUME 5, NUMBER 9 LANGLEY RESEARCH CENTER MAY 6, 1966

GEMINI 9 SCHEDULED FOR LAUNCH FROM CAPE KENNEDY THIS MONTH

The Gemini 9 spacecraft and its companion Agena target vehicle will be launched from Cape Kennedy no earlier than May 17 on a three-day flight to explore new rendezvous techniques and conduct extravehicular activity, according to NASA officials.

Liftoff time for the Agena is 11 a.m. EDT, and the Gemini liftoff is scheduled to follow at 12:39 EDT. An Atlas booster, generating 390,000 pounds of thrust, will launch the Gemini Agena Target Vehicle. Gemini 9 will be put into orbit by the two-stage Titan II Gemini Launch Vehicle with a liftoff thrust of 430,000 pounds.

The Agena target will be inserted into a 185-statute-mile circular orbit. Gemini 9 will be inserted into a 100 by 168-statute-mile elliptical orbit. Initial rendezvous of the two spacecraft is scheduled in the third revolution, approximately four hours after Gemini liftoff.

Command for the mission, Astronaut Thomas P. Stafford, was pilot on the Gemini 6 mission which accomplished the first rendezvous in space with the Gemini 7 spacecraft December 15, 1965. Eugene A. Cernan is pilot for Gemini 9. James A. Lovell is back-up command pilot and Edwin E. Aldrin is back-up pilot.

Approximately 30 minutes after rendezvous, Gemini 9 will dock with the Agena over Hawaii. A bending test with the Agena and a redocking by the pilot will be performed before the crew "powers down" the spacecraft for an eight-hour rest period.

The extravehicular activity by Cernan will begin near the end of the 13th revolution and continue for one and one-half revolutions. Hatch opening will occur about 20 hours, 50 minutes into the mission. Cernan will reenter the spacecraft approximately 2 hours, 25 minutes later.

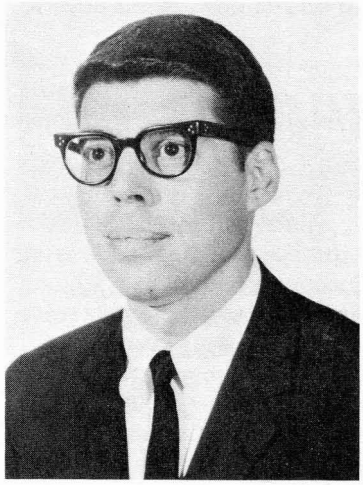
In the first daylight portion of EVA, Cernan will remain on a 25-foot umbilical tether with oxygen supplied from the spacecraft. He will retrieve a meteorite collection experiment from the Gemini adapter and expose some new surfaces on the meteorite collection experiment on the Agena. He will evaluate tether dynamics of the 24-foot umbilical and evaluate the handrail and handholds on the adapter section.

During the night pass, he will be in the adapter section and will don the Astronaut Maneuvering Unit, a backpack with a self-contained propulsion unit and oxygen supply.

At the next sunrise, Stafford will undock the Gemini from the Agena and move 120 feet in place with the Agena. The EVA pilot, moving to the front of the spacecraft, will evaluate attitude control and translation characteristics of the maneuvering unit. Working on a 125-foot-long tether, he will translate to the undocked Agena, and then reenter the spacecraft.

(Continued on page 6)

ACTIVITIES ASSOCIATION TO CONDUCT BOND DRIVE



Humbert E. Rockey

This year is the 25th anniversary of the Federal Savings Bonds Campaign. During the last two weeks of this month, the Center will conduct an intensive program to sign up new participants and to encourage employees now buying bonds to increase their savings. The Center's campaign will be conducted by the Activities Association. Its President, Humbert E. Rockey, has been appointed to act as Chairman.

Rockey stated, "Center employees can develop an independence from financial worry and at the same time support our men in Vietnam through participation in the Payroll Savings Plan."

The Activities Association's representatives will conduct a personal canvass of staff members to enlist new participants and to encourage those already participating to increase their U.S. Savings Bond investments.

(Continued on page 6)

LANGLEY TO TEST PARACHUTES FOR USE IN MARS RESEARCH

Promising designs and techniques for using parachutes to land instrumented unmanned capsules on Mars will be explored in a broad research program of NASA.

Starting this summer, balloons and sounding rockets will carry experimental parachute-equipped payloads to high altitudes where the thin earth atmosphere compares with that of Mars. Then the test units of varying shapes and sizes will be accelerated to determine how well different parachutes can be deployed behind them. Parachutes of different designs and materials will be tested.

The flight units from which the parachutes are to be deployed will be based on concepts that hold promise of providing significant braking (aerodynamic deceleration) in a thin planetary atmosphere.

Those with full-scale parachutes will simulate the geometry and mass of a current concept of a Mars entry capsule.

The shallow, conical blunt-nosed unit will be 15 feet in diameter.

This planetary entry parachute program is conducted as

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

ENGAGEMENTS. . .Dan Cupid scored a victory when Jackie Cropper, Full-Scale Research Division, announced her engagement to Victor Vogelsang, Charleston, South Carolina. No date has been announced for the wedding. . .Making plans to desert the bachelor ranks is Barrett L. Shrout, Full-Scale Research. He is engaged to Nancy Carolyn Sides, Hampton, and plans call for a July wedding. . . A Center romance reached the engagement stage when Ellen G. Evans, Administrative Services Division, and Samuel A. Morello, Flight Mechanics and Technology Division, announced their intent to wed. No date has been announced for the big event. . .Making plans for a June wedding is James R. Williams, Space Mechanics Division. He is engaged to Victoria J. Barber, Hampton.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on May 10 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on May 18 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

BABY DERBY. . .Weighing in at eight pounds, six ounces on April 4 was Sharyl Anne, new daughter of Jon Van Cleave, Langley Mission, Support Office at Western Test Range, California. . .Announcing the birth of a seven pound, three ounce son, Robert Edward Jr., is Jean Elliott, Head of Special Files Section, Administrative Services Division.

NOTE OF THANKS. . .Ethel Beamon, Personnel Records, Personnel Division, wishes to thank her many friends and associates for their kind expressions and for the mementos given her on the occasion of her departure from the Center.

SUMMER BOWLING LEAGUE. . .Teams or individuals interested in joining a NASA summer tenpin league are requested to call Leonard Mayo, 4766.

CHORAL SOCIETY. . .The Peninsula Choral Society, under the direction of George W. Bayley, will present its spring concert Saturday, May 14 at 8:15 p.m. at Thomas Eaton Junior High School. Part I will consist of madrigals and motets, Part II will be the first part of The Creation, and Part III will include selections from The Sound of Music. Center employees who are members of the group are Roy J. Duckett, Aero-Physics Division, Hampton P. Stump, Instrument Research Division, and Natalie Johnson, Public Affairs Office. Admission is one dollar for adults and fifty cents for students and enlisted men.

CALENDAR OF COMING EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6 Dynamic Vehicle Party	7 Square Dance
8 MOTHER'S DAY Mother's Day	9 Building Clean Up	10 Bridge Club Model Club	11 Bridge Lessons	12	13 F.I.D. Party	14 Stability Performance Party
15	16 25th ANNIVERSARY SAVINGS BONDS CAMPAIGN	17 Bridge Club	18 Bridge Lessons	19 Payday Game Night	20	21 Armed Forces Day At LAFB
22	23 --INVEST IN U. S. SAVINGS BONDS--	24 Bridge Club	25 Bridge Lessons	26	27 Supervisors Club	28 Model Club
29	30 HOLIDAY MEMORIAL DAY	31 Bridge Club	APRIL 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	JUNE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30		

The above events have been scheduled to take place in the Activities Building during the month of May.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 9:

Monday - Beef broth with barley, pot roast of beef, breaded veal cutlet, spaghetti with meat balls, western omelette.

Tuesday - Puree of bean soup, pepper steak, broiled ham slice, chicken chow mein, chili.

Wednesday - Chicken-noodle soup, roast beef, smoked pork sausage, fried chicken, hot dog.

Thursday - Vegetable-beef soup, grilled steak, stuffed pepper, salmon cakes, hamburger.

Friday - Clam chowder, roast leg of lamb, broiled halibut steak, fried fish, baked hash.

The menu for the week of May 16 is as follows:

Monday - French onion soup, Swiss steak, grilled pork chops, ham and noodle casserole, fish cakes.

Tuesday - Cream of tomato soup, fried clams, baked meat loaf, knockwurst, barbecued sandwich.

Wednesday - Chicken-vegetable soup, Spanish pot roast, Salisbury steak, fried chicken, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, ham loaf, chicken croquettes, hot dog.

Friday - Clam chowder, roast beef, shrimp Newberg, fried fish, deviled crab, tamale pie.

FOR SALE: Welbilt 2 hp, 14,300 btu air conditioner - one year old. Brandt, 851-2504 after 5 p.m.

FOR SALE: 1963 Chevy II 100 series - 4-door - $700. Lambiotte, LY 6-0980.

FOR SALE: 1964 Cruiser's Inc. 25-foot Barnegat, 225 hp Mercruiser inboard-outboard, 75-watt radio-telephone - $4995 - may be seen at York River Yacht Haven. Lawrence, OXford 3-3886, Gloucester.

FOR SALE: Cox camping trailer - $600. Pauls, 868-9833.

FOR SALE: 1956 Buick, 4-door, power steering and automatic transmission - $295; 7-1/2 hp Elgin outboard motor - $90. Schoonover, 723-8694 after 6 p.m.

FOR SALE: B-flat French Selmer trumpet. Genone, 851-3634.

LANGLEY TO TEST PARACHUTES

(Continued from page 1)

part of the broader planetary entry decelerator program of NASA's Office of Advanced Research and Technology to give basic support to the Voyager planetary exploration program of NASA's Office of Space Science and Applications.

The parachute project will be managed by Langley Research Center. Project management at Langley is assigned to the Applied Materials and Physics Division with Clarence L. Gillis as project manager. All aspects of the program are closely coordinated with NASA's Jet Propulsion Laboratory, manager of the Voyager project.

Information obtained from the Mariner IV mission in 1965 is being used in the entry parachute program.

In planning the parachute experiments, officials are using the range of four to 10 millibars as a base. In the earth's atmosphere, this level is approached at an altitude of about 130,000 feet. (Earth sea level pressure is about 1,000 millibars.)

Balloon-borne experiments with the 15-foot entry body will be carried to about 130,000 feet to simulate velocity and dynamic pressure. The unit will be released with its flight axis pointed slightly upward, then 12 small rocket motors will accelerate it to Mach 1.2 (800 mph) in level flight.

This velocity closely simulates the maximum anticipated at the time of parachute deployment for a capsule entering the Martian atmosphere.

At these conditions the test parachute will be deployed and the parachute and an instrument package will separate from the 15-foot shell. The parachute and instrument package will be recovered for data analysis and evaluation.

The rocket-launched units will carry test payloads to 130,000 feet and Mach 1.2 for parachute deployment. They will be smaller than the balloon units and shaped for lower drag capability.

Both the balloon and rocket tests will be conducted at the White Sands missile range in New Mexico. Balloon-borne flights and then rocket-launched flights are planned.

YOC EMPLOYEES TO JOIN STAFF

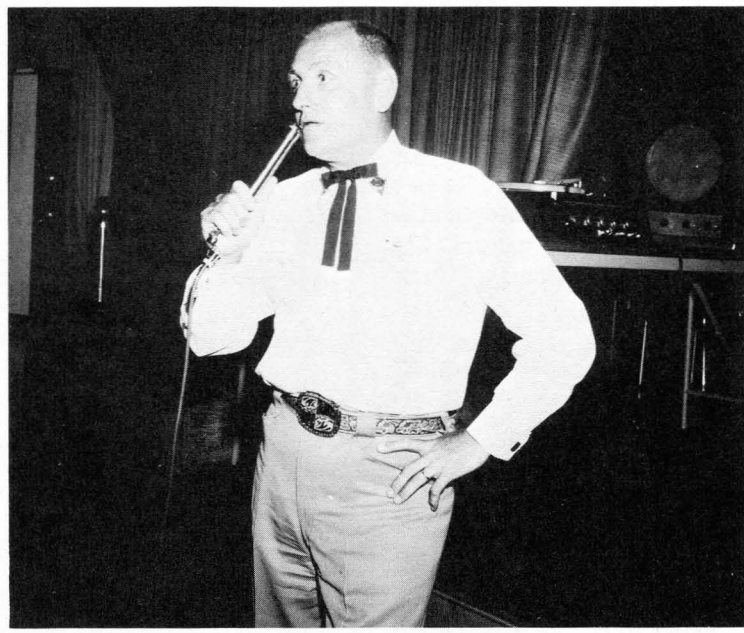
In direct support of the President's Youth Opportunity Campaign, Langley Research Center will offer summer employment to 60 young men and women, ages 16 through 21.

This represents about 12 per cent of the 505 young persons who will be hired under the YOC program by the NASA at its Headquarters in Washington, D.C., and at field installations in the United States.

All 60 of the temporary YOC employees will be hired by Langley through the Virginia State Employment Service, which is establishing a special Youth Opportunity Campaign register for this summer program.

Hiring in the YOC program will be over and above NASA's normal summer employment levels, in compliance with the President's request that each federal agency make every effort to find meaningful work or training opportunities for at least one extra trainee for every 100 regular employees on the rolls.

In a different program, NASA announced that Langley is also authorized to hire 112 temporary employees this summer as office or science assistants.



Ray Ritchie, a member of the Hampton Roads Caller Association, will call the figures for the square dance which will be sponsored by the Activities Association tomorrow night at the Activities Building.

SQUARE DANCE TOMORROW NIGHT

The Activities Association will be host to all Peninsula square dancers tomorrow night at 8 o'clock. The Activities Building will be the scene for skirt swishing and foot stomping as those who enjoy good time and good company gather to dance the square.

Calling for the affair will be Ray Ritchie while Sam Houser will cue the rounds. Ray is a member of the Hampton Roads Caller Association and has been calling on the Peninsula for a number of years. He calls regularly for two of the square dance clubs on the Peninsula - the Langley Lanciers and the Kuntry Kuzzins.

Beginners are asked to come on out and enjoy the fun as there will be some instructional type dances. Representatives of most of the Peninsula clubs will be on hand for the benefit of those wishing to join a square dance group.

Admission will be fifty cents a person for dancers and spectators. There will be hot dogs, hamburgers and cold drinks available during the evening.

PROFESSORS TO VISIT CENTER

Dr. Thomas L. Reynolds, Head of the Department of Mathematics, and Dr. Sidney Lawrence, Assistant Professor of Mathematics, College of William and Mary, will visit the Center on Wednesday, May 18 at 1:30 p.m. to discuss the M.A. program as well as the new M.S. degree program in Mathematics.

Langley staff members interested in these programs are requested to call the Training Branch, telephone 2611.

WANTED: Ride from Wythe Post Office to W.A. on 7:30 shift. Hope Dudley, 4640.

FOR SALE: 2-bedroom Cape Cod house - upstairs ready for easy finishing - attached garage. Ferguson, 723-8173.

FOR SALE: 3-bedroom, 1-1/2-bath brick rancher with attached garage. Murray. 851-1936.

WANTED: Used cabinets for use in garage. Coward, 877-4696.

FOUR RETIRE FROM CENTER

Four staff members recently retired from the Center with a combined total of over 97 years of Federal service. The retirees are Joseph R. Pethel, 8-foot Tunnels Branch; Robert D. Saunders, Flight Mechanics and Technology Division; W. Calvert Roberts, Cost Engineering Staff, and Damascus Hale, Mechanical Service Division.

Pethel was born April 27, 1904 in Kannapolis, North Carolina. He attended public school in Kannapolis and worked 2 years as a carpenter, 2 years as an electrician and 16 years for Cannon Mills in Kannapolis before joining the Center staff on March 1, 1944 as a mechanic.

Joseph R. Pethel

Pethel is to be congratulated on his attendance record. He has more than 1800 hours of sick leave to his credit.

He retired April 29.

Saunders was born October 8, 1917 in Portsmouth. He graduated from Woodrow Wilson High School in Portsmouth and served in the U.S. Navy from June 1945 to August 1946. He first joined NASA on November 24, 1941 at Ames Research Center and transferred to Langley September 25, 1946. He retired March 21 with over 29 years of Government service.

Roberts is a native of Virginia. He was born May 27, 1896 in Lynchburg and received his A.B. and C.E. degrees from the University of South Carolina. He served in the U.S. Army from September 1917 to August 1919. Before starting his NASA career he worked for a number of engineering companies in Baltimore. He entered on duty at the Center on July 5, 1943 as a construction engineer and retired March 28 with almost 25 years of service.

Hale was born May 20, 1925 in Laura, Kentucky. He attended Warfield High School, Warfield, Kentucky, and worked for the Maritime Administration in Norfolk before joining the Center staff. He transferred to Langley on March 5, 1952 and retired April 13 with over 21 years of Federal service.

APPRENTICE HONOR ROLL

Training officials announced that twelve members of the Apprentice School completed the spring term with an average of 97 or better. Members of the honor roll are:

Robert M. Ely, Polymer Lab; Burt R. Emerson and George C. Firth, Space Vacuum Lab; William W. Fernald, Heavy Machine Shop; Stephen Irick, Dynamic Vehicles Section; James J. Kiss, Structures Lab; William R. McCraney, Light Machine Shop; Thomas Pressley, Spacecraft Structures; James R. Smith, Instrument Construction Shop; Dallas Summerfield, Model and Pliant Structures; George B. Whitehurst, High Temperature Materials Branch, and David P. Whittaker, General Electrical Service.

FOR SALE: 1951 Dodge coupe - $150. Reid, 898-5623.
FOR SALE: Tenor saxophone - $60, Craftsman machinist tool box - $10. Seals, 898-3501.

SATELLITE REVIEW BOARD NAMED

Francis B. Smith, Assistant Director, has been appointed to a five-man NASA board to conduct a broad view of the agency's observatory-class Earth satellites.

The Observatory Class Spacecraft Review Board was named by Dr. Homer E. Newell, Associate Administrator for Space Science and Applications. Dr. Newell said the board will study all phases of design, development, testing and space operations procedures of the orbiting observatory spacecraft.

Chairman of the board will be Robert F. Garbarini, Deputy Associate Administrator for Space Science and Applications.

In establishing the board, Dr. Newell said the present practices used in development of the family of heavier observatories have evolved from the experience obtained on lighter spacecraft where the agency's success ratio is quite high.

"The question is raised," he said, "as to whether the current practices are adequate to permit the agency to maintain and improve its spacecraft performance now and into the future."

Dr. Newell said the review will include procedures and methods used to provide for effective contractor project management, design, design review and approval procedures, parts and component selection, quality control, testing procedures, and the planning and conduct of the operation of the spacecraft, including training and rehearsal procedures used prior to launch.

The Orbiting Astronomical Observatory I failed on April 10, two days after its launch from Cape Kennedy. Project officials are studying why the main battery overheated and caused OAO's power system to fail.

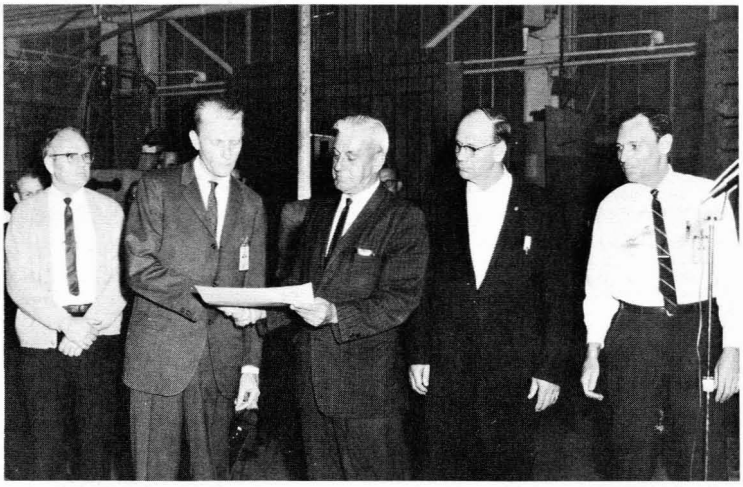
Other members of the Review Board, all from NASA field centers, are:

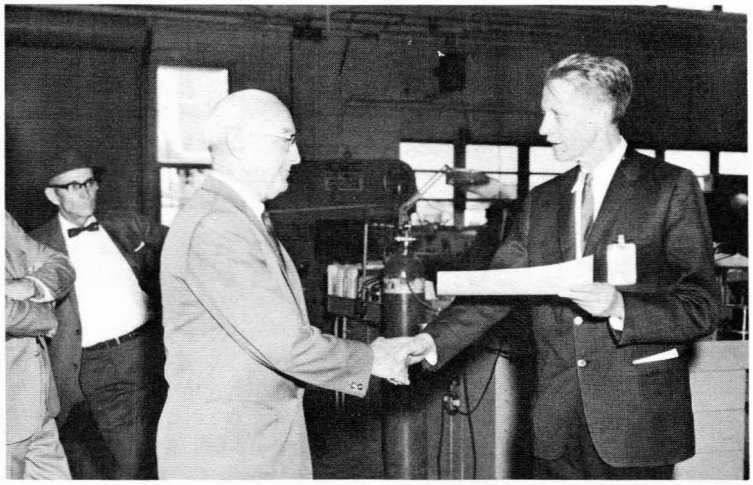
F. John Bailey, Chief, Flight Safety Office, Manned Spacecraft Center; Jack N. James, Director for Lunar and Planetary Programs, Jet Propulsion Laboratory, and Dr. Albert J. Kelley, Deputy Director, Electronics Research Center.

BOOKS FOR SALE

The following books are for sale at the NASA Exchange, telephone 2209:

"Computational Methods of Linear Algebra" by V. N. Faddeeva, "Differential Calculus" by P. J. Hilton, "Machinery's Handbook" by Oberg and Jones, "Vitalized Physics" by Carleton, "Analysis - Volume II" by Winar Hille, "Architectural Graphic Standards" by Ramsey and Sleeper, "Theoretical Physics" by Blass, "Perturbation Methods in Fluid Mechanics" by Van Dyke, "Automatic Data-Processing Systems" by Gregory and Van Horn, "Advanced Calculus" by Spiegel - Schaum's Outline Series, "Introduction to Solid State Physics" by Kittel, "Elements of Gasdynamics" by Liepmann and Roshko, "Mechanics - Part I: Statics" by J. L. Meriam, "Conduction Heat Transfer" by Schneider, "Methods of Applied Mathematics" by Hildebrand, "The Theory of Fundamental Processes" by Feynman, "Boundary and Eigenvalue Problems in Mathematical Physics" by Hans Sagan, "The Dynamics of Real Gases" by Clarke and McChesney, "Analysis and Design of Flight Vehicle Structures" by Bruhn, "Operational Mathematics for Colleges" by Rider.





Dr. Floyd L. Thompson, Director, recently presented the Shop Safety Award to thirteen groups for having a record of no lost-time accidents during the calendar year. Top left - Receiving congratulations from Dr. Thompson (center) are (from left): Aubrey L. O'Kelley, Head of Electrical Equipment Utilization Section; Cletus J. Vincke, Head of Electrical Systems Application Branch; August V. Sansone, Head of Electrical Shop Section; John H. Haverstock, Head of General Electrical Service Section; Joseph Getsug, Chief of Electrical Systems Division, and Martin J. Menges, Head of Electrical Distribution and Drive Section. Top right - Award winners in the Modelmaking Branch were Percy R. Keffer, Head of Modelmaking Branch; Clyde D. Hall, Model and Pliant Structures Shop; W. Cecil Burtner, Head of Model Finishing Shop; Joseph E. Purgold, Head of Foundry; Bernard H. Curran, Assistant Head of Modelmaking Branch; William J. Lawton, Head of Model and Pliant Structures Shop; Theodore W. Schindler, Dynamic Model Shop, and Alexander Borbas, Model and Pliant Structures Shop. Lower left - Dr. Thompson (second from left) presents the award to James Hamilton, Head of Research and Development Support Branch. Looking on are (from left): Ernest W. Johnson, Head of Quality Assurance Support Section; Arthur K. Grow, Head of Research Equipment Service Section, and John T. Turlington, Head of Research Projects Support Section. Lower right - James C. Ferguson, Head of Materials Processing and Development Section, receives congratulations from Dr. Thompson.

SHOP SAFETY AWARDS PRESENTED

Dr. Floyd L. Thompson, Director, recently presented Shop Safety Awards to the Modelmaking Branch, Research and Development Support Branch, Materials Processing and Development Section and four Electrical Shops of Electrical Systems Division.

Included in the Modelmaking Branch award were members of the Dynamic Model Shop Unit, Foundry Unit, Model Finishing Shop Unit, and Model and Pliant Structures Shop Section. The Research and Development Support Branch award included employees in the Environmental Testing Support Section, Quality Assurance Support Section, Research Equipment Service Section, and Research Projects Support Section.

Winning citations in the Electrical Systems Applications Branch were Electrical Distribution and Drive Section, Electrical Equipment Utilization Section, Electrical Shop Section, and General Electrical Service Section.

These shops qualified for the awards as a result of having no lost-time accidents during the last calendar year.

FOR SALE: Desk chair - $45. Johnson, 596-0848.

FOR SALE: Apartment size refrigerator. Drummond, 723-8781.

FOR RENT: 3-room apartment. Wray, 723-3497.

FOR SALE: Limed oak bedroom suite - $50. Woolard, 595-0484.

FOR SALE: Child's large swing - $10. Christian, 722-8306.

WANTED: Ride from Pine Chapel Village to W.A. on 8 shift. Albertson, 4788.

NASA BOWLING LEAGUE

Hampton Scientific leads Group A in the NASA Tenpin League with 91.5 wins and 28.5 losses. High scores for the week were rolled by Lewis White with a 232 game and Bill Wood with a 612 set.

HMS leads Group C with 84 wins and 36 losses. Trailing in second place is ACD with 76.5 wins and 43.5 losses. Top scores were rolled by David Duxbury with a 255 game and 658 set and Peggy Mayo with a 227 game and 579 set.

GROUP A

Hampton Scien.	91.5	28.5	Phantoms	55.5	64.5
Filter Queen	70	50	Unitary	51	69
Mexicali	67	53	Odd Balls	50.5	69.5
Flyers	67	53	Hornets	46.5	73.5
Alley Cats	62.5	57.5	Short Circuits	37.5	82.5

GROUP C

HMS	84	36	Latecomers	56	64
ACD	76.5	43.5	C-Scouts	56	64
Greenhorns	76	44	Dillys	54	66
Trackers	68	52	Sparkys	52	68
RPM	63.5	56.5	Hits & Misses	50	70
Mets	62	58	Bowling Belles	44	76
Gliders	58	62	Chargers	40	80

GEMINI 9 SCHEDULED FOR LAUNCH

(Continued from page 1)

After EVA and redocking, the remainder of the flight will include three burns of the Agena primary propulsion system while docking with Gemini, two re-rendezvous of Gemini with the Agena and one burn of the Agena secondary propulsion system while docked with Gemini.

Seven experiments will be carried out on the mission. Scientific experiments include zodiacal light photography, meteorite collection experiments on both the Gemini and Agena, and airglow horizon photography. Technological experiments are UHF/VHF polarization and the astronaut maneuvering unit. The medical experiment consists of bioassays of body fluids.

Objectives of the Gemini 9 mission are rendezvous and docking with the Gemini Agena Target Vehicle and extravehicular activity by the pilot. In addition, if time permits, the mission will include maneuvers of the docked vehicles using the agena propulsion systems, separation and docking, Gemini re-rendezvous from above the Agena (simulating Lunar Excursion Module rendezvous), guidance of the Agena into a parking orbit for use as a target on a later Gemini mission.

The spacecraft is scheduled to land in the West Atlantic Recovery Zone abour 345 statute miles east of Cape Kennedy at the beginning of the 45th revolution after approximately 70 hours, 50 minutes of flight.

FOR SALE: 1963 14-foot Glaspar ski boat with 40 hp Johnson electric start motor and Cox trailer - $875. Schultz, 7605 Roanoke Ave., CH 4-2825.

FOR SALE: Heavy duty boat trailer for 17-foot inboard boat - new tires - $125. Holt, 244-1285.

FOR SALE: 2-bedroom house in Wythe. Miller, 722-4870.

FOR SALE: Tenor saxophone - $99. Davuso, 826-1303.

FOR SALE: Lot with 133-foot frontage on Menchville Rd., Denbigh. Rollins, 245-6796 or 877-9309.

FOR SALE: Model A Ford farm tractor. Thomas, 877-1053.

MESSAGE FROM NASA ADMINISTRATOR

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

April 11, 1966

OFFICE OF THE ADMINISTRATOR

MEMORANDUM TO ALL NASA EMPLOYEES

SUBJECT: NASA 1966 STAR SPANGLED SAVINGS BOND CAMPAIGN

This year marks the 25th anniversary of the Savings Bond Program. In a recent letter to the Secretary of the Treasury, the President stated:

> "Today, above all, is a time for all Americans to rededicate themselves to the spirit that animated the Minutemen of Concord--who serve as the symbol of the Savings Bond program. For today, as at the founding of our nation, it is freedom which is again at stake. Not all of us are called upon to fight in the jungles of Vietnam, but while our men are there, in the frontlines of a distant land, none of us can remain aloof on the sidelines. We must all do our share--in every way we can--to support our men in Vietnam. One sure way is open to all Americans through the Savings Bond program."

In addition to assisting our country, the Savings Bond Program has helped thousands of NASA employees to secure for themselves and their families many financial advantages they might not otherwise have afforded. With the new 4.15 per cent interest rate for bonds, the Payroll Savings Plan not only serves as a practical way to save for important personal goals but provides added financial rewards.

During the month of May, the NASA 1966 Star Spangled Savings Bond Campaign will be conducted at all NASA installations. At that time you will be asked:

> TO BUY SAVINGS BONDS--If you are not now enrolled in the Payroll Savings Plan.
>
> TO INCREASE YOUR PRESENT ALLOTMENT--If you are enrolled.

The importance of this decision cannot be overstressed. While it remains an individual personal one, collectively our decisions have a significant impact on the economy of our country during these times.

Our NASA-wide percentage of participation in the Savings Bond Program is only 48.1% compared with a Government-wide participation of over 60%. I am sure that with your personal interest and efforts we can greatly increase NASA's participation. The benefits which will accrue to you under this program and to the economic well-being of our country play an important role in assisting and maintaining a stable financial future. I urge, therefore, that you give this campaign your full support.

James E. Webb
Administrator

ANNUAL BOND DRIVE PLANNED

(Continued from page 1)

One of the many advantages to U.S. Savings Bonds is th new and attractive 4.15 percent interest rate. It affects a bonds, no matter when they were issued. An individual doe not have to cash in old bonds to get the 4.15 percent. It i automatic.

The May canvass is part of a worldwide effort markin the 25th Anniversary Savings Bonds Campaign for Federa Employees. The effort is being directed by Postmaste General Lawrence F. O'Brien in his capacity as Chair man of the Federal Savings Bonds Campaign and in con junction with the Savings Bonds Division of the U.S. Treas ury Department.

O'Brien has announced the immediate goal of the Ma campaign as an increase from 60 to 75 percent in the rat of participation by Government personnel in the Saving Bonds Program and the long range goal of the Federa Government as enlisting at least nine out of every ten em ployees to buy Savings Bonds on a systematic basis.

FOR SALE: 1960 Comet - 2-door sedan, radio/heater automatic transmission - $275. Smith, Williamsburg 229-3101.

NASA POLICIES EXPLAINED

1. Employees may not have any outside activities or interests which may interfere with the performance of their duties or might reasonably be expected to result in a conflict of interest which would tend to prevent them from exercising impartial judgment on behalf of NASA.

2. Employees may not have any outside activities which tend to result in discredit or embarrassment to NASA.

3. Employees may not have any outside activities or interests which may appear to involve unethical capitalization of their official positions or of information or resources to which they have access by reason of their employment by the Government.

4. Employees may not receive any salary from nongovernmental sources for their service to the Government.

5. Employees may not receive gratuities from or become obligated to any one with whom they may have official relationships or who may be affected by their performance of duty.

6. Employees must disqualify themselves from handling or attempting to influence in any way any matter which affects chiefly any private person or organization (a) with whom they have a substantial economic interest, or (b) with whom they have arranged or are negotiating for subsequent employment or business relations, except by prior written authorization.

7. Employees may not divulge any restricted information to any unauthorized person; release any information in advance of the time prescribed for its authorized issuance; or make use of, or permit others to make use of, any information for private purposes on a basis of advantage not available to the general public.

8. Employees may buy stocks and bonds for bona fide investment purposes providing they do not buy or sell securities as a result of or on the basis of information derived from their official position or from the official position of other NASA employees with whom they associate.

9. Employees may not utilize Government time or resources except for official business or NASA approved or sponsored activities.

10. Employees may not represent any nongovernmental interest in any matter which involves any case or matter about which they have acquired knowledge, or have taken, or may take action, in connection with their official duties.

11. Employees may not do indirectly (by, through, or with other persons) what they may not do directly under the foregoing rules.

Questions concerning these policies should be directed to the Personnel Officer.

FOR SALE: 960 Cushman Eagle motor scooter with buddy seat and new engine - $ 60. Phaup, 826-6941.

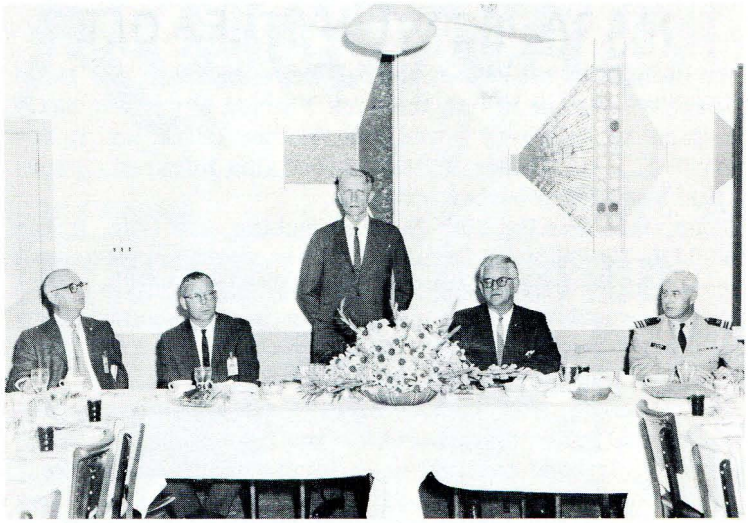
FOR SALE: ANA 14-foot fiberglas hull boat with 40 hp Mercury motor, trailer and extras. Moore, 898-5748.

FOR SALE: 6-room house on 3 acres of land. Hunt, 868-9269.

FOR SALE: 18-foot sailboat (HOD #448) with dacron sails and trailer - $1000. Oehman, 596-3994.

FOR RENT: 2-bedroom house with stove and refrigerator - $80 per month. Gardner, LY 6-6204.

FOR SALE: 1961 Grady White 16-foot boat with convertible top, vented windshield, and 1000-pound Cox trailer - $650; 1958 1/2-ton pick-up truck - $550. McGee, 868-9065.



Langley Research Center was host for the April meeting of the Hampton Roads Area Federal Safety Council. Dr. Floyd L. Thompson (center), Langley Director and General Chairman of the Hampton Roads Federal Safety Council, briefed the group on the Center's safety record for this year. Others in the photograph are (from left): T. Aubrey Harris, Chairman of the Langley Executive Safety Committee; Trafford J. Leland, Landing and Impact Branch, who presented a program on hydroplaning of tires and the cross-braking concept; Duane McSmith, Langley Safety Officer and Executive Chairman of the council, and Lt. Commander, T. J. McGhee, staff member of the U.S. Naval Hospital in Portsmouth and Secretary of the council.

GIANT ANTENNA DEDICATED

A 200-foot tracking and telemetry antenna - the largest in the United States deep space network - was officially dedicated April 29 at Goldstone, California.

The newest addition to U.S. tracking facilities, located in the Mojave Desert will be able to follow future spacecraft out to the planet Pluto at the edge of the solar system.

The antenna, created by NASA and the Jet Propulsion Laboratory for research in the far reaches of the solar system, is one of the world's largest and most sensitive instruments. The diameter of its parabolic "dish" is 210 feet - an area of nearly an acre - and it stands as high as a 21-story building.

Although not the largest antenna in existence, the Goldstone "210" is the largest specifically designed for NASA's deep space projects. It is expected to be in operation this summer.

The 210-foot antenna must have the same speed and accuracy as an 85-foot "dish" in following a spacecraft from horizon to horizon. Until now the 85-foot dish has been the largest in the NASA networks.

Another requirement is stability to withstand winds up to 50 miles an hour, pounding rain, and the weight of snow.

The dedication ceremony was attended by members of Congress, California State officials, NASA and JPL officials, and U.S. and foreign scientists.

FOR SALE: 25 hp Sea King outboard motor. Moberg, LY - 6-2747.

FOR SALE: 18-foot skiff, 32-volt bilge pump, Stereophonic portable record player, Costeau Scuba regulator. Gilman, PA 2-5847.

TIROS REPORTS WEATHER DAILY

To the many "bird" watchers at Cape Kennedy, the Delta rocket which roared into the dark Florida sky in the early morning of February 3 was just another Delta, and it was carrying just another TIROS (Television Infrared Observation Satellite) weather satellite.

True, this was the 36th Delta launching, and true, it was the 11th TIROS to be launched. But to weathermen around the world it was the beginning of an operational weather satellite system which meant they would receive every day, on a routine basis, cloud cover pictures around the world that can be used for daily forecasting.

The satellite was called ESSA I (an acronym for Environmental Survey Satellite) after the Department of Commerce's Environmental Science Services Administration.

Operational weather satellites are paid for by the Department of Commerce and launched into orbit by NASA.

ESSA I is one half of a two-satellite operational system. It was followed February 28 with the second half of the system - a spacecraft called ESSA II.

ESSA II sends "live" pictures immediately to relatively inexpensive stations anywhere in the world. ESSA I stores pictures on tape for later processing at a ground station.

Thus, the two-satellite system sends pictures to local forecasters who have APT (Automatic Picture Transmission) equipment and also sends to one central point, the National Weather Satellite Center, Suitland, Maryland, pictures of the entire 200-million-square-mile area of the world every day.

The TIROS program, which began April 1, 1960, started as a research and development program of Goddard Space Flight Center.

With each launching in the program, NASA made improvements to the system so better information of the world's weather could be analyzed by meteorologists.

TIROS II, III, IV and VII carried, in addition to cameras, infrared equipment to measure the earth's heat balance. Meteorologists hope that a better understanding of how much is radiated back into the atmosphere, will give a clue as to why the weather changes.

The earlier TIROS satellites carried cameras which could send pictures to only large tracking stations operated by NASA. But the TIROS VIII, launched December 21, 1963, changed all this.

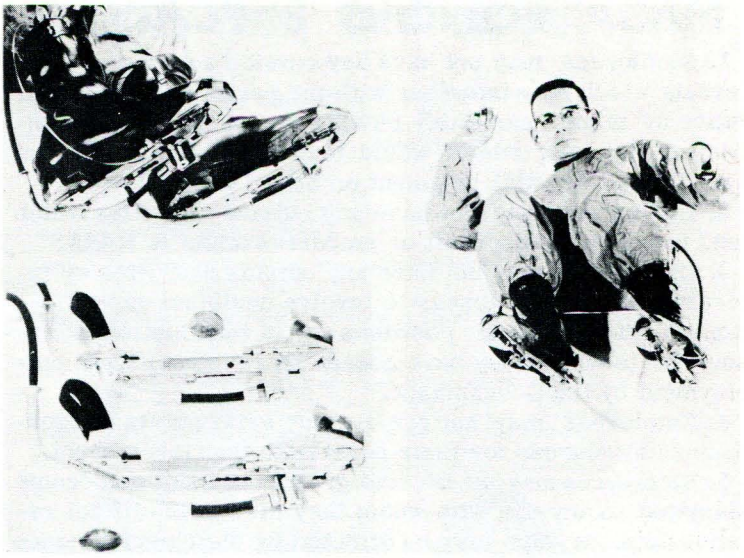
TIROS VIII carried a revolutionary camera called APT (Automatic Picture Transmission). It works on the slow scan principle similar to sending photo facsimiles by radio. As the satellite passes over a ground station which has APT equipment, the satellite sends "live" pictures to the station below.

With the addition of the APT camera, countries which could not afford a weather satellite program, or large ground stations to receive pictures, could receive on a daily basis a first hand look of the cloud conditions within a 1,500-mile radius of the APT station.

The first eight TIROS viewed about 25 percent of the earth, not good enough for meteorology.

Some changes were made to improve this coverage and they were carried on TIROS IX, launched January 22, 1965. This TIROS was the first of the "cartwheel" satellites. By repositioning the cameras, by rolling the satellite through space like a wheel turning on an automobile, and by injecting the satellite into a near polar orbit, meteorologists received 100 percent photo coverage of the world every day.

A lot of changes were made in the TIROS program which led to the first operational weather satellite system called ESSA. While the past in weather satellite research has been bright, the future looks even brighter.



JET SHOES - In future space missions astronaut footwear may be jet propelled. With these jets attached to his shoes, a man walking in space would be able to move more quickly and more surely, according to David F. Thomas Jr., Space Mechanics Division. Able to maneuver with the aid of the jet shoes, the astronaut's hands would be free for repair work on spacecraft on long-duration missions.

GODDARD ESSAY CONTEST OPEN

The National Space Club announced the opening of the Robert H. Goddard Historical Essay Award competition for 1966. This annual nationwide competition, with a $200 prize, is open to any U.S. citizen.

The contest is named in honor of the world rocket pioneer, Dr. Robert H. Goddard, whose scientific and technological contributions - although belatedly recognized in the United States - helped open the door to space.

Essays may treat with any significant aspects of the historical development of rocketry and astronautics and will be judged on their originality and scholarship. They may bring new information to light or may cast a new and different light upon events or individuals influencing rocketry and astronautics in the United States.

Entries should be submitted by November 1 to the Goddard Historical Essay Contest, c/o National Space Club, 1629 K Street, N.W., Washington, D.C. 20006. The winner will be announced at the Dr. Robert H. Goddard Memorial Dinner in March, 1967. He will receive the Goddard Historical Essay Trophy Certificate and a $200 prize.

Winner of the fourth Goddard Historical Essay Trophy for 1965 was Airman Frank H. Winter, USAF. His essay was 19th century rocketry in Denmark and adds new knowledge to the early history of rocket technology. It will be published in The Aerospace Historian (July -966) quarterly of the Air Force Historical Foundation.

Further information concerning the contest may be obtained from the Awards Office, telephone 3503.

Langley Researcher

VOLUME 5, NUMBER 10 LANGLEY RESEARCH CENTER MAY 20, 1966

LANGLEY CENTER NEGOTIATES FOR TWO-GAS SENSOR SYSTEM

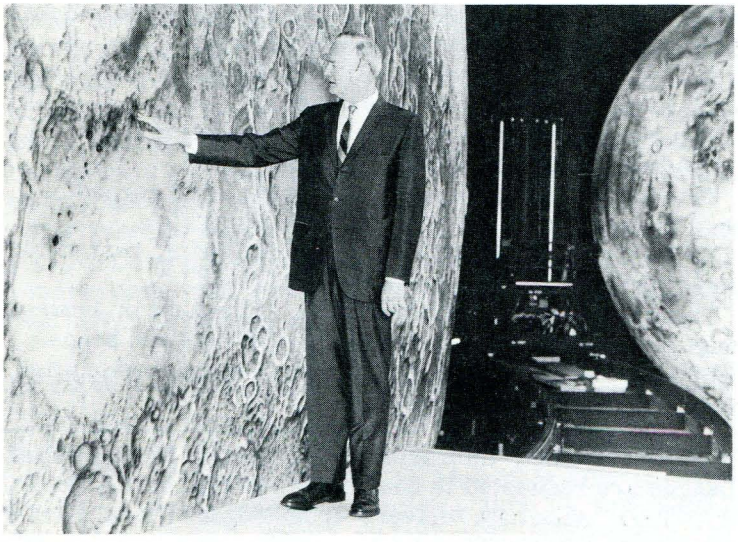
NASA is negotiating with two companies for design, development and fabrication of a two-gas atmosphere sensor system for future manned spacecraft operating for periods of 45 days or longer.

Each of the two companies, SDS Data Systems, Pomona, Calif., and Perkin-Elmer Corp., Norwalk, Conn., will be required to design, develop, test and deliver a flight prototype system to Langley Research Center for further basic ground research. Each Contract is valued at about $300,000.

Manned spacecraft now use a single gas system operating on oxygen. Longer missions lasting 45 days or more may require a two-gas system composed of oxygen and either nitrogen, helium, or another inert gas for crew health and safety.

The sensor systems to be developed will give an accurate measurement of the mixed gases and information on the presence of carbon dioxide and water vapor. By measuring the partial pressure of each component present in the cabin, the system will determine the correct ratio required for controlling the total atmosphere pressure. The system must be capable of operating from the critical 45-day period up to 120 days.

Langley will use the two flight prototypes in a program of basic research. The Center is managing the studies as part of its responsibility for developing technology which will be needed for future space missions which the United States may wish to undertake.



Senator Harry F. Byrd Jr., who was appointed to complete the unexpired term of his father as a member of the U.S. Senate from Virginia, visited the Center on May 16. He visited with Center officials and toured a number of research facilities. In the above picture Senator Byrd is shown inspecting the Lunar map.

ACTIVITIES ASSOCIATION LAUNCHES BOND CAMPAIGN

T. Melvin Butler (seated), Assistant Director for Administration, launched the Center's 25th Anniversary Federal Savings Bonds Campaign, by signing up to increase his present allotment. Looking on are Charles F. Barnett, Personnel Officer, and Humbert E. Rockey, Chairman of the Center's campaign.

The Center's 25th Anniversary Federal Savings Bonds Campaign got underway Monday when members of the Activities Association started contacting members of their districts in an effort to sign up new participants and to encourage employees now buying bonds to increase their present savings.

Humbert E. Rockey, President of the Activities Association and Chairman of the Center effort, stated that the goal this year is 90 percent or better participation by Government personnel.

Rockey pointed out that two $25 bonds will be given to two lucky new subscribers and two $25 bonds will be given to two who increase their present allotments. Winners will be picked in a U.S. Federal Bonds Sweepstakes. A $25 bond will also be awarded to the representative or alternate selected as contributing the most to the success of the campaign.

One of the main attractions of bonds is the new interest rate. Effective December 1, 1965, the interest rate on Series E and H Bonds was increased from 3.75 to 4.15 percent, compounded semiannually, when held to maturity. This means that E. Bonds purchased on or after that date will mature in only 7 years; and that the semiannual interest checks on H Bonds will be larger than before, starting in June 1966.

All older E and H Bonds will earn 4/10 of 1 percent more than before for the remaining period to next maturity, starting with the first interest period of 5 months or more which begins on or after December 1, 1965.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

BOY SCOUT DRIVE NOTICE. . .The co-chairmen of the Boy Scout Reservation and Service Center Development Fund drive request that all solicitors make their final reports not later than Monday, May 23 to Carolyn Wilt, Room 134, Building 1219. In the event that solicitors have been unable to make all their contacts, they should return the cards by the same date. Any staff member who has not been contacted and who wishes to participate in the drive may contact Mrs. Wilt.

BASEBALL GAME. . .The Activities Association will sponsor a one-half price baseball night for all NASA employees and their friends at the Peninsula Memorial Park on Monday, June 6. The game will be between the Peninsula Grays and Kinston. Tickets are fifty cents each - children under 12 will be admitted free. See your District Representative for tickets.

BUSINESS CARDS. . .Employees who ordered business cards through the Activities Association may pick them up at the Activities Building.

EAT EARLY. . .A research meeting will be held at the Center on May 23, 24 and 25. Employees who use the West Area Cafeteria facilities are requested to eat before 12:15 on these days.

HUNT CLUB. . .The James River Hunt, Inc., will present the Annual Spring Horse and Pony Show at the show grounds on Todds Lane tomorrow beginning at 9 a.m. and Sunday beginning at noon. The show is operated in accordance with the American Horse Show Association and the Virginia Horse Show Association rules. Judges for the two-day show will be Mr. and Mrs. L. Clay Camp of Shadwell. Personnel of the Center participating in the show will be Constance Parker, L. T. Parker, Pete Stack, Charlotte Phillips, Ernest Phillips, Ray Kenny and Payne Parker.

THANKS STAFF. . .Charles Shobe, retired employee, wishes to thank all the staff members who donated blood for his son, Charles Jr., who is a patient in the Medical College of Virginia.

TRYOUTS. . .The Newport News Operatic Society announces tryouts for the coming season will be held at the YMCA, 211 32nd St. at 7:30 p.m. on May 31 and June 1. In November the society will present "Die Fledermaus" by Johann Strauss and in the spring of 1967 the presentation will be Verdi's "Il Trovatore." A wide range of voices will be needed to fill the many roles in both shows. Those interested are invited to tryouts.

DIVISION BOND STANDINGS

DIVISION	PERCENTAGE
Office of the Director	82
Research Reports	72
Office, Assistant Dir., Flight Projects	59
Applied Materials and Physics	53
Analysis and Computation	59
Instrument Research	53
Space Mechanics	63
Dynamic Loads	59
Structures Research	72
Aero-Physics	59
Flight Mechanics and Technology	76
Full-Scale Research	60
Office, Engineering and Technical Service	82
Electrical Systems	79
Flight Vehicles and Systems	71
Mechanical Service	72
Plant Maintenance	76
Research Models and Facilities	69
Office, Assistant Director for Administration	72
Administrative Services	64
Fiscal	72
Personnel	86
Photographic	78
Procurement	69
Percentage Bond Participation	67

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 23:

Monday - Consomme julienne, hot roast beef sandwich, fried fantail shrimp, stuffed pepper, western omelette.

Tuesday - Cream of tomato soup, roast turkey with dressing, barbecued spare ribs, liver and onions, macaroni and wieners.

Wednesday - Split green pea soup, baked Smithfield ham, chopped steak, spaghetti with meat sauce, Austrian ravioli.

Thursday - Vegetable-beef soup, grilled steak, chicken pie, ham and noodle casserole, baked hash.

Friday - Clam chowder, roast beef, flounder stuffed with crab meat, broiled perch, hamburger.

The menu for the week of May 30 is as follows:

Monday - H O L I D A Y

Tuesday - Tomato-barley soup, simmered corned beef, veal cutlet, Polish sausage, chili-macaroni.

Wednesday - Minestrone soup, baked ham, beef steak, fried fish, spiced luncheon meat.

Thursday - Chicken-noodle soup, grilled steak, braised beef tips over noodles, fried chicken, franks and beans.

Friday - Clam chowder, Spanish pot roast, broiled fish, fried fish, barbecued sandwich.

NOTICE: Women interested in forming a NASA Softball League are requested to contact Sharon Haythorne, 4861.

WANTED: Alternate drivers from Edgehill to W.A. on 8 shift. Robertson, 4895.

SCIENCE FAIR WINNERS NAMED

Scientists from Federal agencies and professional organizations selected outstanding finalists at the 17th International Science Fair held May 11 in Dallas, Texas. A total of 419 exhibits were viewed during the fair, including representation from the 50 states and a number of foreign countries.

NASA awarded certificates of merit and two-day visits to NASA facilities to six winners for their creative scientific endeavor in space exploration: James Duggan, 17, Alexandria, Va., for "A Study of Cavitation;" Jeffrey S. Harris, 17, Albuquerque, N. Mex., for "Effects of Various Electromagnetic Radiations on Photosynthesis;" H. Grady Rylander III, 18, Austin, Texas, for "Construction of a Metal-Oxide-Surface Field-Effect Transistor;" Edward C. Svendsen, 17, Arlington, Va., for "Derivation of the Maxwell-Lorentz Equations;" Theodore M. Willer, Pine Village, Ind., for "Plasma Jet Studies of Reentry Materials;" and Michael C. Yaksh, 17, Atlanta, Ga., for "Shock Waves - Correlation of Experimental to Ideal Shock Mach Numbers for Different Gases."

Axel T. Mattson, Research Assistant for Manned Space-Projects, Langley Research Center, served as chairman of the NASA judges. Other NASA judges were: Aleck C. Bond, Manned Spacecraft Center; Dr. Richard S. Young and Manley J. Hood, Ames Research Center; Konrad K. Dannenberg, Marshall Space Flight Center; Dr. Albert Boggess III, Goddard Space Flight Center; Dr. Charles M. Goldstein, Lewis Research Center; Raymond R. Corey, Electronics Research Center, and Dr. Aaron Seamster, Everett E. Collin, Dr. Freeman H. Quimby, Carl B. Palmer, and Muriel M. Thorne, NASA Headquarters.

IEEE GROUP MEETS MAY 25

The Hampton Roads Section of the Institute of Electrical and Electronic Engineers will meet on Wednesday, May 25 at Eli's Restaurant, Hampton.

Ralph Jenkins, Head of Instrumentation Branch, Electronics Maintenance Engineering Center, Norfolk, will speak on "Utilization of Mobile Electronic Test Equipment for Training U.S. Naval Fleet Personnel." In the modern Navy of today fast, efficient and thorough maintenance of shipboard electronic equipment is of paramount importance. Jenkins will describe the development and implementation of training programs for Naval fleet electronics maintenance personnel.

The meeting will be preceded by a social period at 6:30 p.m., followed by dinner at 7:15 and the meeting at 8. For reservations call Frank Strehle, 4811, or Frank Senft, 3461, by noon on May 24.

DREYFUS TO GIVE LECTURE

Dr. Stuart Dreyfus, Rand corporation, will present a lecture on "Decision-Making Under Risk or Uncertainty via Dynamic Programming" on May 25 at 10 a.m. in the East Area Projection Room (Building 587). He will discuss the relationship between dynamic programming and the calculus of variations and, also, the application of dynamic programming to the regulation of systems involving randomness or uncertainty, and learning.

Dr. Dreyfus is presently teaching at Harvard University and has published several books on applications of dynamic programming.

Members of the Office of Manned Space Flight, NASA Headquarters, visited the Center on May 6. Top photograph - Dr. Floyd L. Thompson (right), Director, talks with Dr. George E. Mueller, Associate Administrator for Manned Space Flight. Bottom photograph- Charles J. Donlan (right), Associate Director, discusses the Lunar Orbiter Mission with (from left): James C. Elms, Deputy Associate Administrator for MSF: Brig. Gen. Carroll H. Bolinder, Deputy Director for Mission Operations; Edward Z. Gray, Director, Advanced Manned Missions Program; Dr. Thompson, and Dr. Mueller. Standing in the background are R. Donald Smith, Lunar Orbiter Project Office, and Axel T. Mattson, Office of the Associate Director.

FOR SALE: Frigidaire deluxe portable dish washer. Nichols, 595-0023.

FOR SALE: 1965 Valiant, 4-door, stick shift, 9,000 miles. Osborn, 898-2851.

FOR SALE: Large gray formica top dinette table with extra leaf and six chairs upholstered in red plastic - chrome legs. Huffman, 722-8401 after 5 p.m.

KNOW YOUR CREDIT UNION

SEMI-ANNUAL STATEMENTS? How come? Well, the facts are simple. The membership approved the change at the annual meeting held February 21. Mailings will now be made to all members simultaneously reflecting data as of June 30 and December 31.

The majority of those present at the meeting felt that the advantages of the new schedule outweighed the disadvantages. One big plus was the simultaneous mailing of statements. There are many advantages to all members receiving their statements at approximately the same time. The improvement in the timely distribution of educational material is obvious; however, it is the year-end mailing that tips the scale. All members will receive statements as of December 31 early in the following year. Think of the improvement for tax purposes for those members who formerly got year-end figures in March.

Another reason for the shift was economic. With the installation this summer of new and more sophisticated accounting equipment, statements will no longer be an inexpensive by-product of posting accounts. Instead they will be photo copies of the actual ledger cards with processing costs about equal to past postage expense. In other words, two mailings under the new system will cost about the same as four did under the old. Doubling that cost for four mailings in the years to come was not considered feasible.

Despite the fact that the most worthwhile benefits of the new accounting system lie in other areas, it does have certain definite advantages in the matter of statements. One is the fact that since the statement is a photographic reproduction of the entire ledger card, all transactions appearing on its face will be shown. This means that instead of a short 3-month period, statements in the future will reflect transactions over a period of a year or more. Another plus is the ability of the accounting equipment to accumulate information. One column on the ledger card - and hence on the statement - will reflect the interest paid current year-to-date. A great convenience for the income-tax conscious member.

Members may want to obtain information at times other than June 30 and December 31. To insure receipt of this confidential information by the member himself and to keep the workload within acceptable limits, the Board has adopted the following policy:

If there is any question about the correctness of a balance, etc., the member should call or come in at once having available the documentation which indicates the discrepancy. The matter will be settled immediately.

If the member desires one statement between statement dates (i.e. a copy of the ledger card), he is entitled to it. A written request, for record purposes, will be honored.

If a member desires to know his current share/loan balance, he may either come in for the information or write or call. In the last two cases, the data will be mailed the same day. This last insures receipt by the individual entitled to the information.

FOR SALE: 16-foot Lapstrake boat with 22 hp Mercury engine - $125. Mattson, TW 8-3912.

FOR SALE: 1956 Dodge sedan. White, 877-1714.

FOR SALE: 7-room frame rancher. Harris, 826-2081.

FOR SALE: 30- x 42-inch kitchen table with green linen formica top and solid mahogany straight legs - $20. Simmons, 826-5332.

ENGINEERS' CLUB MEETS JUNE 2

Max Schwartz

Max Schwartz, technical director of Bulova Watch Company, Inc., will speak at a meeting of the Engineers' Club of the Virginia Peninsula on June 2 at 8 p.m. at Eli's Restaurant, Hampton.

Schwartz will speak on the revolutionary new Accutron electronic timepiece which was originally developed as a consumer product. The timepiece is now being used as a high-precision timer and clock in space aboard the Telstar II, Pegasus III, LES-4 and other satellites as well as on the manned Gemini 9 spacecraft.

Schwartz has just returned from London where he was the first American to lecture before the British Horological Institute. His subject was the Accutron timepiece.

The timepiece uses a one-inch tuning fork as its frequency standard. The fork hums faintly (between E and F above middle C) as it vibrates 360 times a second, or 31,104,000 times each 24 hours. That's 144 times as fast as the oscillation rate of the balance wheel of a conventional watch movement.

Like all Accutron consumer models, the Gemini 9's 24-hour-dial clock operated on about .000008 watts (eight one-millionths of a watt), and was guaranteed to maintain an average in-use accuracy of plus or minus two seconds a day.

Power is transmitted to the tuning fork through twin electromagnetic coils via a transistorized electronic circuit. A tiny mercury oxide power cell supplies the power requirement, lasting at least one year.

To manufacture the timepiece, Bulova had to design and build more than 100 new tools. These produce miniature parts and components, including index jewels so small that 7,800 of them would be needed to cover the face of a dime. The wire used in the electromagnetic coils is so fine that one pound of it would extend more than 200 miles.

The meeting will be preceded by a social hour at 6 p.m. and dinner at 7. Reservations may be made by calling F. W. Schmidt, CH 5-1714; A. W. Robins, TW 8-5495, or J. E. Robins, 723-0385.

SKYWATCHERS MEET MAY 27

The Skywatchers Astronomy Club will hold a viewing session of the moon and one or more major planets on Friday, May 27 at 7 p.m. and lasting approximately four hours. The session will be held if the sky is clear or if only half clear with broken clouds.

Viewing will be by use of both small and large telescopes located in or near the Observatory Building which is behind the Activities Building. Regardless of the weather, all members are requested to be present because the club has some important matters to discuss.

FOR SALE: 1963 Karmann Khia. Alvarez, 826-2351.

WANTED: Rotator for roof TV antenna. Youngblood, 877-1224.

NASA-DEVELOPED PARAWING TESTED BY ARMY CHUTISTS

A parachute-like flexible wing conceived by a NASA scientist is undergoing a series of manned glide flights by the U.S. Army to evaluate possible applications.

First manned flights of the maneuverable glide-parachute, or parawing, built to specifications provided by Langley Research Center, were made late last month at the Army's John F. Kennedy Center for Special Warfare, Fort Bragg, North Carolina, by personnel of the U.S. Army Parachute Team.

The parawing can be steered over moderate distances to a pin-point landing at a selected site. The device being evaluated is an adaptation of the concept of a flexible wing originated in 1948 by Francis M. Rogallo, Head of Low-Speed Vehicle Branch, Full-Scale Research Division.

Close technical cooperation between Langley Research Center and the U.S. Army Aviation Materiel Laboratories at Fort Eustis has led to extensive Army interest in many sizes, shapes and types of the Rogallo concept extending over many years.

Evaluation of the parawing for personnel use was an outgrowth of recommendations by the Army Aviation Materiel Laboratories (AVLABS) to the Center for Special Warfare, whose commander, Brig. Gen. Joseph Stilwell, witnessed two NASA experimental unmanned flights at Langley early this year.

At the Army's request, NASA research experts on flexible wings visited the Center for Special Warfare early in March to demonstrate in unmanned flight a 24-foot parawing constructed by Langley technicians.

Army interest led to manned flights of parawings built at Langley and others constructed by the Pioneer Parachute Company, Manchester, Conn., and Irving Air Chute Company, Glendale, California, incorporating the Langley design.

The parawings used in the tests do not have any stiffening members or ribs and are roughly triangular when fully opened. These parawings, about 400 square feet in area, can be folded, packed, and deployed like a parachute.

More than two dozen manned flights of various types have been completed by members of the Army Parachute Team responsible for the evaluations.

NASA and AVLABS engineers and observers have been present at the flights and have assisted with technical consultation.

In flight, the parawing is able to develop aerodynamic lift which gives it a gliding and maneuvering capability. Conventional parachutes are purely drag devices and do not develop any lift. (The aerodynamic lift force operates perpendicular to the flight path.)

Scientists working with Rogallo at Langley have been active in parawing research for many years and a number of design variations suited to special applications have evolved from their work.

In recognition of their contribution to the science of aeronautics, Rogallo and his wife, Gertrude, received a special award from NASA in July 1963 for the concept and development of the flexible wing principle. The inventor's wife is a co-holder of original private patents on the concept, which were made available by the inventors in 1963 for Government use without license or royalty fee.

The above photograph was taken at a luncheon honoring Major John Samos on the occasion of his retirement from the U.S. Air Force. The affair was sponsored jointly by friends at Langley Research Center and staff members of the AFSC Liaison Office. During the luncheon, Major Samos was awarded the Air Force Commendation Medal for "Meritorious Service as Chief, AFSC Scientific and Technology Liaison Office from August 1963 through April 1966." The citation covered outstanding professional competence, initiative, good judgment, and devotion to duty. Major Samos will be replaced as Chief, AFSC Liaison Office by Major Theophilos Andrada, USAF, who comes to Langley from the Aeronautical Research Laboratory, Wright Patterson Air Force Base. Show above are (from left): Major Samos, Charles J. Donlan, Associate Director of Langley; T. A. Harris, Research Assistant to the Associate Director, who acted as master-of-ceremonies; Mrs. Samos, and Nicholas G. Vretakis, AFSCLO Assistant Chief and Scientific Adviser.

FIVE RECEIVE HONORARY AWARDS

Five employees recently received Honorary Suggestion Awards under the Center's Incentive Awards Program. The award is in the form of a certificate which becomes a permanent part of the employee's personnel record. It gives recognition to an individual who has made a suggestion that has been accepted and put into use. The Honorary Suggestion Award is presented when a cash award is inappropriate because the suggestion is related to the employee's regular duties.

Cadd T. Moore Jr., Scout Project Office, was honored for his suggestion concerning "Personnel Safety."

Thomas G. Meador Jr., Mechanical Service Division, received an award for his "Shield-lamp."

Kazimierz R. Czarnecki, Full-Scale Research Division, received an award for suggesting a "Preparation of Memorandum (Standard Form)."

Duval A. Hudson, Planning Control Unit, suggested a "Work Form."

George T. King Jr., Mechanical Service Division, was honored for a "Drill Motor."

FOR SALE: Girl's large bicycle - $20. Kulp, PA 3-4553.

FOR SALE: 1961 Volkswagon - 2-door sedan, 33,000 miles. Myers, CH 4-1062.

WANTED: Ride from Tuckahoe to W.A. on 8 shift. Fetner, 3472.

RATE CHANGE FOR NASA LIFE INSURANCE EFFECTIVE JULY 1

The NASA Employee's Benefit Association has announced that considerations of prudence and sound financing require an upward adjustment in the rates charged to employees under the NEBA group life insurance program. Effective July 1, 1966 the premium charged to employees will be changed from the present $1.10 per thousand dollars of insurance per quarter to $1.30 per thousand.

The Association pointed out that, over its fourteen-year history, rates charged to employees have been constantly reduced from the initial charge of $2.20 per thousand down to the present $1.10, and that this is the first increase during that period. Even with the change, the new rate is still $0.64 per thousand under the standard rates established by the underwriters association, and $0.25 per thousand under the rate actually charged by the carrier, the Home Life Insurance Company of New York.

The necessity for the change is attributed in part to an increase in the average age of the group, which has resulted in an increase in the rate charged to the Association by the carrier, and in part to several years of higher than usual claims experience, which has substantially reduced reserves held by the Association for the purpose of stabilizing rates charged to employees. The new rate will have the effect of bringing the rate charged to employees in line with claims experience in recent years.

The Association also announced that returns from the survey of employee reaction to a proposal to offer insurance coverage to family members indicates a wide spread interest among employees in this form of protection. Negotiations will be conducted with the carrier to amend the contract to make this feature available as soon as practicable.

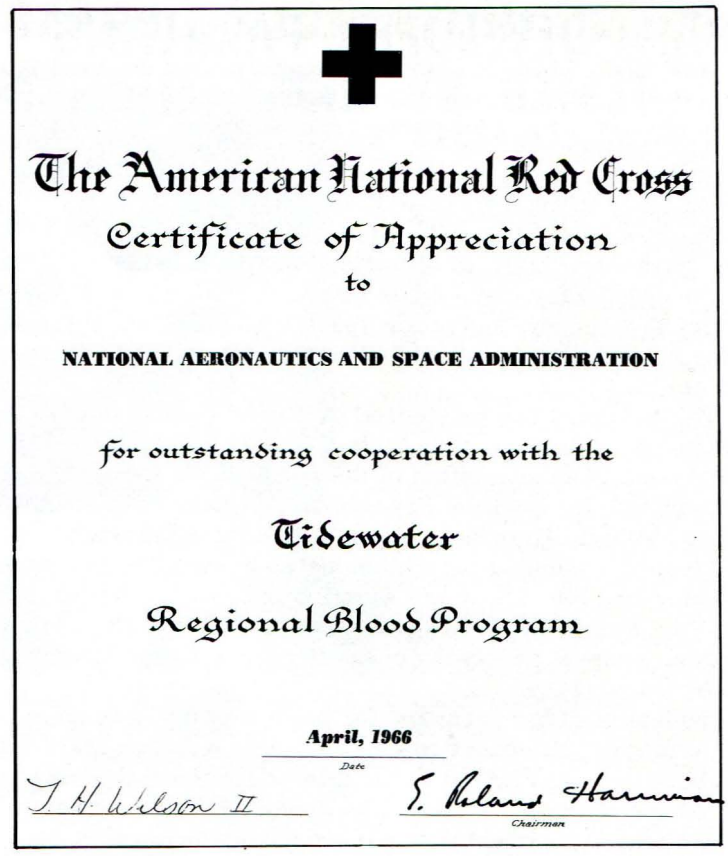
MINTA MARTIN LECTURE MAY 27

Dr. Arthur E. Bryson Jr., Jerome Clarke Hunsaker Professor of Aeronautical Engineering, Massachusetts Institute of Technology, will present the Minta Martin Lecture on "Applications of Optimal Control Theory in Aerospace Engineering" on Friday, May 27 at 9 a.m. in the East Area Projection Room, Building 587.

The lecture will be divided into four parts: (1) design of flight paths, (2) design of deterministic guidance and control logic, (3) design of data-processing logic, and (4) design of Stochastic guidance and control logic. A brief survey of what can be done in each of these areas with currently available techniques and computers will be presented along with one or two examples.

Dr. Dryson received his B.S. degree in Aeronautical Engineering from Iowa State University. In 1948 he started graduate work at the California Institute of Technology where he received his M.S. degree in 1949 and his Ph.D. in 1951.

He joined the Harvard faculty in 1953 as assistant professor. He became associate professor in 1956 and professor in 1961. He and his students have done research on the diffraction of shock waves, missile dynamics, magnetohydrodynamics and transport properties of high temperature gases. In recent years his research interest has shifted toward optimal programming and control, particularly as it relates to the design of trajectories and the guidance of aerospace vehicles.



The American National Red Cross

Certificate of Appreciation

to

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

for outstanding cooperation with the

Tidewater

Regional Blood Program

April, 1966

Date

T. H. Wilson II

E. Roland Harriman

Chairman

The above Certificate of Appreciation has been awarded the Langley Research Center by the American Red Cross "for outstanding cooperation with the Tidewater Regional Blood Program during the year 1965." Personnel of the Center contributed 875 pints of blood during five bloodmobile visits to the Center, an average of 175 pints per visit. James C. Tingle, Head of Employee Services Branch, coordinates the visits of the bloodmobile and he stated that new donors are needed to keep up this record of community service which has become a tradition at Langley. Staff members interested in becoming donors are asked to contact Tingle at extension 2605.

AVEN NAMED CONSULTANT

Alex P. Aven, Oklahoma City, Okla., has joined NASA as a consultant to the Administrator on management.

Aven will continue to operate his own petroleum consulting firm in Oklahoma City, providing his services to Webb as required. A principal effort will be devoted to the consideration of the proprietary aspects of NASA's contractual relationships, with particular regard to the operation of the patent, license and waiver programs.

Aven holds a bachelor's degree from the University of Oklahoma and a master's degree in business from Harvard University. He has been associated with the oil and gas business most of his career, with military experience in the Air Force Systems Command (formerly ARDC).

WANTED: Alternate driver from Ivy Farms to W.A. on 8 shift. Davis, 3572.

WANTED: Truck for hay ride for about 25 people. Nelson, 4566.

FOR SALE: 1962 Pontiac Catalina convertible - will take trade in. Holliday, 851-2360.

WANTED: Used piano. Maahs, 838-0643.

ASTRONAUTS HELP DEVELOP TOOL KIT FOR MOON TRIP

What tools will man need in order to find out what the moon is made of? And will the astronauts be able to haul the necessary tool load to the lunar surface?

The answers are being forged by a group of some 65 scientists, including three scientist-astronauts and a fellow astronaut, according to a report issued by NASA.

The astronauts and their scientists colleagues met last summer at Falmouth, Mass., to recommend a feasible scientific program of lunar exploration for NASA. Their report has recently been published.

Among those attending the conference were Astronaut Walter Cunningham and Scientist-Astronauts Dr. Harrison H. Schmitt and Dr. Frank C. Michel. A third scientist-astronaut, Dr. Owen K. Garriott, did not attend the meeting but aided in its studies.

In their report, the conferees listed two main priorities for manned lunar missions:

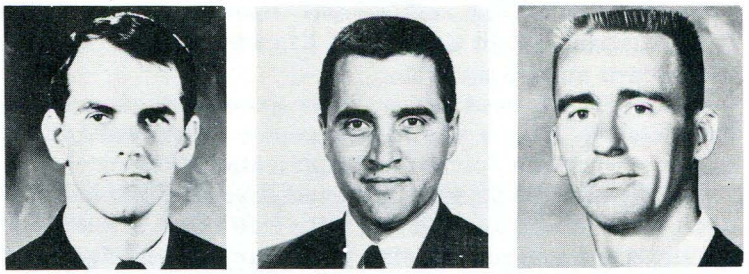
(1) To collect and bring back to earth the greatest number and variety possible of the surface and subsurface samples; and

(2) To establish on the moon the Apollo Lunar Surface Experiment Package (ALSEP) so that the experiments will continue and the data obtained from them will be transmitted back to earth after the astronauts leave the moon.

The tools and materials required to meet these priorities must satisfy weight and space limitations of the Lunar Excursion Module (LEM) which will carry two astronauts to the lunar surface from the Apollo spacecraft.

The package the scientists recommended is under 150 pounds in total weight. Such a kit was developed by the Martin Company, Baltimore, and is being evaluated at the Manned Spacecraft Center in Houston.

MOON DRILL - A battery powered lunar core drill, part of the prototype geology tool box that Project Apollo astronauts will take to the moon, is given a test. The tool kit is under test at Manned Spacecraft Center in Houston.



Three NASA astronauts attended a conference of 65 scientists to advise the space agency on a sound, feasible program to explore the moon. They are (from left): Dr. Frank C. Michel, Dr. Harrison H. Schmitt, both scientist-astronauts, and Walter Cunningham. Selection of a tentative tool kit for lunar exploring was one result of the conference.

The tools included a battery-powered drill, a dust-scoop, several types of surveying instruments and range-finders, a sample retriever for picking up very small and hard-to-reach rock specimens, and a beam-type scale. The tools are hung in a compact two-cubic foot container easily stored in the LEM.

The container is designed so that is may be turned inside out on its hinges so that the former exterior may be used as the interior to hold lunar samples.

The amount of lunar material that can be carried back to the Apollo spacecraft within the LEM is limited to 80 pounds; and the scale, which can weigh rocks from 5 to 65 pounds, provides insurance that the baggage limit will not be exceeded.

The Martin kit appears promising but further refinements will be made and final tool development probably obtained when NASA's Surveyor is soft landed on the moon.

Science-Astronauts Schmitt and Michel are working on the evaluation of the kit and its contents. Schmitt is a member of the working group on geology and Michel, a physicist, is a member of the lunar atmosphere working group.

Dr. Garriott is a member of the group making atmosphere studies.

JOHN GLENN TOURS EUROPE

John H. Glenn, the first American astronaut to orbit the Earth, attended the annual meeting of the Transatlantic Council, Boy Scouts of America, in Garmisch, Germany, May 6 and 7, and participated in ceremonies marking German-American Friendship Week.

While in Europe, Glenn will respond to a number of requests to appear before educational, scientific and technical groups. As a NASA consultant, he will speak on the U.S. space program.

In addition to Germany and England, which he visited last October, Glenn will travel to Sweden, Finland, Norway, Denmark, Belgium, France and Switzerland. On Memorial Day, he will participate in services at the American Military Cemetery in Luxembourg.

FOR SALE: 16-foot Glaspar Avalon, 40 hp Johnson motor with electric starter and Cox Tilt trailer - $800. Hunt, 245-2575.

CLARK NAMED GODDARD DIRECTOR

Dr. John F. Clark was recently named Director of the Goddard Space Flight Center, He has been Acting Director of Goddard since July 1965.

To succeed Clark at his previous Headquarters position, Dr. John E. Naugle was named Deputy Associate Administrator for Space Science and Applications (Science).

Jesse L. Mitchell was appointed Director, Physics and Astronomy Programs of the Office of Space Science and Applications and Dr. Henry J. Smith was named Deputy Director.

Dr. Naugle and Mitchell have been acting in their positions since last year.

Prior to coming to NASA in 1958, Dr. Clark was head of the Atmospheric Electricity Branch of the Naval Research Laboratory where he managed a number of rocket programs to study various atmospheric phenomena. At NASA, he served in the Office of Space Sciences where he was appointed Director of Physics and Astronomy Programs in 1961 and as Director of Sciences for OSSA in 1963.

Dr. Clark was born in Reading, Pa., and received his B.S. degree from Lehigh University in 1942, his M.S. from George Washington University in 1946 and his Ph.D. in Physics from the University of Maryland in 1956.

Dr. Naugle came to the Goddard Center in 1959 from the Convair Scientific Research Laboratory, San Diego, Calif. In 1960 he came to NASA Headquarters where he served for a year as Chief of Physics and in 1961 was appointed Director of Physics and Astronomy Programs.

Dr. Naugle was born in Belle Fourche, South Dakota, and earned his B.S., M.S., and Ph.D. degrees in Physics from the University of Minnesota.

Mitchell had been Deputy Director of Physics and Astronomy Programs for three years before his present appointment. He joined the Langley Research Center in 1947 and in 1959 became Technical Assistant to the President's Special Assistant for Science and Technology. He came to NASA Headquarters in 1960 as Assistant Director of Physics and Astronomy Programs.

Mitchell was born in Birmingham, Ala., and received his B.S. degree from the Alabama Polytechnic Institute in 1947.

Dr. Smith has been serving as Chief of Solar Physics of Physics and Astronomy Programs since 1963. An astronomer, Dr. Smith superintended Harvard Observatory's Boyden Station, South Africa, from 1952 to 1954 and was Astronomer in charge of the Harvard Observatory solar project in New Mexico from 1955 to 1962. He then served as Chief of the Sun-Earth Relations Section of the National Bureau of Standards Central Radio Propagation Division in Boulder, Colo., prior to joining NASA.

Dr. Smith was born in Boston and earned his Ph.D. degree from Harvard University in 1955.

FOR SALE: 3-bedroom brick rancher in Denbigh. Tannery, 877-1208.

FOR RENT: 3-room and bath unfurnished apartment - all utilities furnished. Keffer, 723-7540.

FOR SALE: Gould impeller water pump. Sunday, 898-5884.

WANTED: Driving combination from Morrison to W.A. on 8 shift. Stroud, 4891.

FOR SALE: 1958 Plymouth station wagon. Henley, 723-4767.

OFFICIAL TEST FORM

THE NEW 1966 NATIONAL DRIVERS TEST

TUESDAY, MAY 24TH, 10-11 P.M. EDT ON THE CBS TELEVISION NETWORK

Over 50 million people watched the first National Drivers Test last year.

Now you can try to improve your first-time score and, more importantly, your driving skills.

Compare your answers with those of a studio audience of motorists, with friends' and family scores, and with correct answers provided by expert drivers and consultants.

Be sure not to miss the new 1966 National Drivers Test on May 24th. Make a note of the date on your calendar today. That's *May 24th, the Tuesday before the Memorial Day Weekend.* (Consult your newspaper or TV Guide for local time and channel number.)

Fill in blanks with T or F (True or False), Y or N (Yes or No), A, B, C or D (multiple choice), or appropriate word. Opinion questions are not scored.

1.	☐	13.	☐
2.	☐	14.	☐
3.	☐	15.	☐
4.	☐	16.	☐
5.	☐	17.	☐
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10.	☐	22.	☐
11.	☐	23.	☐
12.	☐	24.	☐
25.	☐	38.	☐
26.	☐	39.	☐
27.	☐	40.	☐
28.	☐	41.	☐
29.	☐	42.	☐
30.	☐	43.	☐
31.	☐	44.	☐
32.	☐	45.	☐
33.	☐	46.	☐
34.	☐	47.	☐
35.	☐	48.	☐
36.	☐	49.	☐
37.	☐	50.	☐

OPINION (NO SCORE)

1.
2.
3.
4.
5.

TOTAL SCORE ☐

The new 1966 National Drivers Test is produced by CBS News, with the cooperation of the National Safety Council, presented by the Shell Oil Company.

NASA BOWLING LEAGUES

Hampton Scientific continued to lead Group A in the NASA Tenpin League by a wide margin of 97.5 wins and 30.5 losses. Top bowlers for the week were Bill McMillan with a 229 game and 582 set.

HMS leads Group B with 88 wins and 40 losses. High scores for the week were rolled by Don Booth with a 254 game and 685 set and Irene McLain with a 265 game and 659 set.

GROUP A

Hampton Scien.	97.5	30.5	Phantoms	57.5	70.5
Filter Queen	75	53	Odd Balls	57.5	70.5
Flyers	74	54	Unitary	56.5	71.5
Mexicali	69.5	58.5	Hornets	47.5	80.5
Alley Cats	67.5	60.5	Short Circuits	37.5	90.5

GROUP B

HMS	88	40	Latecomers	62	66
ACD	81.5	46.5	Dillys	59	69
Greenhorns	79	49	C-Scouts	57	71
RPM	70.5	57.5	Sparkys	56	72
Trackers	70	58	Hits & Misses	52	76
Mets	66	62	Bowling Belles	50	78
Gliders	64	64	Chargers	41	87

FOR RENT: Mountain vacation cabin in Warm Springs, Va. Accommodates 8, completely furnished including linens. Two private ponds with fishing privileges. Weekly rates - $75. Yates, PA 2-7753.

FOR SALE: Electric L & H wall oven - $25; two burners with stand - $20. Coltrane, 851-1266.

FOR RENT: 2-bedroom house with refrigerator and stove, near East Gate. Brissenden, LY 6-5302.

WANTED: Driving combination from Windsor Great Park to E.A. on 8 shift. Hunter, 2675.

FOR SALE: 3-bedroom brick rancher in Denbigh - has 1-1/2 baths, family room and fireplace. Snyder, 877-3426.

EPH

Langley Researcher

VOLUME 5, NUMBER 11 LANGLEY RESEARCH CENTER JUNE 3, 1966

STRUHAR ELECTED PRESIDENT OF ACCOUNTANTS ASSOCIATION

Joseph R. Struhar

Joseph R. Struhar, Assistant Head of Accounting Branch, Fiscal Division, has been elected president of the Virginia Peninsula Chapter of the Federal Government Accountants Association. The installation of new officers will be held June 8.

The Virginia chapter was founded in 1960. The FGAA has 43 chapters all over the world including Canal Zone, Frankfurt, Hawaii, Paris, and Tokyo. For the past 15 years they have sponsored a symposium annually which is recognized as an outstanding event and praised by the President of the United States and the Civil Service Commission.

Membership in the association is open to all professional fiscal and budget employees of the Federal Government.

Edward A. Howe, Chief of Fiscal Division, served as

(Continued on page 8)

General Marvin Demler (second from right), Commander of Research and Technology Division, Bolling Air Force Base, Washington, D.C., prepares to cut the ribbon at the dedication ceremonies of the new Air Force Systems Command Liaison Office which is located in the southwest end of the 16-Foot Transonic Tunnels Building. Attending the dedication are (from left): Major John Samos, who retired last month as Chief, AFSC Liaison Office; Nicholas G. Vretakis, Acting Chief, Liaison Office; Dr. Floyd L. Thompson, Director of Langley Center, and Colonel Harry Sanders, Commander, Langley Air Force Base.

AMERICAN HELICOPTER SOCIETY PRESENTS FELLOWSHIP TO REEDER

John P. Reeder

The American Helicopter Society conferred a Honorary Fellowship on John P. Reeder, Assistant Chief of the Flight Mechanics and Technology Division. The Fellowship included a certificate and a life membership in the Society. Honorary Fellowships are presented to persons who have made notable and meritorious contributions to the advancement of rotary-wing aeronautics.

Reeder was born May 27, 1916 in Houghton, Michigan. He graduated from Stambaugh (Michigan) High School and earned a Bachelor of Science degree in Aeronautical Engineering in 1938 from the University of Michigan. While in college he joined the University of Michigan glider club and learned to fly a glider.

After graduation from the university, he joined the Langley staff in June 1938 as a Junior Aeronautical Engineer assigned to the Full-Scale Wind Tunnel where he participated in conducting wind-tunnel tests with single and multi-engine airplanes and full-scale models until 1942. During this period, he took flying lessons at his own expense at a local airport, qualifying for a private pilot's license in August 1939.

When World War II began, Reeder was one of several engineers selected for test pilot training with the former NACA. He transferred to the Pilots Section of Flight Research Division in October 1942. He completed helicopter flight training two years later at the U.S. Coast Guard School at Floyd Bennett Naval Air Station. In August 1952, Reeder was selected to head Flight Operations Branch, a position he still holds in addition to Assistant Chief of the Flight Mechanics and Technology Division.

Appointed to his present position in July 1963, Reeder has direct responsibility for guiding flight research dealing with V/STOL, helicopters and a wide variety of other aircraft types.

Reeder is a veteran pilot and an authority on helicopters and V/STOL aircraft. He has done extensive work in aircraft stability and control research from low speed into the transonic range. He has had an active part in the study of helicopter handling qualities and in the definition of satisfactory characteristics. His flight experiences and evaluation procedures form a large part of the current military specifications for helicopter flying and groun

(Continued on page 5)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

NEWLYWEDS. . .Edwin W. Zellers, Electrical Systems Division, took his final vows with Donna Yvonne Blalock, Newport News, on May 7 at the Hilton Presbyterian Church. Wedding bells rang on April 30 when Linda Lucado, Fiscal Division, took her final vows with Robert J. Swaim, Electrical Systems Division.

BABY DERBY. . .Announcing the arrival of a daughter, Barabara Ellen, on April 20 is John Camp, Applied Materials and Physics Division. The new heiress weighed eight pounds, thirteen ounces. . .Word has been received at the Center that Sarah Coley, Personnel Records, became the mother of a ten pound, four ounce daughter on May 6. The new arrival was named Susan Leigh. . .Announcing the birth of a daughter, Kelly Jo, on May 7 are Amelia, Structures Research, and George Steinmetz, Analysis and Computation Division. . .Weighing in at six pounds, four ounces on April 26 was Robin Elizabeth, daughter of Richard A. Russell, Lunar Orbiter Project Office.

NOTE OF THANKS. . .Melville F. Kiefer, Research Reports Division, wishes to thank his many friends and coworkers for their thoughtful expressions during his recent illness.

ENGAGEMENTS. . .Dan Cupid scored a victory when Benson Dexter, Structures Research Division, and Cornelia Bowles, formerly of Structures, announced their engagement. No date has been announced for the wedding. . .Making plans for a July wedding is Joan Hixon, formerly of Langley and now assigned to Kennedy Space Center. She is engaged to Joe Carrol McMenamy, Cape Kennedy. . . Sporting a new sparkler on the third finger left hand is Helen L. Lamberth, Stenographic Services. She is engaged to McRee G. Hazzard, Mattaponi. No date has been announced for the wedding.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on June 14 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on June 15 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, June 7 at 7 p.m. at the Central Labor Union Hall, Newport News.

EMPLOYEE HONORED. . .Congratulations to Edgar Kersey, Applied Materials and Physics Division, on being selected by the Hampton Roads Jaycees as their Outstanding New Member for the Year 1965-66. Kersey won out recently on the regional level, which involved the 12 Jaycee chapters in the Tidewater Area, and qualified to compete on the state level.

SHIPYARD APPRENTICES. . .Center employees who are graduates of the Apprentice School of the Newport News Shipbuilding and Dry Dock Company and who are interested in joining the group's alumni association are requested to call W. F. Haskins, LY 6-3965. The association will hold its annual crab feast at the Original Club on June 17 from 5:30 p.m. to 8:30 p.m. Only members may attend and admission will be $1.25 per person.

FOR RENT: 4-room apartment located one block from VPI, furnished or unfurnished. Schuchert, 723-2458.
WANTED: Ride from Madison Ave., Newport News, to W.A. on 8 shift. Ben Parker, 3398.
LOST: Four personal aircraft flight log books of John P. Reeder. Anyone knowing the whereabouts of these logs is requested to call Reeder, 4507.

CAFETERIA OPERATIONS CITED

The NASA Exchange Cafeteria operation at the Langley Research Center is comprised of two units - one located in Building 587, East Area, and one located in Building 1213, West Area. The operation is maintained for the purpose of serving food and certain other items to employees of the Center and other authorized personnel. It is a non-profit operation and is allowed to generate funds only as necessary to cover operating expenses and the purchase of needed supplies and equipment.

The Cafeterias operate under the control of the Exchange Council and since December 1961 have been managed by Tracy Phelps. The operation is audited both quarterly and annually by representatives of the Fiscal Division and by certified public accountants.

The continuing high cost of food items purchased for use in the preparation of meals and of items that are purchased "ready-to-serve," plus the establishment of a minimum wage for food service workers here at the Center that is "in-line" with the minimum wage now in effect for food service workers in other departments of the Government, necessitate some increase in the selling price of items served in the cafeterias in order to permit the continued serving of only high-quality food items in ample portions.

The concerted efforts of cafeteria personnel will be continued to maintain the highest possible degree of efficiency and economy in order to provide for the continued service of high-quality food items at minimum cost and, at the same time, keep the cafeteria operation on a sound financial basis.

EMPLOYEE CONDUCT ON THE JOB

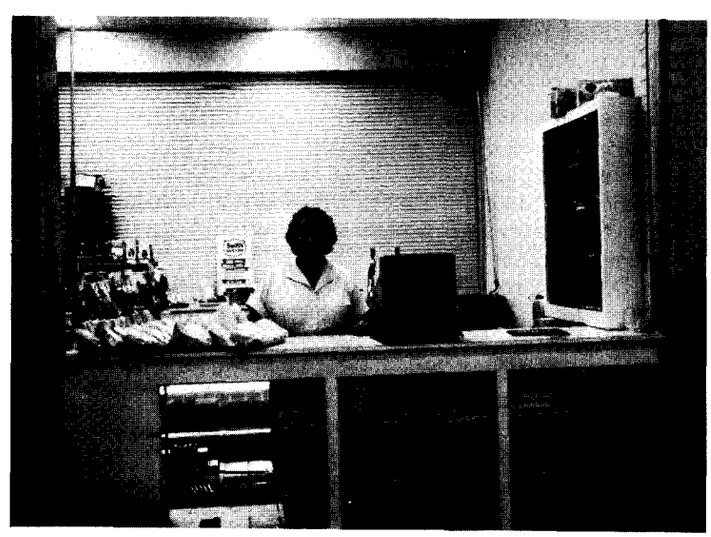
The manner in which an employee conducts himself on the job is frequently relevant to the proper, economical and efficient accomplishment of his official duties and responsibilities. In addition, those employees who are in direct contact with the public play a most significant role in determining the public's attitude toward the Federal service, both by the manner in which they serve the public and the way in which they conduct themselves generally in the view of the public.

Employees are expected during duty hours consistently to apply themselves to the duties of their positions and to give full value in services rendered to NASA and the public. Idleness, wasting time, or failure to be at work on assigned tasks will not be tolerated. Instructions of supervisors must be carried out promptly or within established deadlines insofar as possible.

Employees may not use Federal property of any kind for other than officially approved activities. They also have a positive responsibility to protect and conserve all Federal property, including equipment and supplies, which is entrusted or issued to them.

Generally speaking, employees of the Federal Government are expected not only to be efficient, but also to conduct themselves in a manner which will reflect favorably on their employer. Although the Government does not want to circumscribe the private lives of its employees, it does expect them to be honest, reliable, trustworthy, and of good character and reputation. They are expected to be loyal to the Government and to NASA.

FOR SALE: 1966 Honda sport 50 - best offer over $200. Kyle, 838-0041.



For the past few months the West Cafeteria has been undergoing a face lifting. Top photo shows the new entrance located at the rear of Building 1213. Center photo shows the changes that have been made in the two food serving lines. The bottom photo shows the new snack bar which is located just inside the entrance to the cafeteria.

TWO PIONEER STATIONS CLOSING

Two pioneer tracking and telemetry stations of NASA will be closed in the near future because of technical progress in space communications.

The station at East Grand Forks, Minn. will cease operation June 30, while the Blossom Point, Md. Station will close September 30. Advances in the state of the art of tracking and orbit determination have made them no longer essential in support of NASA's scientific satellites.

Both stations were in use in the early days of space exploration. The Blossom Point station was the first tracking station established by the United States for Project Vanguard and served as a prototype for all Vanguard stations set up for the International Geophysical Year, 1957-58. It has tracked every unmanned earth-orbiting NASA satellite launched since then.

The East Grand Forks station is a veteran of almost five years of space tracking.

These stations were among several located in the western hemisphere to receive signals from spacecraft passing overhead in the near-equatorial and near-polar orbital paths of the early unmanned space flights.

Signals were received on a fan-shaped antenna pattern, which made it possible to determine the spacecraft's position with considerable accuracy. Measurements were transmitted to computers located at Goddard Space Flight Center.

The Vanguard stations supported the first U.S. satellite, Explorer I, launched January 31, 1958, which discovered the Van Allen radiation belt. Next to be served was Vanguard I, launched March 17, 1958, the satellite which determined that the Earth was slightly pear shaped. Both satellites are still in orbit.

After NASA was created by Congress in October 1958, the Vanguard stations became the original Minitrack Network which later developed into the versatile and highly complex STADAN for tracking, commanding and communicating with NASA's unmanned scientific satellites.

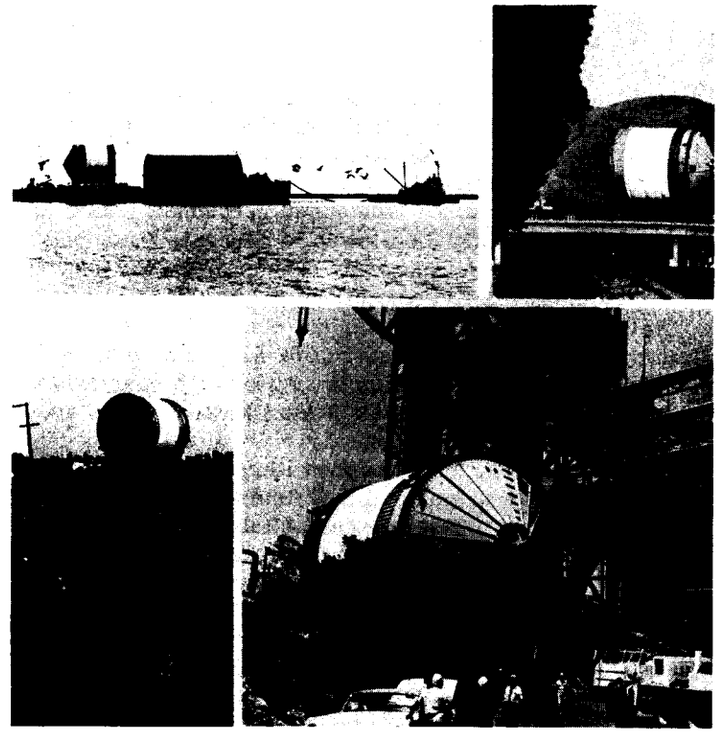
The large unmanned satellites now being launched, such as Nimbus, Orbiting Geophysical Observatory (OGO) and Orbiting Astronomical Observatory (OAO), follow orbital paths which are better served by stations in other areas than the sites at East Grand Forks and Blossom Point.

These second-generation stations are constructed with advanced tracking equipment such as NASA's Range and Range Rate and with antennas large enough to handle the many telemetering channels on which the multi-experiment modern satellite now transmits.

NASA will require approximately three months beyond closing date to dismantle the East Grand Forks station. The station, located on farm land seven miles north of East Grand Forks consists of radio interferometer antennas and other supporting electronic equipment housed in three small prefabricated buildings. Some equipment will be sent to other NASA stations.

The Blossom Point station, located south of Washington, D.C., along the Potomac River, will become part of the STADAN Network Test and Training Facility to be operational at Goddard by January 1, 1967. This facility will be used to test equipment, modes and procedures for STADAN and to train personnel to operate the STADAN stations.

--Buy U.S. Savings Bonds--



BY LAND AND SEA. The journey of a large rocket part is a test of skill and patience. This test tank, simulating the S-II second stage of NASA's Saturn V rocket, traveled by ocean barge from the North American Aviation plant at Seal Beach, California, 60 miles northward to Port Hueneme, then over 50 miles of California roads and freeways into the Rocketdyne mountain testing site at Santa Susana. The journey of the 45-foot long tank was an opportunity to work out the wrinkles for the later voyage of the larger and heavier S-II stage. The tank is a replica of the critical inner part of the S-II where the liquid hydrogen and the liquid oxygen tanks share a common wall. Upon its arrival at the field laboratory (photo lower right), tests are made on the the tank to certify its structural design.

NASA TO NEGOTIATE FOR COMPUTERS

Control Data Corporation and International Business Machines Corporation have been selected by NASA for competitive negotiations leading to a contract to furnish a large-scale digital computer complex for the Langley Research Center.

Value of the computers and associated equipment in the overall complex to be purchased is expected to exceed $15 million.

The computer complex will increase Langley's capability and effectiveness in the conduct of advanced research. It calls for using the computers with a wide variety of simulators to provide the technology required for the success of important national programs in aeronautics and space.

This includes such Langley research simulators as those used for rendezvous and docking in Earth and lunar orbit, landing on the Moon, and problems of air traffic control associated with future supersonic commercial transports now being designed.

The procurement, based on a study of Langley computer requirements for the next six years, will provide for the orderly replacement of most existing electronic computers at the Center.

Richard R. Heldenfels (left), Chief of Structures Research Division, presents a certificate and check for $45 to Andrew L. Wang for his suggestion concerning a directional light reflection control. The award was made under the NASA Incentive Awards Program.

NEW TRANSISTOR DEVELOPED

Space scientists have developed a new transistor which may simplify greatly the process for manufacturing microelectronic printed circuits.

The new development is the result of joint research by electronic engineers from NASA and the Radio Corporation of America, and NASA is negotiating with RCA for continued research on the new process. The contract will amount to about $35,000.

The new principle is being applied to the processing of thick film microelectronic devices in which the printed circuits are prepared by printing patterns of paste or slurry through fine screens onto a ceramic wafer.

Thick film technology has been used for a number of years, but its advancement has been hampered because some components, including transistors, had to be inserted by hand. With the new process, the transistor is printed onto the wafer simultaneously with the other components - resistors and capacitors.

NASA is pursuing advances in thick film technology because three-fourths of space electronic systems will be miniaturized within several years.

One major advantage of the thick film technique is its high volume use and relatively low cost. It is also a flexible technique in which a variety of patterns can be made with little variation in the process.

As long as resistance within the circuit is low, thick film circuits can be made very rapidly. The process has the further advantage of permitting a number of connections to be formed at one time, eliminating the troublesome one-at-a-time welded or soldered connections.

The research contract with RCA will be managed by Langley Research Center. The work will be done at the RCA plant, Somerville, N.J., under the direction of the Defense Microelectronics activity.

FOR SALE: Sunfish sailboat with sails and fittings - 80% completed - $75; also A Model Ford parts. Garrison, 826-7081.

AMERICAN HELICOPTER SOCIETY

(Continued from page 1)

handling qualities. He has flown approximately 4800 hours in 186 different types of aircraft. Of these, 28 have been jet airplane types, 50 have been rotary wing types and 7 have been VTOL airplane types.

Typical of the flight research that Reeder has conducted as an aeronautical research pilot have been investigations of handling qualities and aerodynamic loads on such aircraft as the Air Force P-47 and P-57 fighters, the Navy's F6F Hellcat and F8F Bearcat fighters, the B-45 jet bomber, the Bell L-39 airplane (a P-63 modified by the Navy) for the first extensive studies of swept-back wings, studies of F-86 and F8U-1 transonic flying qualities, buffeting and loads and tests of supersonic propellers on the XF-886 jet research airplane. He was the second pilot in the nation to fly the VERTOL-76 tilt-wing and the Doak VZ-4 tilt-duct vertical take-off and landing aircraft. He has flown 3 types of jet powered VTOL aircraft, including two European prototypes (Short SC-1 and Hawker P-1127) as well as a variety of helicopters.

As another example of NASA flight research, Langley pilots fly delicately instrumented experimental aircraft and simulators to simulate spacecraft missions in an effort to make easier and safer the difficult task confronting astronauts - who must control space vehicles through a wide range of atmospheric and space flight.

He has been the author or co-author of over 50 technical reports and papers and has made numerous presentations on the different phases of helicopter and VTOL aircraft research before the American Helicopter Society, the American Institute of Aeronautics and Astronautics, the Society of Experimental Test Pilots and other organizations.

In 1954, he went to Paris as NACA representative to present a paper on helicopter flight research at a meeting of the flight test panel of the Advisory Group for Aeronautical Research and Development (AGARD) of the North Atlantic Treaty Organization (NATO).

Reeder received the Octave Chanute Award of the AIAA in 1959. He is an Associate Fellow of the AIAA, an Associate Fellow of the Society of Experimental Test Pilots, a member of the American Helicopter Society (past chairman of the Hampton Roads Section), and Twirly Birds, (past secretary and president of the national organization). He was associate editor of the American Helicopter Journal for several years.

WANTED: Ride from Denbigh area to W.A. on 8 shift. Branum, 3576.

WANTED: Ride from Brookfield Dr., Denbigh, to W.A. on 8 shift. Shirley Gratto, 4730.

FOR SALE: 1963 Kenmore vacuum cleaner - $25. Voros, 877-3050.

WANTED: Driving combination from Morrison to W.A. on 8 shift. Stroud, 4891.

FOR SALE: 1966 Volkswagon. Blume, PA 2-2006.

WANTED: Passengers or alternate driver from Newmarket-Briarfield area to E.A. on 8 shift. Parker, 2631.

FOR SALE: Wooden kitchen cabinets, wooden screen doors and windows and wooden venetian blinds. Parker, CH 5-1736 after 6 p.m.

FOUND: Pair of lady's glasses. Nelson, 4566.

VENUS MISSION EXPERIMENTS SELECTED

Seven scientific experiments have been chosen by NASA to be conducted during the Mariner mission to Venus in 1967.

A modified version of the backup spacecraft for Mariner IV, which flew within 6,000 miles of Mars in July 1965, will make the mission. The spacecraft, to weigh about 550 pounds, will be launched by an Atlas-Agena in early summer of 1967, and be aimed to pass within about 3,000 miles of Venus.

Mariner Venus 1967 project management has been assigned by NASA to its Jet Propulsion Laboratory.

The scientific experiments were chosen by Dr. Homer E. Newell, Associate Administrator for Space Science and Applications, on recommendation of NASA's Space Science Steering Committee.

The experiments, listed with their principal investigator and co-investigators, are:

Ultraviolet photometer - Dr. Charles A. Barth, Jeffrey B. Pearse and Kenneth K. Kelly, University of Colorado, and Edward F. Mackey, Packard-Bell Electronics. This experiment will use two ultraviolet photometers to attempt to produce a temperature profile of the upper atmosphere of Venus by measuring density and distribution of atomic hydrogen and atomic oxygen.

S-Band Occultation - Dr. Arvydas Kliore, Dan L. Cain and Gene S. Levy, JPL, and Dr. S. I. Rasool, Goddard Space Flight Center's Institute for Space Studies, New York City. This team will study the changes in Mariner's 2,300 megacycle carrier signal before and after it passes behind the planet. The experiment, similar to one conducted by Mariner IV at Mars, should indicate the density-altitude profile of the Venusian atmosphere and ionosphere.

Dual-frequency radio occultation - Professor Von R. Eshleman, Stanford University. Signals of two different frequencies are beamed from Stanford's 150-foot diameter antenna at Palo Alto to the spacecraft and the effect of the planet's ionosphere and atmosphere on the signals received by Mariner are studied for further information on the Venusian atmosphere and ionosphere. The presence of two frequencies insures a separation of the ionosphere from the neutral atmospheric effects.

Trapper radiation detector - Dr. James A. Van Allen, Dr. Louis A. Frank and Stanatios M. Krimigis, State University of Iowa. This experiment will observe particles of various energies to search for trapped radiation belts around Venus and to increase knowledge of energetic particle emissions from the sun.

Helium Vapor Magnetometer - Dr. Edward J. Smith, JPL; Dr. Paul J. Coleman, University of California; Professor Leverett Davis, California Institute of Technology, and Professor Douglas E. Jones, Brigham Young University. This experiment will attempt to determine the strength and direction of the magnetic field of Venus as well as the flow of the solar wind around the planet.

Plasma probe - Professor Herbert S. Bridge and Dr. Alan J. Lazarus, Massachusetts Institute of Technology, and Dr. Conway W. Snyder, JPL. This experiment will employ a Faraday cup detector unit to study the density, velocities, temperatures and direction of low energy protons that stream outward from the sun to form the solar wind.

Celestial mechanics - John D. Anderson, JPL. This experiment will use Deep Space Network tracking data from the Mariner 67 mission and that from the 1962 Mariner II mission to Venus to refine further the Astronomical Unit, the masses of Venus and the moon and the ephemerides of Earth and Venus.

". . . then for a minute my whole life flashed before me— except the part where I took driving lessons."

$11 MILLION SAVED ON OFFICE NEEDS

Federal agencies saved $11.1 million last year as a result of President Johnson's directive of January 1965 placing a moratorium on purchases of new file cabinets and a reduction in the buying of office furniture and typewriters, the Administrator of General Services has told the President.

Administrator Lawson B. Knott Jr. reported that the cost reduction resulted in $3.6 million saved in procurement of filing cabinets and $7.5 million in purchases of office furniture and typewriters.

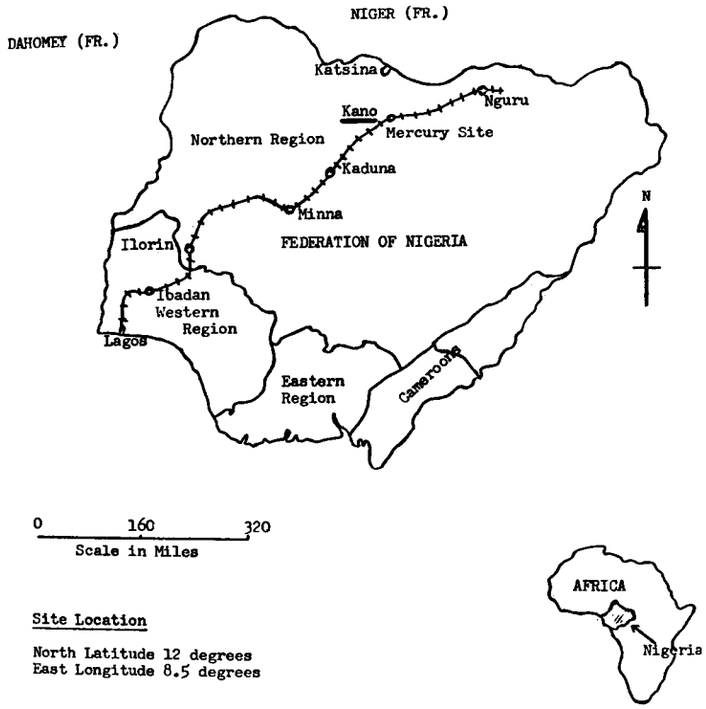
He also said Federal agencies "have given continued cooperation in achieving cost reductions in this area by using used and rehabilitated filing cabinets, office furniture, and typewriters and retiring records to low-cost storage space in Federal Records Centers."

FOR RENT: Room with private bath and entrance. McBee, 851-0450.

FOR SALE: 1958 Volkswagon. Hudgins, 596-1997.

FOR SALE: Reck-O-Kut K34-H 2-speed turntable with Grado walnut arm, mounted on custom-built walnut base-$65. Carter, 877-9025.

CITY OF CAMEL TRACKS NOW TRACKS SPACECRAFT



Site Location

North Latitude 12 degrees
East Longitude 8.5 degrees

NIGERIA - WEST AFRICA

Once the crossroads for camel caravans, the 1,000-year-old walled city of Kano, Nigeria, is the site for a NASA space-tracking station.

Once a junction of medieval camel caravans and now a vital center for space communications, the city of Kano, Nigeria, relayed the retrorocket countdown to Gemini VIII Astronauts Armstrong and Scott as they approached Africa on their final orbit.

Drop in on the walled city of Kano today and you will still see the ancient slave market, the bazaar where artisans dye handloomed cloth or hammer tribal daggers on antiquated anvils, while only six miles to the south NASA engineers with space-age techniques are tracking astronauts training for the U.S. flight to the moon.

Kano, lying some 600 miles northeast of Nigeria's Atlantic coast capital, Lagos, was settled 1,000 years ago by Hausa traders whose tongue became the language of mid-Africa south of the Sahara.

Early in 1900 the British took over the country and in 1960, Nigeria gained independence. NASA then was planning America's first manned space flight.

A ground station was needed to catch the first orbit as the spacecraft sped from Cape Kennedy across the Atlantic, and to maintain voice communications with the astronauts approaching the African continent.

An agreement between the United States and the government of Nigeria, enabled NASA to build a telemetry and communications station at Kano in support of the one-man Project Mercury flights. This agreement was later amended to provide support to the two-man Gemini missions and unmanned scientific satellites.

The station's prime function is to furnish voice contact between the astronauts and Mission Control Center at Houston, Texas. The station also receives telemetry data from the spacecraft, records it and sends it on to Mission Control.

If you visit the space station, the engineers will tell you that their network functions on two basic principles: "Keep 'em orbiting," and "Get back the data."

If you happen to visit Kano, you will enjoy the blending of the old and the new. In the market place they'll serve you barbecued wild pig prepared from a 1,000-year-old recipe. Or join the space crew in a modern cookout of Sahara-style curried chicken with side dishes of bananas, paw-paws, pineapple, peppers and peanuts, topped off with 20th Century ice cream.

BIOMEDICAL CHECKS TESTED

A simplified and improved technique of recording medical information which was developed for test pilots is now being used on youngsters in the Midwest.

Developed by NASA, the new method replaces bulky sensors requiring shaving and messy creams with small, bare wires which act as their own electrodes. The wires are applied in a three-minute operation using fast-drying, spray-on adhesive.

The system, in use at the University of Kansas Medical Center at Kansas City, Kansas, permits doctors to send an instrumented patient home after a quick office visit and record biomedical data while the patient goes about his normal functions.

Medical data obtained in this manner rather than while a patient is lying on an examining table is considered more meaningful by many doctors.

The wires attached to the patient pick up such data as heart and respiratory rates and body temperature and feed it to a battery operated, seven-channel recorder carried by the patient.

NASA is using the technique at its Flight Research Center to obtain biomedical data on its test pilots while they are flying projects such as the X-15, the wingless M-2 lifting body, a free-flight lunar landing simulator, and various high-performance jet aircraft. NASA has also used the method in instrumenting students at the Air Force Aerospace Pilot's School and the members of the Thunderbirds, the Air Force flight demonstration team.

The technique was conceived by Dr. James A. Roman, Chief of Biomedical Research at Edwards, and introduced to the University of Kansas by Midwest Research Institute. MRI is under contract to NASA's Technology Utilization Division in its program of transferring aerospace technology to the public.

FOR SALE: 1964 Volkswagon - $1200. Raper, 877-9028.

FOR SALE: 1962 Chrysler 300 - $1200. Thompson, 826-0844.

FOR SALE: 1963 14-foot fiberglas sailboat, dacron sails, and trailer - $900. Fedors, 642-2018.

FOR SALE: New Kenmore dryer, 2-3/4 hp Craftsman mower, 7-foot square tent and double sleeping bag, 14-cubic-foot Kelvinator refrigerator. Norwood, 229-2810.

WANTED: Chain saw; also driving combination from Dare to E.A. on 8 shift. Mulqueen, 898-6327.

FOR SALE: 4 tires, size 7.35 x 14 w/w - $25. Thornton, 596-4117 after 5 p.m.

"SELECTED CASTING TECHNIQUES" RERORT AVAILABLE TO STAFF

C. C. Shufflebarger, Langley's Technology Utilization Officer, announced publication of a Technology Utilization Report on a Langley technique for making wind-tunnel models. The special publication, entitled "Selected Casting Techniques," was prepared by the Philco Corporation and published as NASA SP-5044.

In accelerated aerospace research programs, new concepts must be evaluated rapidly and accurately and research personnel require wind-tunnel models which can be quickly fabricated regardless of configuration and to a relatively high degree of accuracy. The quick and accurate production of a wind-tunnel model depends upon the ingenuity, skill and experience of the craftsman in the use of materials and the application or modification of established procedures.

Each new model usually involves an entirely new design concept and purpose or a modification of a design currently being evaluated. The technical problems associated with the construction of new models are often many and varied. It is for this reason that Langley's craftsmen do not adhere to a set or stereotyped method of model construction. The new publication outlines one method of model construction using an interesting casting and plasticizing technique developed by Langley personnel. Although the basic construction processes are not entirely new, the application of material, modification of established or commonly known procedures, and use as an integrated whole are considered unique. By this method wind-tunnel models of simple or complex configuration can be produced rapidly and at reduced cost.

The procedures described in the publication are intended not only to illustrate the construction of a wind-tunnel model, but also to describe and illustrate a casting and plasticizing technique that may be applied to the production, in limited quantities, of simple or complex items not necessarily related to the aircraft industry. Although the procedures were developed for the rapid production of wind-tunnel models, their application or adaptation may be useful in other projects by industry.

Copies of the publication may be obtained from the Technology Utilization Office, extension 3281.

ACCOUNTANTS ASSOCIATION

(Continued from page 1)

president of the Virginia chapter in 1962.

Struhar was born in Pittsburgh, Pennsylvania. He graduated from North Catholic High School in Pittsburgh and received his B.S. degree in Accounting from Duquesne University in 1960. Before joining the Center staff he worked for the Universal Auto Radiator Corporation in Pittsburgh.

He entered on duty at Langley on August 31, 1960 as an Accountant. He served in the U.S. Army from September 8, 1961 to August 17, 1963. Following his discharge he returned to the Center on October 1, 1963.

FOR SALE OR RENT: Colonial brick house with 3 bedrooms and 1-1/2-baths. Ault, 40 Bruton Ave., 826-6811.

FOR SALE: 3-bedroom brick rancher at 2907 Bending Oak Dr. Wells, 826-4446.

One manner in which the Gemini spacecraft and Gemini Agena Target Vehicle can rendezvous and dock in earth orbit is illustrated in the above concept by a Lockheed Missiles and Space Company artist. Lockheed produces the Agena for the NASA program. At right the target vehicle (top) is stationary as the two-man spacecraft moves toward it. At left the two vehicles are joined.

WASHINGTON FOOTBALL TRIP PLANNED

The Activities Association is making plans to sponsor a bus trip to Washington, D.C., on Sunday, September 11 to see the Washington Redskins vs. Cleveland Browns football game.

The cost will be $15 per person which includes transportation, admission to the game, and one meal. The bus will leave the Activities Building at 9 a.m. on September 11. A limited number of tickets will be sold and persons interested are requested to contact Joe Siefring, extension 3234, Mail Stop 235. Persons planning to go on the trip are requested to contact Siefring as soon as possible so the tickets can be ordered.

NASA BOWLING LEAGUE

Group C ended its season in the Tenpin League with HMS taking first place with 90 wins and 42 losses. ACD came in second with 84.5 wins and 47.5 losses and Greenhorns were third with 81 wins and 51 losses. Top honors for the season went to the following: John Samos with a 171 average, Rodney Duncan with high game and set of 276 and 745, Mickey Rowe with a 276 game, Peggy Mayo with high average of 162 and high set of 660, Marie Henley with a 259 game, and RPM with high team game of 1100 and high team set of 3012.

GROUP C

HMS	90	42	Latecomers	63	69
ACD	84.5	47.5	Dillys	63	69
Greenhorns	81	51	C-Scouts	61	71
RPM	74.5	57.5	Sparkys	59	73
Trackers	71	61	Hits & Misses	55	77
Gliders	67	65	Bowling Belles	51	81
Mets	67	65	Chargers	41	91

COURSE OFFERED STAFF

The University of Virginia Extension is offering a three-semester-hour course in Analytical Geometry - Introduction to Calculus. The class will meet on Saturdays at 9 a.m. in Building 1348 and the first class will be held on June 11.

For further information call Kenneth Margolis, 2259.

Langley Researcher

VOLUME 5, NUMBER 12 LANGLEY RESEARCH CENTER JUNE 17, 1966

LANGLEY ENGINEERS HONORED AT NATIONAL MEETING OF SAE

Upshur T. Joyner

Walter B. Horne

Two members of the staff of the Langley Research Center have been presented the Arch T. Colwell Merit Award by the Society of Automotive Engineers. The honor was bestowed on Upshur T. Joyner and Walter B. Horne at an SAE luncheon in Detroit on June 9.

The award is given annually to the authors of papers of outstanding technical or professional merit which shall have been presented at a meeting of the SAE or any of its sections during the preceding calendar year.

The paper which won laurels for the two Center men was on the subject of "Pneumatic Tire Hydroplaning and Some Effects on Vehicle Performance." It was presented at the International Automotive Engineering Congress in Detroit in January 1965.

The paper dealt with research at Langley on the hydroplaning of a pneumatic tire of an aircraft during takeoff and landing. Hydroplaning is the phenomena of a tire riding on a film of water on a runway in a manner similar to the familiar water ski.

The research included a study of the loss of braking and steering ability when aircraft tires travel on wet runways, and the resulting information has been used extensively in the training of aircraft operators and flight safety personnel in the United States and many foreign countries.

In view of the fact that hydroplaning is a hazard in the operation of motor vehicles on the Nation's roads, there has been a wide interest in the NASA research among individuals and groups concerned with the reduction of highway accidents.

Joyner, born in Suffolk, joined the Langley staff in 1931 shortly after his graduation from the College of William and Mary with a B.S. degree in Physics and Mathematics. He was head of the Landing and Impact Branch of Dynamic

(Continued on page 4)

JOSEPH A. WALKER, TEST PILOT, DIES IN AIRCRAFT ACCIDENT

Joseph A. Walker, Chief Research Pilot at the Flight Research Center, who worked closely with the Langley staff in the research airplane program and other flight projects during the past two decades, died in an aircraft accident June 8 in California.

Walker was pilot of an F-104 chase plane which crashed after the craft was in collision with an XB-70A during a research flight over the California desert.

Private family services and interment were held June 10. A memorial service was conducted June 11 in the Community Methodist Church in Lancaster, California, where Walker made his home at 1309 West Avenue (L-4).

The memorial services were attended by Thomas A. Toll, Associate Chief of Full-Scale Research Division and former Chief of the Research Division at the Flight Research Center, and John P. Reeder, Assistant Chief of Langley's Flight Mechanics and Technology Division, who participated in several flight projects involving the Flight Research Center during Walker's career.

The family has requested that in lieu of flowers, donations may be sent to the scholarship fund of the Society of Experimental Test Pilots, 619 Milling Street, Lancaster, California.

Walker, who joined the NASA in March 1945, served as

(Continued on page 4)

Joseph A. Walker, Chief Research Pilot at the Flight Research Center, who worked closely with the Langley staff in the research airplane program and other flight projects, died in an aircraft accident June 8 in California.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

BAND CONCERT. . .The Langley Air Force Band will present a concert on the picnic grounds of the Activities Building on Sunday, June 19 from 5 p.m. until 6 p.m. All Center families and their friends are invited to attend. Persons desiring to bring a picnic lunch may do so.

ENGAGEMENT. . .Dan Cupid scored a victory when Adnronicos G. Kantsios, Instrument Research Division, announced his engagement to Alexa Fragakis, Winston-Salem, North Carolina. No date has been announced for the wedding.

DIAPER LINE. . .John H. Lewis Jr., Flight Reentry Pro-Office, recently became the father of a six pound, thirteen ounce son, James. . .Celebrating the birth of a ten-pound son, Robert Derek, on June 12 is Robert F. Hill, Electrical Systems Division. . .Announcing the birth of a seven pound, seven ounce son, Charles David, on May 24 is Charles D. Harris, Full-Scale Research Division.

NEWLYWEDS. . .James R. Williams, Space Mechanics Division, and Victoria J. Barber, Hampton, took their final vows on June 8 at Aldersgate Methodist Church, Hampton.

CHESS CHAMPIONSHIP. . .The Peninsula Chess Club, under the sponsorship of the Newport News Recreation Department, will begin the 1966 Peninsula Chess Championship Tournament on Tuesday, June 21 at 7:30 p.m. at the South Morrison School on Dresden Drive. The tournament, which is an annual event, will run for seven consecutive Tuesday nights. The tournament is open to any individual who resides or works in the Peninsula area. Membership in the United States Chess Federation is required and may be obtained at the time of registration. There will be an entry fee. For additional information contact H. A. Smith, LY 6-6679.

WHAT IS A 'LOST-TIME' INJURY?

A number of employees have asked the definition of a "lost-time" injury. The National Safety Council says: "In general terms a 'lost-time' injury or 'disabling' injury is one which results in death or permanent impairment or which renders the injured person unable to work for a full day on any day after the day of injury."

FOR SALE: Craftsman 9-inch radial arm saw - $100. Bethea, 595-1913 after 5 p.m.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of June 20:

Monday - Puree of bean soup, roast beef, fried oysters, spaghetti and meat sauce, baked hash.

Tuesday - French onion soup, baked ham, veal chop, stuffed pepper, fish cakes and cole slaw.

Wednesday - Chicken-rice soup, roast veal, liver and onions, fried chicken, beef ravioli.

Thursday - Vegetable-beef soup, grilled rib-eye steak, barbecued pork chunks over rice, stuffed cabbage, western omelette.

Friday - Clam chowder, Spanish pot roast, fried shrimp, broiled perch, spiced luncheon meat.

The menu for the week of June 27 is as follows:

Monday - Cream of tomato soup, corned beef brisket, chicken pie, Salisbury steak, barbecued sandwich.

Tuesday - Minestrone soup, pepper steak, broiled ham slice, stuffed flounder, grilled cheese and bacon sandwich.

Wednesday - Split green pea soup, roast ribs of beef, crab cakes, Polish sausage, chili-macaroni.

Thursday - Vegetable-beef soup, grilled steak, hot turkey sandwich, meat loaf, franks and beans.

Friday - Clam chowder, baked Virginia ham, fried fillet of flounder, broiled fish, cheeseburger.

FOR SALE: Hunter 20-inch electric window fan, exhaust and intake - 2 speeds - $20. Glenny, 596-2568.

FOR SALE: Formica top kitchen table with 6 chairs - $40, 2 barrel back chairs, light green - $ 50 for both; folding Danish den set - two-seat couch, chair and ottoman - $50; brass fireplace set - $10; lady's white shoe skates, size 6 - $10. Nelson, 877-4410.

Carol S. Rowland

Ray W. Lovelady

Bernard H. Curran

Earl R. Blymiller

Marshall D. Johnson

SEVEN RECEIVE CASH AWARDS

Seven employees recently received letters of commendation and cash awards from the Langley Incentive Awards Committee for sustained superior performance.

Receiving the awards were: Carol S. Rowland, Personnel Division; Ray W. Lovelady, Flight Instrumentation Division; and Bernard H. Curran, Earl R. Blymiller, Marshall D. Johnson, Gideon J. Hagood, and Roger K. Amick, all of Mechanical Service Division.

The citations read as follows:

Mrs. Rowland - "For her sustained high quality and quantity work, and for her assistance in supervising employees assigned to Personnel Records Unit."

Lovelady - "For his role in the development of the equipment associated with an underwater location aid utilized in the recovery of submerged research devices from the ocean floor."

Curran - "For significant contributions in the concept and development of a new technique for construction of large-scale contoured lunar maps for Project Lola."

Blymiller - "For his superior performance in designing and developing an accurate method of obtaining data relative to certain dimensional and physical characteristics of small-sized Beryllium tubing."

Johnson - "For his outstanding contribution in leadership and dedication in supporting the Integrated Life Support Test Bed Facility."

Hagood - "For providing outstanding services in support of Thor and Agena space vehicle research studies."

Amick - "For his superior performance in all of his assigned duties involving the construction of flight memory recorders and the experimental heat gauges."

Gideon J. Hagood

Roger K. Amick

TWO RETIRED EMPLOYEES DIE

Two retired employees died last week. Edmund A. Vogt, former head of the Model Finishing Shop, Mechanical Service Division, died on June 6 and Spence Watkins, former Aeronautical Laboratory Mechanic in the Flight Research Division, died June 9.

Vogt was born February 20, 1893 in Philadelphia, Pennsylvania, and graduated from Industrial Public Manual Training School in Philadelphia. He served in the Navy from 1917 to 1919 and entered on duty with the Quartermaster Corps at Langley Air Force Base in 1938. He transferred to NASA on September 16, 1940 as a Junior Model Surfacer and Finisher. He retired on September 28, 1962.

Watkins was born January 16, 1889 in Messick. He joined the Center staff on July 3, 1922 and operated a Navy Torpedo Retriever for several years. At that time the Center did some work on seaplanes and the boat was used to service them. He was later transferred to the Hangar where he worked until his retirement on May 1, 1950. Prior to his 28 years with NASA, he worked five years for the Army at Langley Field, making a total of thirty-three years of Government service.

WANTED: Driving combination from Hidenwood area to W.A. on 8 shift. Nye, 4591.

WANTED: Ride from Briarfield Manor area to W.A. on 8 shift. Shipley, 851-5117 after 5 p.m.

WANTED: Alternate driver from Norfolk to W.A. on 7:30 shift. Hudgins, 4851.

WANTED: Alternate drivers from GEX and Newmarket area to W.A. on 8 shift. Davidson, 4881.

LOST: Safety glasses. John Rogers, 2591.

WANTED: Ride or driving combination from Tuckahoe to W.A. on 8 shift. Fetner, 3274.

WANTED: Ride from Temple Lane, Briarfield area, to W.A. on 8 shift. Lynne Dannelly, 3216.

WANTED: Ride from West Ocean View Ave., Norfolk, to W.A. on 7:30 shift. Wallace, 4711.

WANTED: Driving combination from Portsmouth to E.A. on 8 shift. Stegall, 2231.

LESHER, DAY NAMED TO POSTS

NASA announced two top appointments in its office of Technology Utilization. Dr. Richard L. Lesher was named Assistant Administrator for Technology Utilization and Melvin S. Day was appointed deputy to Lesher. Lesher succeeds Breene M. Kerr, who remains as Assistant Administrator for Policy Analysis, and Day succeeds Lesher. Day formerly headed TU's Scientific and Technical Information Division.

NASA's Technology Utilization Office is responsible for insuring the flow of scientific and technological information derived from space-related research and development to the scientific, educational and business communities.

During 1962-63, Lesher, 32, worked as a research fellow at Indiana University in the development of the first NASA-sponsored Regional Dissemination Center. During this time he earned his Doctor of Business Administration degree from Indiana University.

A native of Chambersburg, Pa., Dr. Lesher received his B.S. degree in 1958 from the University of Pittsburgh and his M.S. degree in 1960 from Pennsylvania State University. He came to NASA in 1964 from the Ohio State University where he had served on the faculty of the College of Business Administration.

A native of Lewiston, Me., Day received his B.S. degree from Bates College in Lewiston in 1943 and did graduate work at the University of Tennessee.

He joined NASA in August 1960 as Deputy Director, Office of Technical Information and Educational Programs, and in 1962 was appointed Director, Office of Scientific and Technical Information.

LANGLEY ENGINEERS HONORED

(Continued from page 1)

Loads Division from 1953 to December 1965, when he retired. Since that time he has been employed by NASA on special assignments in connection with scientific investigations concerned with the ground performance of airplanes, including takeoff and landing systems for manned reentry spacecraft.

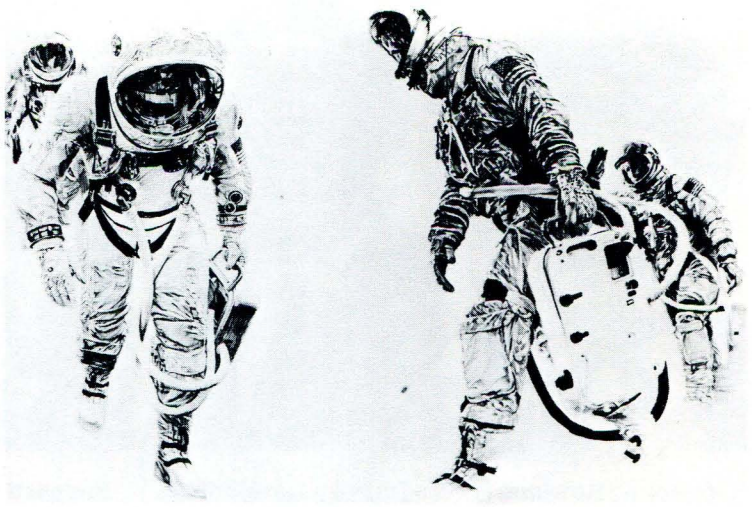
Horne, assistant head of Landing and Impact Branch, is a native of Worcester, Massachusetts. He was a flight engineer with the U.S. Army Air Corps on missions over Japan in World War II and received a B.S. degree in Mechanical Engineering at the University of Rhode Island in 1948 when he joined the Langley staff. He has been active since that time in research concerned with aircraft ground operating problems.

TEST PILOT DIES IN CRASH

(Continued from page 1)

project pilot on the D-558, X-1, X-3, X-4, X-5, and the X-15, in which he established speed and altitude records; and was research pilot on flight programs involving such aircraft as the F-100, F-101, F-102, F-104, and the B-47. He piloted the Flight Research Center's Lunar Landing Research Vehicle on its first flight on October 30, 1964.

Walker was born February 20, 1921, in Washington, Pa., where he attended school. He was graduated from Washington and Jefferson College in 1942 with a B.A. degree in Physics. This same school honored Walker with an honorary Doctor of Aeronautical Sciences degree in June 1962.



Two teams up (top photo) - Pad 19 at Cape Kennedy is a busy place during NASA's two-man Gemini missions. Prelaunch excitement has been captured in these sketches by Paul Calle, noted American artist. At left, Astronauts Frank Borman and James Lovell as they strode up the ramp to the Gemini 7 spacecraft for their 14-day orbital flight last December. The astronauts at right are James McDivitt and Edward White as they boarded their Gemini 4 spacecraft for the flight last June that saw White remain outside the capsule for almost 22 minutes. Two teams on deck (bottom photo) - When these two teams of astronauts hit the decks of aircraft carriers after their historic Gemini flights, Artist Calle was on the spot with his sketch pad. Left, Frank Borman and James Lovell are shown after they completed the December Gemini 7 mission. At right, Pete Conrad and Gordon Cooper after their eight-day Gemmini 5 flight in August.

FOR SALE: 3-bedroom brick rancher in Denbigh, also 1964 Porsche 356 C. Croom, 877-2703.

FOR SALE: 3-bedroom, 2-bath house with pier on deep water. Zanks, 15 Adriatic Ave., Hampton, 851-2026.

During World War II Walker flew P-38 fighters for the Air Force, earning the Distinguished Flying Cross and the Air Medal with seven Oak Leaf Clusters.

In his 20 years as a research pilot, Walker was the recipient of many honors and awards. He was a charter member of the Society of Experimental Test Pilots, and was one of the first to be designated a Fellow by the society.

He is survived by his wife, the former Grace McClary, three sons, and a daughter.

KNOW YOUR CREDIT UNION

EARLY SUMMER - The ideal time to take advantage of the Credit Union's latest offering for the benefit of its members - a FHA Home Improvement Loan. Speed and convenience are the watchwords. Up to $3500 is available almost as quickly as you can say, "A Title 1 loan of my very own!" But hurry. The season won't last. It is a lot more fun laying those patio bricks in late June than in early August - and just as rewarding.

The money is waiting for you. Actually, considering all its plus features, it is surprising that even greater interest has not been shown by Credit Union members in the Title I Home Improvement Loan program. True, some 48 percent of the membership are Air Force military personnel and hence, to some extent, must be considered transients. But what about the hard core 43 percent made up of NASA employees? This translates into 4300 members. Many of them - and probably most - own their own homes or are in the process of buying them. In either case, there is pride of ownership and an understandable desire to have everything just "right." This should be enough to insure volume business. But it hasn't - yet.

The answer is probably two-fold. One, the Credit Union has been remiss in not publicizing at greater length with more absolute clarity the special advantages of FHA-type loans. While, on the other hand, many members have gone ahead and charged their paint/supplies because it was so "convenient." It was routine...a habit. They just didn't stop to consider the fact that service charges on time-payment plans are - in almost every instance - at least twice the interest charge allowed by the Federal Housing Administration. And, on top of that, such charges are not fully tax deductible.

Generally speaking, the proceeds of a Home Improvement loan may be used to pay for the alteration, repair, or improvement of an existing structure provided the work substantially protects or improves the basic livability of the property. This includes most projects around the house: painting, landscaping, enlarging, insulating, fencing, installing built-in equipment and many other similar jobs. Two notable exceptions are the construction of swimming pools and barbecue pits. Almost everything else is legal.

Usually no lien is involved or co-maker required. Loans can run up to $3500 and the repayment period may extend up to 5 years. The interest rate is a very low .75% of the unpaid balance each month on loans up to $2500 and an even lower .70% on the full amount of loans that exceed $2500. And, at your Credit Union, loans are covered by loan-life insurance at no out-of-pocket cost. See why the Federal Housing Administration and the Langley Federal Credit Union make a team hard to equal - much less to beat?

FOR SALE: 2 male German Shepherd pups. Crawley, 722-8406.

FOR SALE: 1964 Ford Falcon Futura - 4-speed - V-8 - $1250. Nelson, 826-5118.

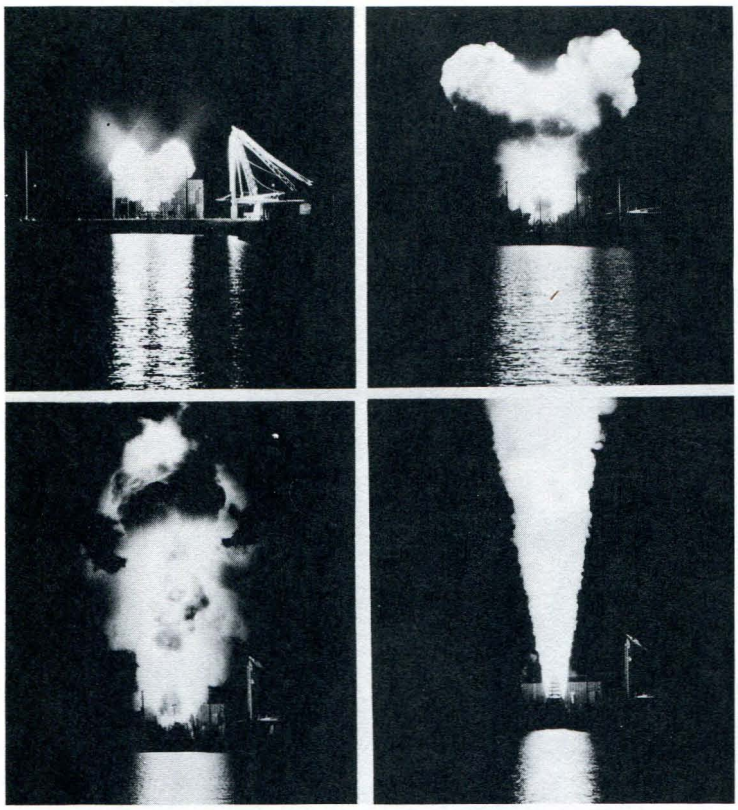
WANTED: 2-car driving combination from Williamsburg to W.A. on 7:30 or 8 shift. Shomo, 4643.

FOR SALE: 3-bedroom brick rancher in Forrest Heights. Clark, 826-0205.

FOR SALE: AKC registered male Pekingnese - 2 years old. Dudley, 723-9403 after 5 p.m.

Eight staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Top photograph - Dr. George W. Brooks, Assistant Chief of Dynamic Loads Division, presents a check to Judith A. Pettigrew for her suggestion concerning telephone directories for all NASA centers and main industries. Bottom photograph - Marion B. Seyffert (right), Assistant Chief of Mechanical Service Division, congratulates (from left): Lorin E. Bassett for his suggestion concerning fitting for "Light Pipe," Charles F. Bryan Jr. for improved connection to air density explorer antenna, Archie D. Myers for swivel mount in Schlieren system, Francis S. Wolak for forming teflon for irregular shape models, William E. Blanks Jr. for cleaning of pipe and tubing, Edward J. Roberts for thermocouples, and Fred Ferrari Jr. for foam compression test fixture. Ferrari's was shared with Jerry G. Williams, Applied Materials and Physics Division.

LARGE SOLID FUELS IN THE FUTURE



FLASHING NIGHT SCENES - These photos were recorded as NASA's largest solid propellant rocket motor was fired at Homestead, Florida, south of Miami. The motor, built for NASA by Aerojet-General Corporation, produces about 3.5 million pounds of thrust.

With two successful tests under its belt and a third planned, it now looks like the United States is going to do a lot more about enormous rocket motors which burn solid propellants.

Space engineers call these monsters "large solids," and they claim a bright future for this type of rocket motor even though it has no assignment as yet.

What are the NASA engineers talking about?

The differences between the "large solids" and the rocket motors now in use are: the propellant is a solid rather than a liquid, and the solid has much greater size and thrust than liquid fueled engines. Furthermore, they are simpler in design and operation.

The big problem with the solids is that once the engine is started, it cannot easily be shut off. This is in sharp contrast to a liquid engine which can easily be shut off and offers the possibility of multiple restarts.

The experimental large solid, 260-inch, motor tested recently by NASA was 20 feet in diameter and 80 feet long. It developed a thurst of 3.5 million pounds. Its operation is relatively simple. Its cylindrical casing looks like a large rolling pin with only one handle. That handle is the motor's 20-foot tall exhaust nozzle, 15 feet in diameter at its widest point.

The hot combustion gases, reaching temperatures above 5,500 degrees Fahrenheit, rush through the open end of the nozzle producing tremendous thrust.

The propellant is a solid mixture of an oxidizer and a fuel which is about twice as dense as foam rubber, but not as hard as the rubber in a handball. Scientists and engineers know this propellant by a tongue-twisting name - polybutadiene, aluminum and ammonium-perchlorate. It weighed some 1.6 million pounds in the last test of the 260-inch engine and burned at a rate of six tons per second. It is the burning of this propellant that is radically different from burning other rocket engine fuels.

The solid has a core drilled out of its center from one end of the motor casing to the other. An igniter causes the propellant to burn along the entire surface of this core, burning rapidly from the center of the core out to the casing.

In the most recent test, this process required the instantaneous ignition of some half-million square inches of propellant, and to do this required an 80-foot flame which ignited the entire length of the motor at the same time. And that's what makes the difference.

TWO NAMED TO NEW JOBS

NASA has appointed Irwin P. Halpern as Director, Policy Analysis Staff, Office of the Assistant Administrator for Policy Analysis, it was announced by Breene M. Kerr, Assistant Administrator for Policy Analysis. Walter A. Radius, a career Foreign Serfice officer who has been on detail to NASA from the Department of State since 1963, has been assigned as special assistant to Kerr.

Dr. Halpern will be responsible for developing and executing plans, policies, and procedures for examining, analyzing and reporting on selected NASA policy matters; and for performing special tasks as may be assigned by the Office of the Administrator.

Dr. Halpern was formerly with the Central Intelligence Agency, specializing in the analysis of Soviet and Chinese Communist political and military affairs and doctrine. He has also served on various interagency committees. He was born in Newark, N.J., and received his M.A. and Ph.D. degrees in Soviet History from Columbia University.

A native of San Francisco, Dr. Radius received his bachelor, master and Ph.D. degrees from Stanford University. He joined the Department of State in 1942 where he has held various assignments, including director of the Office of Transport and Communications of the National War College, director of the management staff, assistant to the Undersecretary and to the Deputy Undersecretary for Economic Affairs.

He transferred to the Foreign Service in 1956, was assigned to the American Embassy in Bonn, Germany, as Civil Air Attache and chief of the Transport and Communications section, and from 1960 to 1963 served as Deputy to the Economic Minister, American Embassy, London.

FOR SALE: Flower plants. Buchanan, 877-3130.

FOR SALE: 1959 Rambler Classic station wagon with reclining seats; also Pearce Simpson citizen band radio - Companion II. Carter, Gloucester 642-4461.

FOR SALE OR RENT: 3-bedroom house with garage - located in Pine Grove. Kurtz, UN 8-9426.

WANTED: Ride from Forrest Dr., Deer Park area, to W.A. on 8 shift. Dianne Adams, 4866.

WANTED: Driving combination from Bloxom's Corner to W.A. on 7:30 shift. Williams, 3224.

FOR SALE: 25-foot house trailer with attached room and porch - easily detachable for moving - $700. Moughon, Matthews 725-5050.

MARINER IV AGAIN REPORTING

Mariner IV spacecraft, which took the world's first close-up pictures of Mars last year, is again in contact with Earth, reporting on the space environment and its own operating performance after 18 months of flight.

NASA said telemetry from Mariner, received over a 197.5 million-mile radio link with the Deep Space Network's Goldstone space communication station in California, indicated that all spacecraft systems are operating properly.

Although Mariner was transmitting over its low-gain antenna, the signal was gathered in, amplified and recorded by a combination of a supersensitive receiver and Goldstone's huge new 210-foot diameter antenna. (The spacecraft's high-gain antenna, used during the Mars flyby last July 14, is no longer pointing at the Earth.)

Mariner IV and the Deep Space Network have broken all existing space communication records.

On October 1, 1965, Mariner's orbital path around the sun finally exceeded the telemetry range of the DSN's 85-foot antennas at the previously unprecedented distance of 191 million miles. Prior to that time, the spacecraft's radio signal was beamed at the Earth by a directional dish antenna.

Periodic tracking of Mariner's signal for the past eight months indicated that the transmitter was operating, but no telemetry could be received with the smaller ground antennas.

The "210," one of the world's largest and most sensitive automatic tracking antennas, gives the DSN the capability to track future spacecraft to the farthest reaches of the solar system.

Some of the information derived from a preliminary analysis indicated:

Mariner IV has exceeded its designed life by more than 100 percent. Designed for a 6,000-hour mission, the spacecraft has operated continuously for more than 13,000 hours.

The attitude control system has a 3.22-pound supply of nitrogen gas - enough to keep the spacecraft stabilized until some time in 1968.

After nearly one complete revolution of the sun, Mariner's solar panels remain the primary power source. The spacecraft has not lost sun-lock since sun acquisition occurred following the mid-course maneuver on December 5, 1964.

Temperatures and voltages of all systems including scientific experiments are normal.

Mariner IV's star sensor probably is pointing at the star Denab instead of the star Canopus. This is indicated by the spacecraft's "look angle" and the light intensity reading from the sensor.

Mariner IV was launched November 28, 1964 from Cape Kennedy. It completed its primary mission on August 2, 1965, after transmitting to Earth 21 full pictures and a fraction of a 22nd picture of the Martian surface recorded July 14 when it flew within 6,118 miles of the planet.

Mariner project and Deep Space Network officials plan to use the 210-foot antenna to track the spacecraft and record telemetry about once each month during the next year.

WANTED: Driving combination from Riverside Dr. and Showalter Rd. to W.A. on 7:30 shift. Miller, 3234.

FOR SALE: 1959 24-inch Silvertone blonde TV set - $50. Pickrell, 826-5173.

Members of the Activities Committee of the Activities Association who are planning a number of interesting activities for employees are: Front row (from left) - Joe Italiano, Joe Siefring, Chairman, and John Shores. Back row - Arnold Mueller, Dave Duxbury, Gene Wagner, and Bob Huffman.

ACTIVITIES PLANNED FOR STAFF

Joe Siefring, Chairman of the Activities Association's Activities Committee, announced that members of his committee are planning a number of interesting and new activities this year for employees.

Some of the activities which have already been arranged are a NASA night with the Peninsula Grays baseball team (which was held June 6), a bus trip to Washington D.C., to see a professional football game, and a band concert by the Langley Air Force Band. A few of the other activities planned for the near future include a bus tour of Williamsburg, and documentary films of space flights and rendezvous.

On September 11, the Washington Redskins will play the Cleveland Browns in Washington, D.C. The Association has made arrangements with a local bus company to provide transportation to and from the game, a ticket to the game, and a meal while on the road. The cost will be $15 per person. For further information, contact Les Powell, 4835.

On Sunday, June 19, the Langley Air Force Band will present a concert on the picnic grounds of the Activities area. The concert will begin at 5 p.m. and last an hour. Persons desiring to bring a picnic lunch may do so. Guests are welcomed.

WANTED: Alternate driver from Ivy Farms to W.A. on 8 shift. Boyden, 4540.

WANTED: Part-time choir director, Hudson, 851-0367.

FOR SALE: BC 348Q communications receiver and 2 meter Arc-5 transmitter with modulator - $70. Batte, 838-2023.

FOR SALE: 1961 Mercury Comet, 4-door sedan, automatic transmission. Sabo, 723-5855.

FOR SALE: 1966 Ford Bronco roadster with 2 sets of tires-$2250. Lawrence, Oxford 3-3866, Gloucester.

FOR SALE: Two quarter horses - 7-year-old mare and 5-year old gilden. Adkins, 826-0963.

FOR SALE: G.E. Mobile Maid dishwasher - $25. Evans, 229-7445.

SUMMER CONCERT PROGRAM

Once again the Hampton Recreation Department invites staff members to a summer of free entertainment in the air-conditioned Kecoughtan High School auditorium on Woodland Road.

Those who enjoyed the offerings of 1964 and 1965 will find the 1966 programs even more attractive. Many of their favorites will return and other outstanding performances are scheduled to appear on the Hampton concert program.

The summer program is as follows:

June 22, 8 p.m. - CONARC Stage band under the direction of Robert Arledge. This represents jazz and rock 'n roll at its best by one of the top military bands.

June 29, 8 p.m. - An Evening of Popular Music under the direction of Frances P. Breeze. The cast includes Kenneth Lundie, Sonya Block, William Crump, Mary Swift, Frances Breeze, Carl Naeseth, and Ralph Hill. The program will include selections from Sound of Music, Hello Dolly, Milk and Honey, South Pacific and others.

July 6, 8 p.m. - The Children's Chorus under the direction of James E. Steele. The first half of the program highlights the combined efforts of some 200 youths, ages 12-13. The second half will feature musical selections, both vocal and instrumental, by outstanding talent in the city.

July 13, 8 p.m. - SPEBSQSA, Inc., directed by James Youngblood, and the Sweet Adelines, directed by Joseph Tuttle, form a double header featuring barbershop singing at its best.

July 20, 8 p.m. - Organ Concert, directed by Charles Hulcher, and featuring organists Bene Hammel and Kitty Rayle Hutchinson.

July 27, 8 p.m. - Hampton Lions Jug Band directed by James Bridgers. Dressed in striped uniforms they get unusual music from such instruments as washboards, jugs, pieces of scrap metal, etc.

August 3, p.m. - Senior High School Talent Night. This program will feature the 12 best acts from more than 60 staged this spring at Hampton's three senior high schools.

August 10, 8 p.m. - The Crusaders under the direction of Charles Flax. The Crusaders are considered one of the finest all male choral groups in Virginia.

NASA TO BRIEF CONTRACTORS

Contractors, subscontractors, and suppliers have been invited by NASA to attend a meeting at the Langley Research Center Monday for a review of NASA's construction contract management functions and procedures.

The session is scheduled for 10 a.m. in Building 1212 located in West Area. It will last about one hour.

Sherwood L. Butler, Langley Procurement Officer, announced that certain changes being made in NASA construction contract management procedures will be explained at the meeting.

Butler pointed out that the meeting will be of interest to firms which have contracts with Langley at the present time and those which may have contracts in the future.

FOR RENT: Two 2-bedroom apartments with private baths. Wray, 344 W. Lincoln St., Hampton, 723-3497.

FOR SALE: Dehumidifier - Fresh'nd-aire Jet-liner model with 1/4 hp compressor - $45. McComb, 898-5203.

WANTED: Home for kittens. Conway, 826-7730.

FOR SALE: 1963 Karmann Kria. Tung, 838-0113.

M. Patrick Clark (right), Employee Development Office, Training Branch, Personnel Division, presents the 1966 Detroit News Award to J. Patrick Riley, student trainee assigned to the VTOL Branch, Flight Mechanics and Technology Division. Looking on is Gayle J. Routten, also of Training Branch.

RILEY WINS DETROIT NEWS AWARD

J. Patrick Riley, student trainee assigned to the VTOL Branch, Flight Mechanics and Technology Division, won the 1966 Detroit News Award at the University of Detroit. The medal is presented annually by the Detroit News to the outstanding cadet officer at the university. The medal was mailed to the Center and presented to Riley by M. Patrick Clark, Employee Development Officer, Training Branch, Personnel Division.

Riley was born in Fremont, Ohio, and graduated from St. Joseph's High School in Fremont. He attended the University of Detroit from 1962 to 1964 and entered the Center's student trainee program on August 17, 1964. He will receive his degree in April 1967.

Riley's return to duty last week marked his fourth assignment to the VTOL Branch where he is working on the establishment of V/STOL handling quality criteria through the use of a variable stability research helicopter.

FOR SALE: New Titlist golf balls - 75¢ each; Craftsman 21-inch lawn mower - $15; heavy duty wheelbarrow - $10. Gibson, 826-2678.

FOR SALE: 3-bedroom rancher with family room in Fairfield. Brady, 851-0377.

FOR SALE: 1960 Corvair, 2-door. Shaughnessy, 838-4379.

FOR SALE: 3-bedroom rancher with attached garage - $200 down. Morgan, 595-2009.

FOR SALE: 1965 Chevrolet Super Sport, 2-door hardtop - will sell or trade for lesser car. Wyatt, 898-2581.

FOR SALE: 1955 Chevrolet - $100. Blanks, 838-1572.

FOR SALE: Two 7.75 x 14 Goodyear power cushion tires. Fox, 6 Freeman Dr., Hampton.

FOR SALE OR RENT: 3-bedroom house - rent $110 per month; sale $13,500. Phillips, 826-7202.

FOR SALE: Convertible stroller-carriage - $18, padded car seat - $5, Smith-Corona portable typewriter - $20, 120 Noble bass accordion. Lansing, 596-6978.

FOUND: 2 keys in Bldg. 1247-D. Borchers, 4795.

LC

Langley Researcher

VOLUME 5, NUMBER 13 LANGLEY RESEARCH CENTER JULY 1, 1966

HENDERSON NAMED PRESIDENT-ELECT OF SUPERSONIC TUNNEL ASSOCIATION

Arthur Henderson, Jr., Head of the Helium Tunnels Section, Aero-Physics Division, has been named President-elect of the Supersonic Tunnel Association (STA).

Arthur Henderson, Jr.

The Supersonic Tunnel Association is made up of organizations which own and operate supersonic and hypersonic wind tunnels. The primary function of the association is to provide a forum for the interchange of ideas, techniques, and solutions to problems associated with aerodynamic testing and aerodynamic test facilities.

Membership is limited to organizations with sufficiently qualified personnel and aerodynamic facilities that they perform significant research and/or development work.

The U.S. organizations in its makeup include all of the major aerospace manufacturing companies, many private and government aerospace research centers, and several universities with major aerospace programs. Comparable organizations from Sweden and several of the NATO countries are members. Japan will be represented in the near future.

Meetings are held semi-annually and are rotated among the member organizations. Langley generally sends three attendees - Henderson and Robert R. Howell, Structures Research Division, who are Langley's representative and alternate, respectively; and Stewart L. Ocheltree, Instrument Research Division. They present Langley's contributions at the technical sessions and act as intermediaries for the exchange of information as requested by other Langley personnel. Langley receives a single copy of all papers presented at a meeting. These are reproduced here and distributed to interested divisions for dissemination to the appropriate people.

These papers are for closed circulation within the Supersonic Tunnel Association only, and are not to be referred to in the literature. This condition is imposed because it encourages a more candid discussion of problems and results of attempted solutions; it lets members feel free to name venders or contractors who perform poorly; and it encourages members to discuss recent work of a preliminary nature which they might otherwise hesitate to do.

Henderson is a native of Newark, N.J. He graduated from Bloomfield High School in Bloomfield, N.J., and attended Newark College of Engineers. He received his B.M.E. and

(Continued on page 6)

NEW SATELLITE ORBITS POLES ON EARTH MAPPING PROJECT

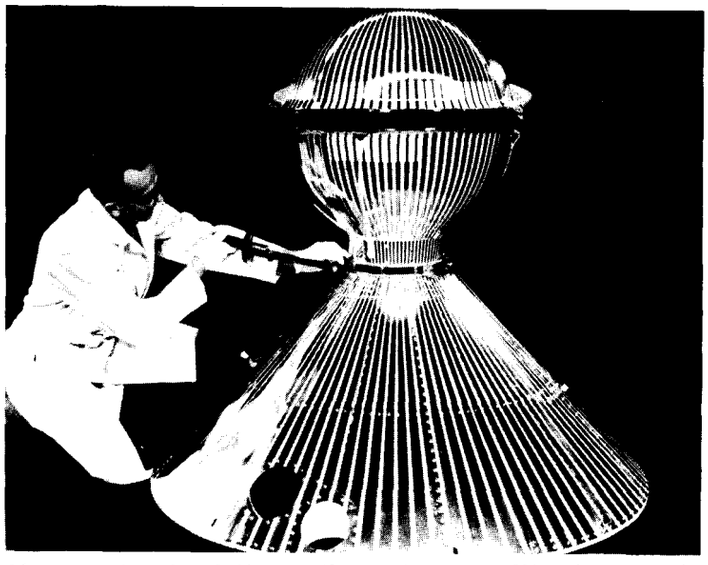
PAGEOS, a 100-foot balloon satellite, designed to obtain information for precision mapping of the Earth's surface, was launched by NASA from the Western Test Range, Cal., at 8:12 p.m. EDT on Thursday, June 23.

The aluminum-coated Passive Geodetic Earth-Orbiting Satellite (similar to Echo I launched August 12, 1960), is managed by the Langley Research Center. Dewey L. Clemmons, Applied Materials and Physics Division, is Project Manager, and Bert C. Deis, Flight Vehicles and Systems Division, is Assistant Project Manager.

A Thrust-Augmented Thor-Agena-D launch vehicle was used to boost the inflatable sphere satellite into a circular, polar orbit. Its altitude is ranging from 2,616 to 2,649 statute miles high, compared to an expected 2,600. It is taking 181 minutes for each complete orbit. PAGEOS will be photographed by a network of 41 ground observing sites around the world.

PAGEOS carries no instruments. By reflecting sunlight, the satellite will provide an orbiting point source of light

(Continued on page 6)



The Passive Geodetic Earth-Orbiting Satellite (PAGEOS), 100-foot-diameter aluminum-coated inflatable balloon, was launched into orbit June 23 to be photographed by a network of ground-based observing sites to provide data for a more precise mapping of the Earth's surface. PAGEOS is folded and packaged inside the spherical container which is being checked preliminary to a flight into space. As the launch vehicle reaches orbital velocity, the canister is ejected into space. The two halves of the spherical canister are separated by an explosive device placed around its laced middle, permitting the folded satellite to automatically inflate to spherical shape.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

ENGAGEMENT. . .Dan Cupid scored a victory when Linda Pettigrew, Procurement Division, announced her engagement to Weldon S. Cannon Jr. No date has been announced for the wedding.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, July 5 at 7 p.m. at the Central Labor Union Hall, Newport News.

ALL-PENINSULA TRACK TEAM. . .Gene Hutchens, who recently entered on duty at the Center as a summer employee under the President's Youth Opportunity Campaign, was a unanimous choice to the 14-man 1966 All-Peninsula High School Track Team. Hutchens, who graduated in June from Warwick High School, captured a State Group 1-A championship in his speciality - the shot put. He set a record of 58 feet, 6-3/4 inches during the season.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on July 12 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

BEACH PARTY. . .The NASA Singleton Club, a club for all single employees and their guests, will sponsor a beach party on July 9. The party will begin at 5 p.m. with everyone meeting at the end of Beach Rd. at Grandview. There will be food, music, badminton, swimming, and plenty of fun for only 50 cents per person. For further information, contact Tom Foughner, 2661, or Sharon Huggett, 2245. All summer employees are invited to attend.

NOTE OF THANKS. . .Tut Huffman, Administrative Services Division, wishes to thank her many friends and associates for their flowers, gifts, and cards during her recent illness.

FOR SALE: 4 or 5-bedroom rancher, air conditioned, $1200 down and assume $13,100 balance. Wohl, 851-0563.

FOR SALE: 1961 All State moped - $95. Poling, 826-8975.

FOR SALE: Rosewood square grand piano. Powell, 826-2534.

FOR SALE: 1963 Volkswagon, sun-roof. Randolph, 898-5633.

Over one hundred college students and visiting professors have joined the Center staff as summer employees. Last week the group attended an orientation program and visited a number of research facilities. S. Walter Hixon (right), Head of Training Branch, Personnel Division, explains a demonstration in the Hotshot Tunnel to William Kesselring (left), a representative from the Philadelphia Region of the Civil Service Commission, and Dr. Frank R. Groves, Department of Chemical Engineering, Louisiana State University. Dr. Groves has been assigned to the Aero-Physics Division, for his summer tour of duty at Langley.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 4:

Monday - H O L I D A Y

Tuesday - Puree of bean soup, roast beef, shrimp Newburg, stuffed pepper, grilled luncheon meat.

Wednesday - Tomato-barley soup, veal cutlet, knockwurst, liver and onions, baked hash.

Thursday - Vegetable-beef soup, grilled rib eye steak, stuffed shrimp, ham and noodle casserole, wieners and sauerkraut.

Friday - Clam chowder, Swiss steak, broiled halibut steak, fried fillet of flounder, chile dog, plain hot dog.

The menu for the week of July 11 is as follows:

Monday - Cream of tomato soup, fried clams, braised sirloin tips over rice, Salisbury steak, western omelette.

Tuesday - French onion soup, pot roast of beef, broiled Canadian bacon, spaghetti and meat balls, fish cakes.

Wednesday - Consomme julienne, chuckwagon steak, ham loaf, fried chicken, barbecued sandwich.

Thursday - Chicken-vegetable soup, grilled rib eye steak, chicken pot pie, fried fish sticks, chili con carne.

Friday - Clam chowder, roast beef, broiled fish, fried fish, baked hash.

SCIENTIFIC GERMAN OFFERED

Plans are being made to offer a course in Scientific German with Dr. Hans J. C. Blume as instructor. The course will start the week of July 11 and classes will be held after duty hours. The fee will be pro-rated among the students.

For additional information call the Training Office. 2611.

FOR SALE: 1963 Chevy II, 4-door, series 300. Eareckson, 722-1274.

GEMINI 10 LAUNCH SCHEDULED

NASA has scheduled the launch of the Gemini 10 mission for no earlier than July 18 at Cape Kennedy.

The three-day mission will begin with the launch of the Agena target vehicle by an Atlas booster about 3:40 p.m. EST. The Gemini 10 spacecraft will be launched by a Titan II rocket about 5:20 p.m. EST. The Agena will be inserted into a 185-mile circular orbit and the Gemini into a 100 by 168-mile elliptical orbit.

Primary crew for the mission is John W. Young, command pilot, and Michael Collins, pilot. Backup crew is Alan L. Bean, command pilot, and Clifton C. Williams, pilot.

Young, a Navy commander, was pilot on the first manned Gemini flight, Gemini 3, March 23, 1965. Collina, an Air Force major; Bean, a Navy lieutenant commander, and Williams, a Marine Corps major, have not made space flights.

Plans for the Gemini 10 mission include rendezvous, docking and extravehicular activity. The Gemini 10 spacecraft is scheduled to rendezvous and dock with its target vehicle and if possible to achieve a dual rendezvous with the Agena launched in the Gemini 8 mission March 16.

The first rendezvous is scheduled in the fourth revolution over South Africa with docking following a period of station keeping.

The crew will maneuver the docked vehicles, using the Agena target vehicle propulsion system, into a position to accomplish a dual rendezvous with the Gemini 8 Agena at an altitude of approximately 247 miles. The crew will undock from the Gemini 10 Agena and use the spacecraft control and propulsion systems to initiate the final phase of the dual rendezvous with the Gemini 8 Agena.

Two separate extravehicular activities are planned for Gemini 10. The first is a stand-up EVA in which the pilot will be standing on his seat with his upper body extending through the open hatch of the spacecraft.

During the 55 minutes of this stand-up EVA, the pilot will perform the ultra-violet astronomical experiment, color patch photography experiment, synoptic terrain and synoptic weather photography.

During the umbilical EVA the pilot will evaluate the operation of the Extravehicular Life Support System (ELSS, chestpack), the Hand-Held Maneuvering Unit (HHMU), evaluate maneuvering in space and perform two micrometeoroid collection experiments. He will be using a 50-foot umbilical tether throughout this 55-minute EVA.

Sixteen experiments are to be performed during the Gemini 10 mission: Star Occultation Navigation (D-5), Ion Sensing Attitude Control (D-10), Tri-Axis Magnetometer (MSC-4), Lunar Ultraviolet Spectral Reflectance (MSC-5), Beta Spectrometer (MSC-6), Bremsstrahlung Spectrometer (MSC-7), Color Patch Photography (MSC-8), Landmark Contrast (MSC-12), Zodiacal Light Photography (S-1), Synoptic Weather Photography (S-5), Synoptic Weather Photography (S-6), Micrometeorite Crater Collection (S-10), Micrometeorite Collection (S-12), Ultra-violet Astronomical Camera (S-13), Ion Wake Measurement (S-26), and Bioassays of Body Fluids (M-5).

Landing of Gemini 10 is planned at the beginning of the 44th revolution in the Western Atlantic recovery zone.

FOR SALE: Hassock fan - $10. Collins, 838-2373.

NASA employees recently completed a 26-hour training course in skin diving and the use of self contained underwater breathing apparatus (Scuba). The course was approved by the Atlantic Skin Diving Council and completion certificates were awarded by the Sand Sharks Skin Diving Club. The new skills will be utilized in the study of Extravehicular Activity (EVA) problems using water emersion techniques. These techniques simulate zero gravity conditions by making the subjects neutrally bouyant underwater. Shown above are standing (from left): Bill Cordle, instructor, and Pete Lewis, assistant instructor, both of Research Models and Facilities Division; Dennis Carey, Photographic Division; Dave Middleton and Gary Beasley, Space Mechanics; Harry Hamilton, Photographic, and Perry Deal, Flight Mechanics and Technology. Front row - Charles Folwell and Herb Freeman, Mechanical Service, and John Myers, Photographic. Absent when the picture was taken were Nelson Seabolt, Mechanical Service; Otto Trout, Applied Materials and Physics, and Ranny Williams, Space Mechanics.

NASA SOFTBALL LEAGUE

KNADS 6, ACD 4 - KNADS 2, Ballbusters 11 - Sluggers 5, Structures 7 - Batmen 4, Frosties 7 - Hasbeens 6, ACD 14 - Hasbeens 3, KNADS 15 - Batmen 3, Frosties 13 - Sluggers 6, KNADS 12 - Frosties 7, KNADS 6 - Frosties 2, Packers 6 - Structures 2, ACD 8 - Ballbusters 3, Structures 16 - Hasbeens 13.

Listed below are the standings and scores in the NASA Slowpitch Softball League:

STANDINGS: 1. ACD (8-0), 2. Ballbusters (6-2), 3. Packers (6-2), 4. Structures (6-4), 5. KNADS (5-5), 6. Frosties (4-5), 7. Batmen (2-7), 8. Hasbeens (1-7), 9. Sluggers (0-6).

SCORES: Ballbusters 11 - Packers 5, ACD 5 - Structures 4, Hasbeens 11 - KNADS 7, Frosties 14 - Batmen 3, ACD 10 - Ballbusters 4, Packers 13 - Structures 4, ACD 15 - Packers 6, Ballbusters 16 - Structures 4, Batmen 10 - Hasbeens 9, KNADS 24 - Sluggers 1, ACD 24 - Batmen 2, Structures 16 - Sluggers 1, Ballbusters 5 - KNADS 1, Structures 20 - Frosties 6, Ballbusters 27 - Batmen 2, Packers 7 - KNADS 0, Structures 10 - Hasbeens 7, ACD 9 - Frosties 4, Ballbusters 7 - Frosties 2, Packers 6 - Hasbeens 0, Batmen 11 - Sluggers 10, Structures 7 -

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WANTED: Alternate driver from Norfolk to W.A. on 8 shift. Tuck, 4580.

LANGLEY STAFF MEMBERS RECEIVE ADVANCED DEGREES

Sheldon Baron
Electronics Res. Center
Ph.D., Applied Math.
Harvard University

Hans J. C. Blume
Flight Instrumentation
Ph.D., Engineering
Polytechnic Inst., W. Germany

William F. Leonard
Flight Instrumentation
Ph.D., Elec. Engineering
University of Virginia

David L. Block
Structures Research
Ph.D., Eng. Mechanics
VPI

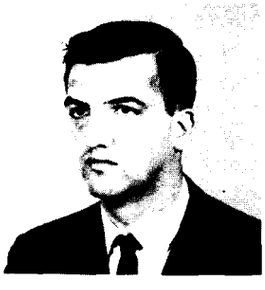
Robert L. Collins, Jr.
Space Mechanics
Ph.D., Eng. Mechanics
VPI

Peter R. Kurzhals
AMPD
Ph.D., Aerospace Eng.
VPI

John A. McElman
Structures Research
Ph.D., Eng. Mechanics
VPI

James B. Robertson
AMPD
Ph.D., Physics
VPI

Robert G. Thomson
Structures Research
Ph.D., Eng. Mechanics
VPI



Melvin D. Aldridge
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

M. Melvin Bruce
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

Anthony Fontana
AMPD
M.S., Elec. Eng.
University of Virginia

Joseph Gera
Full-Scale Research
M.S., Applied Mechanics
University of Virginia

John L. Gilbert
FVSD
M.S., Mech. Eng.
University of Virginia

Anthony Jalink, Jr.
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

W. Linwood Jones
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

Robert J. Pegg
FMTD
M.S., Aerospace Eng.
University of Virginia

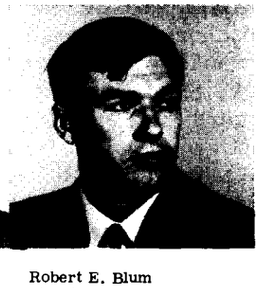
James M. Russell
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

Robert L. Stermer
Flight Instrumentation
M.S., Elec. Eng.
University of Virginia

Robert L. Weirich
Full-Scale Research
M.S., Aerospace Eng.
University of Virginia

William E. Zorumski
FVSD
M.S., Applied Mechanics
University of Virginia

James K. Anderson
Structures Research
M.S., Eng. Mechanics
VPI



Robert E. Blum
Structures Research
M.S., Eng. Mechanics
VPI

Leonard V. Clark
Dynamic Loads
M.S., Eng. Mechanics
VPI

Nancy Jane Cyrus
Structures Research
M.S., Mathematics
VPI

Richard W. Faison
FVSD
M.S., Eng. Mechanics
VPI

Wilbur B. Fichter
Structures Research
M.S., Eng. Mechanics
VPI

Robert R. Clary
Dynamic Loads
M.S., Eng. Mechanics
VPI

Eugene L. Kelsey
Electrical Systems
M.S., Elec. Engineering
VPI

Robert R. McWithey
Structures Research
M.S., Eng. Mechanics
VPI

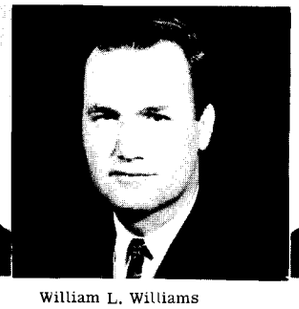
S. Zane Pinckney
Aero-Physics
M.S., Aerospace Eng.
VPI

Columbus W. Stroud
Structures Research
M.S., Eng. Mechanics
VPI

Paul S. Rempfer
Space Mechanics
M.S., Applied Math.
Harvard University

Robert S. R. Rogallo
Aero-Physics
S.M., Engineering
Harvard University

Richard D. Wagner
Aero-Physics
M.S., Applied Math.
Harvard University

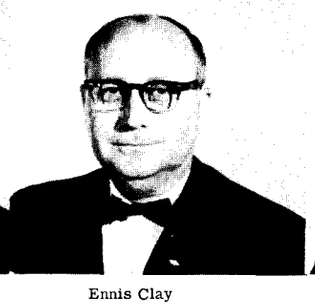


William L. Williams
Off., Asst. Dir. For Adm.
M.A., Public Administration
Indiana University

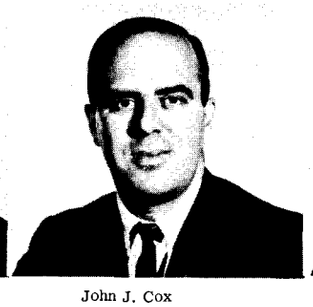
Donald R. Rummler
Structures Research
M.S., Ceramic Eng.
North Carolina State

J. Earl Jones
Flight Instrumentation
M.S., Elec. Engineering
Ohio State University

Wendell G. Ayers
AMPD
M.S., Optics
University of Rochester



Ennis Clay
Procurement Division
M.S., Personnel Adm.
George Washington



John J. Cox
Personnel Division
M.S., Personnel Adm.
George Washington

Hugh E. Mahanes
Procurement Division
M.S., Personnel Adm.
George Washington

William R. Nixon
Procurement Division
M.S., Personnel Adm.
George Washington

James W. Norris, Jr.
Personnel Division
M.S., Personnel Adm.
George Washington

R. Thayer Sheets
Personnel Division
M.S., Personnel Adm.
George Washington

Martin K. Trusty
Procurement Division
M.S., Personnel Adm.
George Washington

Marvin E. Beatty
Flight Instrumentation
M.A., Physics
William and Mary

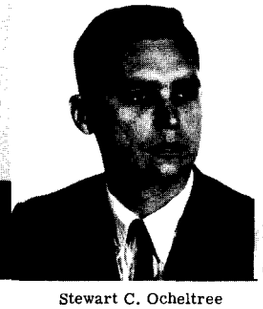
Anthony P. Cotroneo
Analysis and Computation
M.A., Mathematics
William and Mary

David N. Ferguson
Instrument Research
M.A., Physics
William and Mary

William W. Hunter
Instrument Research
M.A., Physics
William and Mary

John M. Jerke
Structures Research
M.S., Physics
William and Mary

Maurice C. McGee
Instrument Research
M.A., Physics
William and Mary



Stewart C. Ocheltree
Instrument Research
M.S., Physics
William and Mary

John J. Olivero Jr.
Flight Instrumentation
M.S., Physics
William and Mary

SUPERSONIC TUNNEL ASSOCIATION

(Continued from page 1)

M.M.E. degrees from Georgia Institute of Technology. He served in the U.S. Army from September 1942 to June 1946.

Henderson joined the Center staff on October 17, 1949. He was appointed head of the Helium Tunnels Section upon its organization in 1959 and since that time has concentrated the work of his section in analytical and small-scale experimental research in the Mach 12 to 40 regime.

Through his research and direction, Henderson has made significant contributions in two important areas - the aerodynamic and fluid mechanics of very high Mach number flows and the problems of design and operation of very high Mach number facilities, particularly those common to helium facilities.

CRASH AFFECTS NASA FAMILIES

A number of Center employees and members of their families suffered injuries and property damage when a Marine jet bomber crashed in the Buckroe area on Monday, June 20.

Arnold Mueller, Dynamic Loads Division, received extensive damage to his home and automobile. His wife and daughter were treated for injuries.

Eric B. Sauls, Plant Maintenance Division, received damage to his garage.

Moore T. Schilling, Mechanical Service Division, had his home and automobile damaged.

John B. Warren, Plant Maintenance, received damage to his home.

Candy Estabrook, formerly employed in the Flight Vehicles and Systems Division, had property damage and was hospitalized for treatment of severe burns.

A number of employees participated in the rescue operations following the crash.

CREDIT UNION NOTICE

As a part of an audit of the Langley Federal Credit Union as of June 6, the Supervisory Committee has mailed statements of the share and loan accounts to all members. Members who did not receive statements are requested to notify the Chairman of the Supervisory Committee, P.O. Box 607, Langley Air Force Base, Virginia 23365.

Members are requested to check their records and report any errors to the Supervisory Committee at the address above. Please note the date of the audit was June 6. Any transactions after that date will appear on the next statement in December.

APPRENTICE HONOR ROLL

Fourteen apprentices completed the spring semester with an average of 97 or better. Members of the honor roll are:

John W. Cox, Electric Arc Facilities; Robert M. Ely, Polymer Lab; William W. Fernald, Instrument Construction; George C. Firth, Space Vacuum Lab; James F. Garvin, Research Projects and Models; Stephen Irick, Dynamic Vehicles; James J. Kiss, Structures Lab; Virgil S. Laney, Electrical Flight Systems; William R. McCraney, Heavy Machine Shop; Thomas Pressley, Spacecraft Structures; James I. Richardson, Fatigue Lab; Donald W. Velsor and David P. Whittaker, General Electrical Service, and George B. Whitehurst, High Temperature Materials Branch.

ANDRADA ASSUMES NEW DUTIES

Major Thiophilos Andrada

Major Thiophilos Andrada has assumed his new duties as Chief of the Air Force Systems Command Scientific and Technical Liaison Office. He fills the vacancy left by the retirement of Major John Samos.

Major Andrada was born in Peabody, Massachusetts. He graduated from Peabody High School in 1949 and Franklin Technical Institute in 1952.

He entered the U.S. Air Force as an aviation cadet in 1952 and was commissioned a second lieutenant on graduation from navigator school in 1952. He received his bachelor degree and M.S. degree in Mechanical Engineering from Oklahoma State University. His latest assignment before assuming his duties at the Langley Research Center was with the Aerospace Research Laboratory at Wright-Patterson AFB, where he conducted research on energy transfer in arc discharge under various flow conditions.

Major Andrada, his wife Jacqueline and their three children - Steven, Marjorie and Bryan - will reside in Hampton.

NEW SATELLITE ORBITS POLES

(Continued from page 1)

to be photographed over a projected five-year period to determine the location of continents, land masses, islands and other such geographic points in relation to each other. In orbit, the satellite should be as bright as the star Polaris.

The photographs will be taken from positions in dark areas of the world as the satellite's reflection from the sun, below the horizon, is visible for several minutes. In each 12-hour span, PAGEOS will pass over every area of the globe as the Earth revolves on its axis.

The orbital course of PAGEOS will provide many opportunities, during its five-year lifetime, for the satellite to be photographed simultaneously against a star background by two or more cameras located at stations 2,500 to 2,800 miles apart.

The interconnected series of camera positions will cover the entire Earth's surface, enabling scientists to determine geometrically each camera position within a single reference system.

The resulting network of spatially-oriented triangles will be useful in locating any point on Earth, as measured from the center of mass, within 51-96 feet of its true position. The distance between two surface points 3,000 miles apart could thus be obtained to an accuracy of 32 feet.

PAGEOS will remain in orbit after this series of Geodetic Measurements have been completed.

FOR SALE: 25 hp Seaking outboard motor. Moberg, LY6-2747.

FOR SALE: 953 Chevrolet panel truck - $75. Moore, 868-2301.

TWO RETIRE FROM CENTER

Two employees retired from the Center during the month of June. William J. Lawton, Head of Model and Pliant Structures Shop Section, Mechanical Service Division, retired on June 16 and Charles H. Carter, Research Facilities Service Section, Mechanical Service, retired June 6.

William J. Lawton

Lawton was born June 2, 1904 in Camden, New Jersey. He graduated from Camden High School and served his apprenticeship as a patternmaker at the Cramps Shipyard in Philadelphia. He also attended the University of Pennsylvania.

Before starting his NASA career he worked for the New York Shipbuilding Corporation and the Newport News Shipbuilding and Dry Dock Company. He joined the Center staff on July 21, 1939 as a Patternmaker.

Carter was born February 16, 1921 in Mecklinburg County, Virginia. He attended Wylliesburg High School in Wylliesburg, Virginia, and worked for the Ford Motor Company Assembly Plant in Norfolk and the Newport News Shipbuilding and Dry Dock Company. He entered on duty at the Center on December 29, 1948 as an Aeronautical Laboratory Mechanic.

LECTURE SERIES PLANNED

The following lecturer-consultants will visit the Langley Center during the month of July:

Dr. G. F. D'Alelio, Department of Chemistry, University of Notre Dame, will be at the Center on July 19. He will present a paper on "Results of Recent Research on Poly-Schiff Bases." Persons interested in attending the lecture should contact Dr. George F. Pezdirtz, 4420.

Dr. Eli Reshotko, Engineering Division, Case Institute of Technology, will speak on "The Foundations and Utility of Boundary Layer Stability Theory" on July 12. He will present a lecture on "The Stability of Plasma Systems" on July 13. Persons interested in attending may contact Arthur Henderson, 4707.

"Recent Advances in Powder Consolidation Techniques Consolidation Techniques" will be the subject of a lecture on July 15 by Dr. Robert Stoops, Head of Pyrochemical Research Group, Department of Ceramic Engineering, North Carolina State University. Persons interested may contact Charles R. Manning, 3439.

Dr. Kenneth R. Lawless, Department of Materials Science, University of Virginia, will conduct a seminar on "Electron Microscopy" July 25-29. Interested persons may call Dr. Donald R. Ulrich, 4884.

"Response of Flight Vehicle Structures to Complex Noise Inputs" will be the subject of a series of lectures July 26-28 by Dr. Brian Clarkson, University of Southampton, Southampton, England. Interested persons may contact Harvey H. Hubbard, 4708.

Wallace Alsbach, National Bureau of Standards, will speak on "Cryogenic Flow Measurement" on July 18. Interested persons may contact George M. Wood, 3234.

Dr. Floyd L. Thompson (center), Langley Director, welcomes Dr. Edward C. Stevenson, Professor of Electrical Engineering at the University of Virginia and co-director of the ASEE-NASA Summer Institute for Engineering Teachers. Looking on is Dr. John E. Duberg, Langley Assistant Director and co-director of the ASEE-NASA program.

PROFESSORS ASSIGED TO LANGLEY

Twenty-five engineering and science professors have been assigned to the Langley Research Center under the ASEE-NASA Summer Institute for Engineering Teachers. The visiting professors started their assignment in June and will be at the Center until mid-August.

The purpose of the program is to bring well qualified young engineering and science teachers into intimate contact with developments in space science and technology through research and study.

The program is a joint project by the American Society for Engineering Education and NASA. Directors for the Langley program are Dr. Edward C. Stevenson, Professor of Electrical Engineering, University of Virginia, and Dr. John E. Duberg, Langley Assistant Director.

The following professors have been assigned to Langley: Dr. William J. Barclay, Dr. Rolin F. Barrett, Dr. Franklin D. Hart, and Dr. Louis A. Jones, all of North Carolina State University; Dr. Furman W. Barton, Duke University; Dr. George R. Buchanan, Tennessee Technology University; Dr. Robert Cheng, Dr. Gennaro L. Goglia, Dr. Henry A. Lackner, Dr. Thomas G. McWilliams Jr., Dr. Albert S. Roberts, and Dr. Roy L. Williams, Old Dominion College.

Dr. Davis M. Egle, University of Oklahoma; Dr. Richard T. Eppink, University of Virginia; Dr. Ernest E. Erickson, and Dr. Frank R. Groves, Louisiana State University; Dr. Bob L. Henson, University of North Dakota; Dr. Wilton W. King, Georgia Institute of Technology; Dr. Swaminathan Madhu and Dr. Stanley P. Reyle, Rutgers University; Dr. Karl G. Maurer, Rose Polytechnic Institute; Dr. Douglas M. Norris Jr., University of New Hampshire; Dr. Robert B. Oetting, University of Missouri; Dr. D. Hurley Robbins, Ohio State University, and Dr. James P. Wightman, Virginia Polytechnic Institute.

WANTED: Used set of golf clubs for about $30. LaFuse, 723-4473.

FOR SALE: 3-bedroom, den, 1-1/2 bath house near Langley. Hundley, 838-2855 after 5 p.m.

APPOINTMENTS ANNOUNCED

William B. Rieke has been appointed Acting Assistant Administrator for Administration by NASA and William L. Green Jr., has been appointed Deputy Assistant Administrator for Public Affairs.

Rieke succeeds John D. Young who has accepted a position in the Bureau of the Budget as Assistant to the Director.

Rieke will continue to serve in his present position as NASA's Assistant Administrator for Industry Affairs. His experience includes almost a quarter of a century in management of major aircraft manufacturing and development. He left the presidency of Lockheed Aircraft International, Inc., Los Angeles, to join NASA as Deputy Associate Administrator for Manned Space Flight (Management) Nov. 2, 1964.

On June 3, 1965, he was appointed Assistant Administrator for Industry Affairs, responsible for directing the activities of the Offices of Procurement, Labor Relations, Reliability and Quality Assurance, and Facilities Management.

As Acting Assistant Administrator for Administration, he will direct all of the agency's administrative and management support activities.

Before joining Lockheed, Rieke was a department manager for Dunn and Bradstreet in Los Angeles and Oklahoma City. He attended the University of Oklahoma and is a native of Onawa, Iowa.

Before joining NASA's Public affairs staff two years ago, Green was with the United States Information Agency serving as press officer in Pakistan, press attache in South Africa and Special Assistant to USIA's Deputy Director.

Green was graduated from the University of North Carolina at Chapel Hill in 1949 with a degree in journalism. Prior to joining USIA, he was editor of two North Carolina newspapers, the Morganton News-Herald and the Shelby Daily Star, and was on the editorial staff of the Durham Sun.

A native of Asheville, North Carolina, he grew up in Zebulon. During World War II, he served overseas as an Army Air Corps pilot.

PROFESSOR TO VISIT CENTER

Dr. Yasutada Kashiwagi, Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Center on July 11 to assist employees engaged in graduate or prospective graduate studies with regard to programs of study.

Persons interested in consulting with Dr. Kashiwagi are requested to call the Training Office, telephone 2611.

FOR SALE: Rebuilt 1958 36hp Volkswagon motor - $95, Volkswagon supercharger - $45, 1949-51 Chevrolet visor- $5. Pine, 245-0872.

WANTED: Alternate driver from Ivy Farms to E.A. on 8 shift. Downing, 2243.

WANTED: Ride from Presidential Apts. to E.A. on 8 shift. Louise Ewing, 2559.

FOR SALE: Hallicrafter AM-FM 4-band radio S-120 model, $30. Kiefer, 826-2136.

WANTED: Driving combination from Kilmarnock to W.A. on 8 shift. Johnson, 4530.

Shown above are high school and college students who have been appointed for summer employment at the Center under the President's Youth Opportunity Campaign. Top photo - Front row (from left): Frank J. Harris, Harriet Bolden, Alvin M. Jackson, Raymond L. Cole Jr., Gene H. Burke, Ernestine Harrison, Yvonne C. Brown, Maryjon McAvery, Bonnie G. Richardson, and Bonnie Faircloth. Second row - Walter E. Faircloth, Charles E. Anderson, Albert J. Plessinger, Leslie G. Phillips, Jackie E. Diggs, Russell V. Watkins, Milton E. Beimler, and Beverly McMahan. Center photo - Front row - Helen D. Tillery, Nora E. Barrett, Nan L. Peake, Mary G. Cherry, Amanda T. Banks, Lynne M. Dannelly, Linda J. Putman, Nancy L. Willis, Shirley R. Pierce, Gertrude G. Blizzard, and Helen L. Armfield. Back row - Nannie M. Henderson, Annie L. Williams, Chow D. Wong, Leroy Roach, Charles W. Springfield, David Q. Howell, Robbe W. Mills, Lee Strickland, Ellis E. Harris, and James C. Costner. Bottom photo - Front row - Merritt Slade, Fred E. Armstrong, Richard A. Banks, Leonard W. Johns, Gary B. Adams, William W. Scott, Ernest C. Dameron, Eugene E. Hutchens, Malinda H. Slater, and Earline Whitehouse. Back row - James Flippen, Herbert E. Foreman, Carlos C. Combs, James W. Lawson, Leonard I. Singleton, Larry L. Chavers, and Ernest Sills.

Langley Researcher

VOLUME 5, NUMBER 14 LANGLEY RESEARCH CENTER JULY 15, 1966

ANGELO GUSTAFERRO NAMED HEAD OF WESTERN TEST RANGE OFFICE

Angelo Gustaferro

Angelo Gustaferro recently assumed duties as head of the Langley Research Center Mission Support Office at the Western Test Range. He succeeds V. Dean Crowder who returns to a new assignment at Langley Research Center.

A native of Hoboken, New Jersey, Gustaferro joined NASA in September 1963. In addition to his present assignment at the Langley Mission Support Office, he is head of the Resident Engineering Management Office at Ling-Temco Vought Corporation, Dallas, Texas.

Prior to his NASA assignments, Gustaferro worked as an engineer for the Radio Corporation of America at Camden, N.J., from 1954 to 1955. He served in the U.S. Air Force from April 1955 until December 1957 as a 1st lieutenant and project engineer on R & D Flight Projects. Following his military service, Gustaferro worked for the Air Force at Eglin AFB, Fla., from 1958 until joining NASA. During this time he acted as Flight Test Engineer, Technical Advisor and Aerospace Development Engineer.

Gustaferro attended Newark College of Engineering where he received a B.S. degree in Mechanical Engineering in 1964. He received Outstanding Civil Service Awards in 1960 and 1962. He is a member of Alpha Phi Delta fraternity.

GUARDS TO CHECK VIOLATIONS

An increased number of complaints and reports of traffic violations on the Base by NASA employees have been received by Center officials. As a result, Center security guards will make periodic checks of vehicles which are illegally parked and improperly operated on the Base.

Speed limits have been posted and should be observed. Employees are urged to refrain from parking vehicles in the no parking areas at the entrances and loading zones of Center buildings. Curbings marked with yellow paint mean no parking and terra cotta curbings (reddish brown) mean 30-minute parking. Unless a building entrance is clearly marked permitting parking, it must be assumed that no parking is allowed.

Infractions of Base traffic regulations may result in suspension or revocation of driving privileges on the Base as well as the issuance of a summons and subsequent trial by the United States Commissioner.

NASA LANGLEY SCIENTIST ELECTED FELLOW OF AIAA

Francis M. Rogallo

Francis M. Rogallo, inventor of the paraglider and a scientist at the Langley Research Center for the past two decades, has been elected a Fellow of the American Institute of Aeronautics and Astronautics.

The award will be presented to Rogallo and seven other leading aerospace scientists and engineers, including a former Langley staff member who was a pioneer in this country's manned space flight program, at an honors night dinner at the third annual meeting of AIAA in Boston December 2.

In addition to Rogallo, whose flexible paraglider concept is being used in a variety of aeronautical and space projects, the AIAA announced that Christopher C. Kraft will become a Fellow. Kraft, now Director for Flight Operations at the NASA Manned Spacecraft Center, Houston, Texas, served for about 14 years on the Langley staff.

Rogallo was born at Sanger, California, January 27, 1912. He received the degree of Bachelor of Arts from Stanford University in 1932 and remained at Stanford until 1935, when he was awarded the degree of Engineer in Mechanical Engineering. He is a member of Phi Beta Kappa, Tau Beta Pi and Sigma Xi honorary societies.

A Langley scientist since 1936, Rogallo is head of the Low-Speed Vehicles Branch of the Full-Scale Research Division. He has been a member of the AIAA since 1935 and is active in the organization's Hampton Roads Section. He is a past president of the Engineers' Club of the Virginia Peninsula.

Some uses of the flexible wing paraglider concept presently being considered include personnel and cargo dropping, cargo towing, launch vehicle recovery, powered reconnaissance drone and manned utility vehicle. Army tests conducted in cooperation with NASA to use the paraglider for landing men from aircraft in flight indicate that the flexible wing is a feasible and utilitarian personnel carrier.

New AIAA Fellows are selected each year by a secret ballot of the AIAA Fellows residing in the United States. They are selected in recognition of important contributions to the advancement of the aerospace sciences. Other re-

(Continued on page 7)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

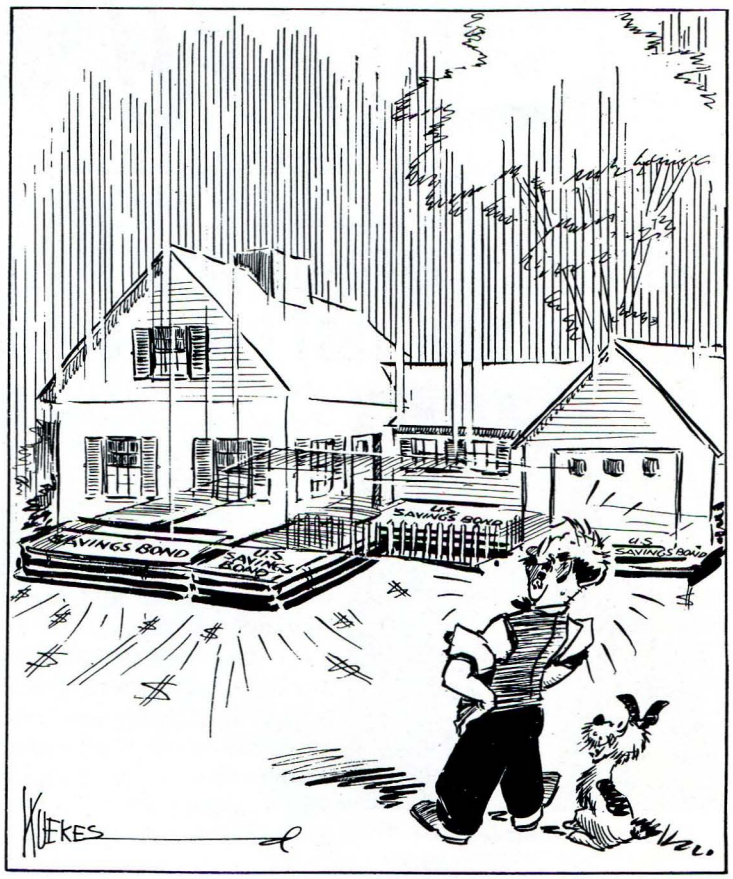
ANNOUNCEMENTS

BABY DERBY. . .Passing out candy and cigars is I. O. MacConochie, Flight Vehicles and Systems Division. He became the father of an adopted daughter, Corinne Bruns, on July 8. The young lady was born April 21. . .George V. Insley, Mechanical Service Division, recently became the father of a six pound, three ounce son. . .Word has been received at the Center that Jean Drummond, Scout Project Office, became the mother of a nine pound, three ounce son, Bradford Westphal, on July 3. . .Weighing in at six pounds, seven ounces on June 28 was Sherri Lynne, new daughter of John Cooper, Applied Materials and Physics Division. . .Announcing the birth of an eight-pound son, Kenneth Andrew, on June 30 is Granville L. Webb, Flight Vehicles and Systems Division. . .Celebrating the birth of a five pound, ten ounce daughter, Monique Jean, on July 1 are Jean and Earl Migneault, both of Lunar Orbiter Project Office. . .Thomas Young, Lunar Orbiter, became the father of an eight pound, twelve ounce daughter, Anne Blair, on June 27. . .Walking the floor nights is William L. Newcomb, Flight Vehicles and Systems. He became the father of a daughter on June 26.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on July 20 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

NEWLYWEDS. . .Dan Cupid scored a victory when Robert B. Lee III, Applied Materials and Physics Division, took his final vows with Margaret R. Giles, Lynchburg, on June 25 in the Fifth Street Baptist Church, Lynchburg. . .Percy R. Keffer, Head of Modelmaking Branch, married Mrs. Ercell Parker, Newport News, on July 2 in the Williamsburg Methodist Church. . .Ellen G. Evans and Samuel A. Morello, both of Flight Mechanics Division, were married on June 11.

EMPLOYEES HONORED. . .Several staff members were honored at the 23rd Installation Banquet of the Hampton Roads Jaycees. Installed as officers for the 1966-67 year were: John E. Cooper and Edgar D. Kersey, Applied Materials and Physics Division, members of the Board of Directors; Amos A. Spady, Space Mechanics Division, Recording Secretary, and C. Gordon McBride, Office of Patent Counsel, Legal Counsel. Receiving merit awards for outstanding service to the chapter and the community were L. Wayne McKinney, Full-Scale Research Division; Edwin F. Harrison, Aero-Physics Division; Charles V. Woerner, Applied Materials and Physics, Kersey, Spady, and Cooper. David F. Varner, Research Models and Facilities Division, retired from the organization after several years of service. The Jaycees is a community service and leadership training organization for men between the ages of 21 and 36. Merit awards are given for above average contributions of both time and leadership ability to the organization and, thus, to the community. The Hampton Roads Chapter has a membership of about 200. It conducts approximately 90 projects each year which directly or indirectly benefit the community.



EVEN A DREAM NEEDS A GOOD FOUNDATION

Savings Bonds now pay 4.15% to maturity

ENGAGEMENT. . .A Center romance reached the engagement stage when Nancy K. McKenzie and David L. Gray, both of Instrument Research Division, announced their plans to wed. No date has been announced for the big event.

FOR SALE: 1960 Corvair, 2-door, straight stick - $400. Fry, 898-5311.

FOR SALE: Brown matching sofa and chair. Williams, 838-3451.

WANTED: Bicycle with Dirailleur gears. Williams, 838-3451.

FOR SALE: 1959 Chrysler New Yorker, power equipped with air conditioner - $450; 26-foot cabin cruiser, sleeps 4, 115 hp Chrysler Marine engine - $1200. Lawson, 723-9204.

TRAFFIC VIOLATIONS ON BASE WILL BE ASSESSED BY POINTS

According to the Chief, Security and Law Enforcement Division, Langley Air Force Base, there have been numerous accidents involving motor vehicles on the base. Steps taken to curtail motor vehicle incidents include reducing speed limits in several areas and stricter enforcement of base traffic regulations by Air Police.

Infractions of the LAFB traffic regulations by personnel operating motor vehicles on the base may result in suspension or revocation of driving privileges on the base as well as the issuance of a summons and subsequent trial by the United States Commissioner for civilian personnel not subject to the Uniform Code of Military Justice.

Suspension or revocation of driving privileges are prescribed by a Joint Regulation of the Departments of the Army, Navy and Air Force which provides, among other things, an impartial and uniform administrative device for evaluating driving performance of personnel on military installations. The regulation provides for the imposition of points for traffic violations.

Traffic points assessed against an individual remain in effect for a 24-month period. An accumulation of 12 or more points will result in suspension of driving privileges for 6 months or longer. Driving on the installation while privilege is suspended will result in permanent revocation. Appeals or grievances from suspension or revocation by civilian employees are processed in accordance with appropriate civilian personnel regulations.

Violations and points assessed are as follows:

1. Driving under the influence of intoxicating liquor - 12 points assessed.
2. Manslaughter, negligent homicide, or assault by an automobile - 12 points assessed.
3. Intentionally leaving scene of accident: a. Involving death or personal injury without rendering aid or information - 12 points; b. Involving damage to property of another without making identity known - 6 points.
4. Reckless driving - 5 points assessed.
5. Speeding: a. Up to 10 mph over posted speed limit - 2 points; b. Eleven to 20 mph over posted speed limit - 4 points; c. Grossly excessive speed of over 20 mph over posted speed limit - 6 points.

WRONG ADDRESS DELAYS MAIL

Officials at the Kennedy Space Center announced that serious delays in mail receipts are being experienced because offices within NASA centers are using the incorrect address for mail to the center. Persons concerned are advised that the correct address is: John F. Kennedy Space Center, NASA; Kennedy Space Center, Florida 32899.

FOR SALE: Piston-type well pump with tank - $25. Christian, 722-8306.

FOR SALE: 3-bedroom, 1-1/2 bath rancher with attached garage in Bethel Park. Davidson, 826-5760.

FOR SALE: 3-bedroom brick rancher with attached garage. Greene, 723-8464.

FOR RENT: 3-room furnished apt. for couple or gentleman. Ozment, 722-5972.

FOR SALE: 4-foot x 7-foot pool table, cues, balls, and rack - $50. Williams, 723-5074 after 5 p.m.

M. Leroy Spearman, Head of Large Supersonic Tunnels Branch, Full-Scale Research Division, was honored last month when he spoke at a meeting of the Birmingham Chapter of the Air Force Association in his home town in Alabama. During the meeting Albert Boutwell, Mayor of Birmingham, presented Spearman a key to the city. The subject of Spearman's speech was "Recent Aeronautical Research."

NASA ADMINISTRATION HISTORY

A 381-page administrative history of NASA's first five years has been completed and is available at the Government Printing Office.

The first of a series which will ultimately cover major programs and other aspects of NASA operations details the space agency's administrative history from its inception in 1958 through 1963.

Titled "Administrative History of NASA, 1958-63," (SP-4101), the volume was written by Dr. Robert L. Rosholt from official source material. It is available at $4 a copy from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

The history studies the call by President John F. Kennedy in May 1961 for an accelerated program of space exploration, including the landing of an American on the moon in this decade, and focuses on the inner workings of NASA to accomplish its mission.

Dr. Rosholt prepared the history under a NASA contract with the University of Minnesota between 1962 and 1964. He is presently teaching at College of Wooster, Wooster, Ohio.

FOR SALE: 3-bedroom, 1-1/2 bath house at 163 Linden Ave., Hampton, also Frigidaire refrigerator - $50, and Tappan gas stove - $35. Guy, 723-1235.

FOR SALE: 3-bedroom, 1-1/2 bath brick rancher in Riverdale. Grose, 838-1314.

CHEF WHO CATERS TO ASTRONAUTS GETS ALL KUDOS, NO COMPLAINTS

It's a rare chef who never gets a complaint on his cooking, but Lewis Hartzell qualifies for such ranking.

He prepares the meals at Kennedy Space Center for the prime and backup astronaut crews and their guests during each manned Gemini mission.

In fact, rather than complaints, he is showered with kudos on his culinary skills. The following comments have been registered by previous Gemini pilots:

"Lou, thanks for the good chow," (Edward White).

"My compliments to the chef." (James Lovell)

"You sure know how to cook." (Frank Borman)

The list goes on and on. Gemini 8 command pilot Neil Armstrong remarked once that it was hard to keep from eating his way out of the spacecraft with Lewis serving up such tasty dishes.

Hartzell feels that the compliments should be reversed. "They're the greatest bunch of guys to cook for I've ever seen," he contends.

"As a rule the astronauts prefer just plain good home-cooked meals, nothing particularly fancy," Lewis said.

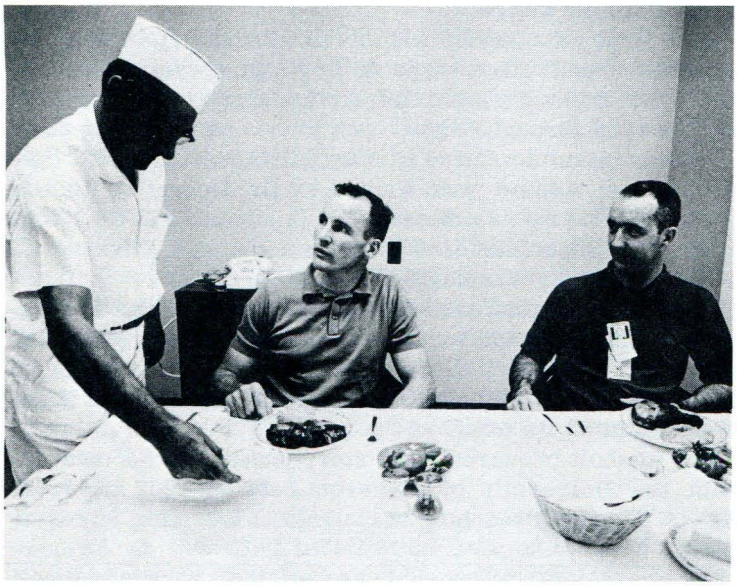
"Most of them favor steaks, roasts and lamb chops, but they eat just about anything I put in front of them. They're not choosy."

Lewis generally makes up the menu, and often asks the astronauts if there is any special dish they would like. They usually tell him to go ahead with what he had planned.

If the crew members are on restrictive diets, Lewis works by a menu provided by a dietician.

"I wouldn't classify the astronauts as the biggest eaters I've worked for," he says. "I've fed labor crews that were a lot hungrier. I would say the appetites here are about average."

Hartzell, who is help in the kitchen and dining room by steward Bob Hiller, is employed by the Macke Corporation. He began cooking for the spacemen on the Gemini 4 mission.



It's a rare chef who never gets a complaint, but Lewis Hartzell (left) is one of them. He prepared the meals at the Kennedy Space Center for astronaut crews during recent Project Gemini missions. Here he helps Gemini pilots Ed White (center) and Jim McDivitt put on the feedbag.

A native of Daytona Beach, Fla., he began his culinary career with the Marines shortly after his enlistment in 1937. Following World War II he opened his own bake shop, and then served as cook on various yachts and tugs on voyages all over the world.

Lewis says the kitchen facilities in the astronauts' quarters, on the the third floor of the Manned Spacecraft Operations Building, are the best he has ever seen.

"This is quite different from the old oil burners and beat up pots and pans I had on those tugs," he says.

When the astronauts are at the center for training the chef's schedule follows theirs.

This often requires a 12 or 14-hour day, but Lewis says he doesn't mind a bit. Nor does he mind if the guest list runs the number of diners from four or six up to 20 or 25.

After all, what chef would mind with such appreciative diners. He hasn't had a complaint yet.

NINE RECEIVE CASH AWARDS

Nine employees recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Donald E. Hewes, Space Mechanics Division, received $300 for his suggestion entitled "Rotating Space Station Simulator."

Dwight G. McSmith, Mechanical Service Division, was awarded $300 for his suggestion concerning "Pipette Safety Device."

Donald R. Rummler, Structures Research, received $600 for an "Automatic Force Measuring System."

Edward L. Hoffman, Structures Research, was awarded $200 for "Hydrofoil Watercraft."

Liam R. Jackson, Structures Research, received $300 for "Techniques for Insulating Cryogenic Fuel Containers."

Robert L. Gungle, Flight Vehicles and Systems, received $200 for "Self-sealing, Unbonded, Rocket Motor Nozzle Closure."

James W. Mayo, Flight Vehicles and Systems, and James E. Michael, Electrical Systems, shared a $100 award for their joint suggestion entitled "Connector - Electrical."

The highest award of $700 went to Carl V. Rumble, Instrument Research, for "Pressure Applicator."

DEFENSE AGAINST ACCIDENTS

The very best defense against an accident is not to be there when it happens.

This sounds like an impossible feat, doesn't if? But it really can be accomplished. It's easy.

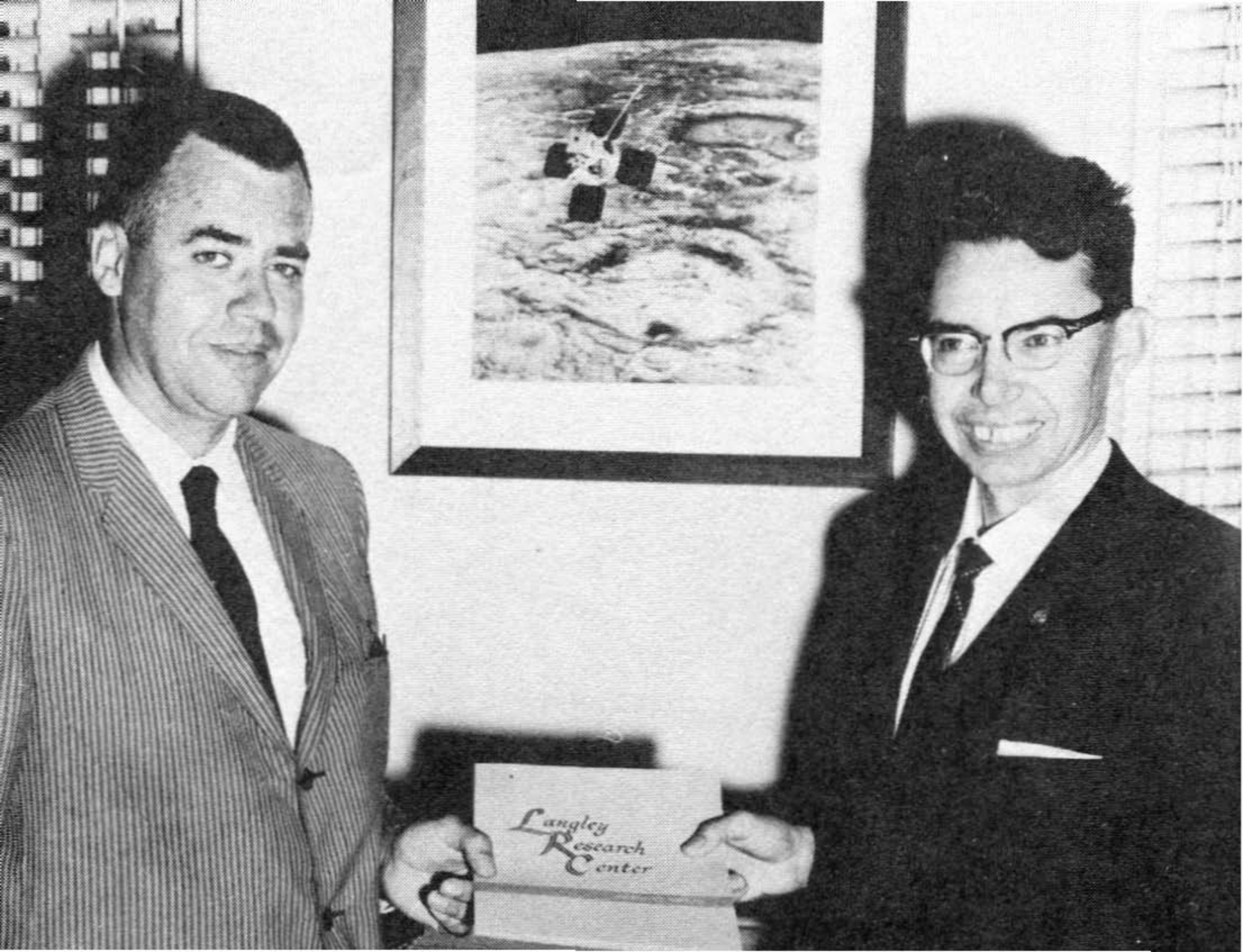
You simply make it an essential part of your job to know all the practices for working safely; make it a strict policy to follow all of those practices without exception; appreciate what an accident can do and what you can do to prevent it.

That's the way you can avoid "being there" when an accident happens - by seeing to it that no accident happens where you are!

It's a trick that works on the job, at home, and in your leisure time activities.

FOR SALE: Youth bed, no mattress - $15. Evans, 229-7445.

FOR SALE: 4-bedroom antique brick house in Azalea Gardens. Cross, 723-2562.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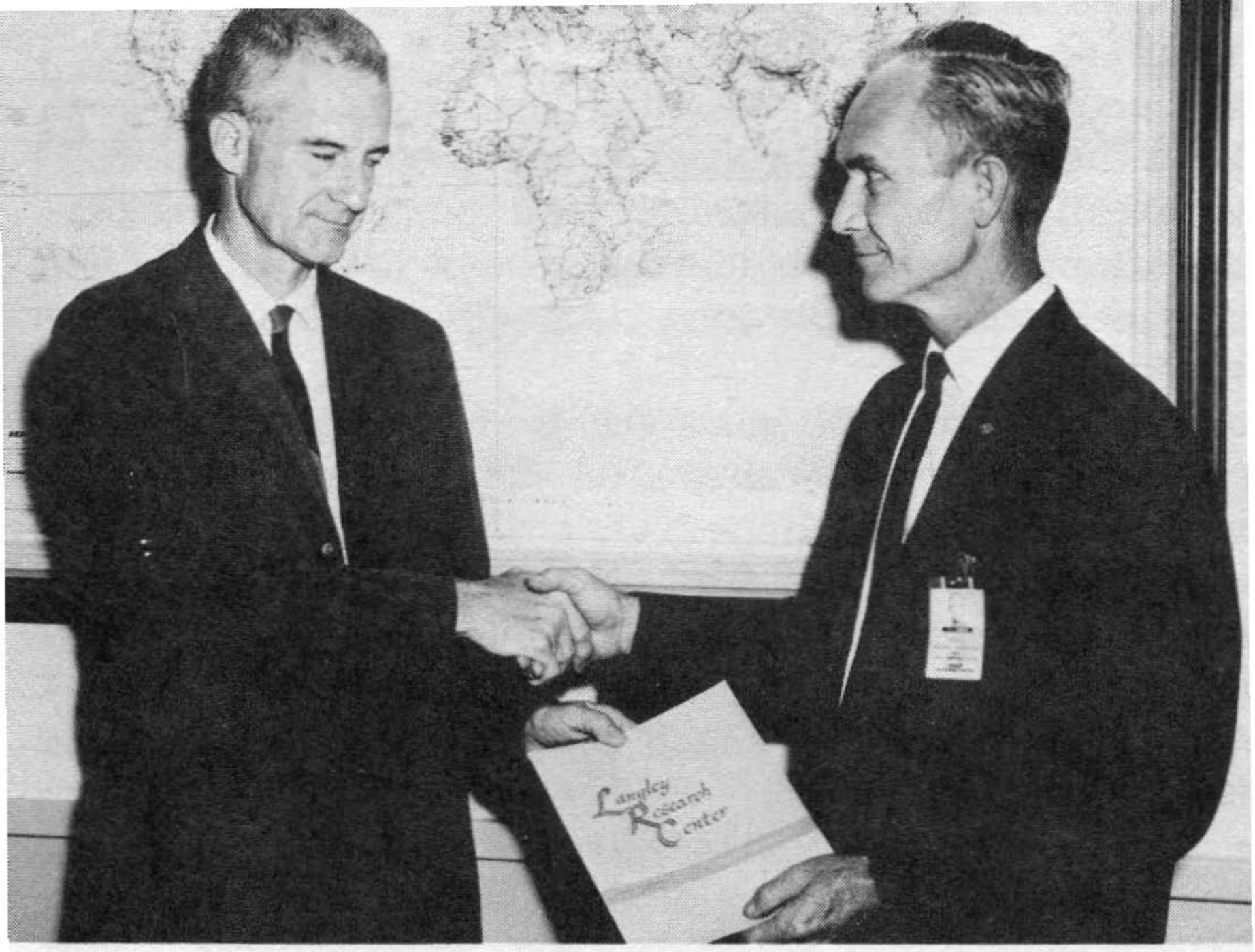


Nine staff members recently received cash awards for a
plications that might result in the granting of patents. To
left - William H. Phillips (right), Chief of Space Mechanic
Division, presents a check to Donald E. Hewes. Top right
Dwight G. McSmith (left) receives his award from Mario
B. Seyffert, Assistant Chief of Mechanical Services. Cente
left - Roger A. Anderson (left), Assistant Chief of Struc

mler, Edward L. Hoffman, and Liam R. Jackson. Cente
right - Edwin C. Kilgore (left), Chief of Flight Vehicle
and Systems Division, presents awards to James W. May
and Robert L. Gungle. Lower left - Howard B. Edward
(left), Chief of Instrument Research Division, congratulate
Carl V. Rumble. Lower right - Joseph Getsug (left), Chie

VRA-NASA TO AID HANDICAPPED

The rehabilitation of disabled people will get an assist from space technology as a direct result of an agreement signed between the Vocational Rehabilitation Administration (VRA) and NASA.

The agreement was signed by VRA Commissioner Mary E. Switzer and NASA's Deputy Administrator Dr. Robert C. Seamans, Jr.

NASA's Office of Technology Utilization will aid VRA by making available the results of aerospace research that also apply to the problems of the mentally and physically handicapped. This help could range from developing new aids for the blind, lame, and deaf, to information which may help free the handicapped who live in social isolation.

Vocational rehabilitation scientists at four VRA research centers will specify their unsolved problems in restoring the disabled to productive life.

NASA's Technology Utilization program will seek out information resulting from aerospace research and development that appears applicable to the solution of these problems. This information will be communicated to the VRA scientists for evaluation and application.

The agreement between the two Federal agencies will apply space research to rehabilitation on a continuing basis. Officials said the interagency cooperative effort is expected to produce a maximum return on the public investment in space research and development which can be adapted to rehabilitation, and point the way to similar joint efforts to apply new space technology in other areas.

There are approximately four million people of working age in the United States who have physical or mental disabilities. Until the pilot program is underway, scientists of the two agencies cannot estimate the value of aerospace research to the problems of the man in the wheelchair. However, the interagency program could revolutionize the approach taken in the 46-year-old program of vocational rehabilitation, the VRA pointed out.

The purpose of the interagency agreement is to accelerate the application of new technology to the problems of the disabled. This will involve an avaluation of NASA technology by VRA scientists; adaptive engineering to apply that technology to the needs of disabled persons; demonstration of the resulting devices, systems, and procedures; and the commercial introduction of new devices and services.

NASA noted, for example, that a proposal to NASA for a device to walk across the surface of the moon to gather data triggered a development project that resulted in a "walking wheelchair" that permits a paraplegic to navigate across difficult terrain. This is the type of innovation the agreement will foster.

FOR SALE: 1960 Mercedes 200-SB, 4-door, air conditioned, AM/FM radio. Mangum, 595-2009.

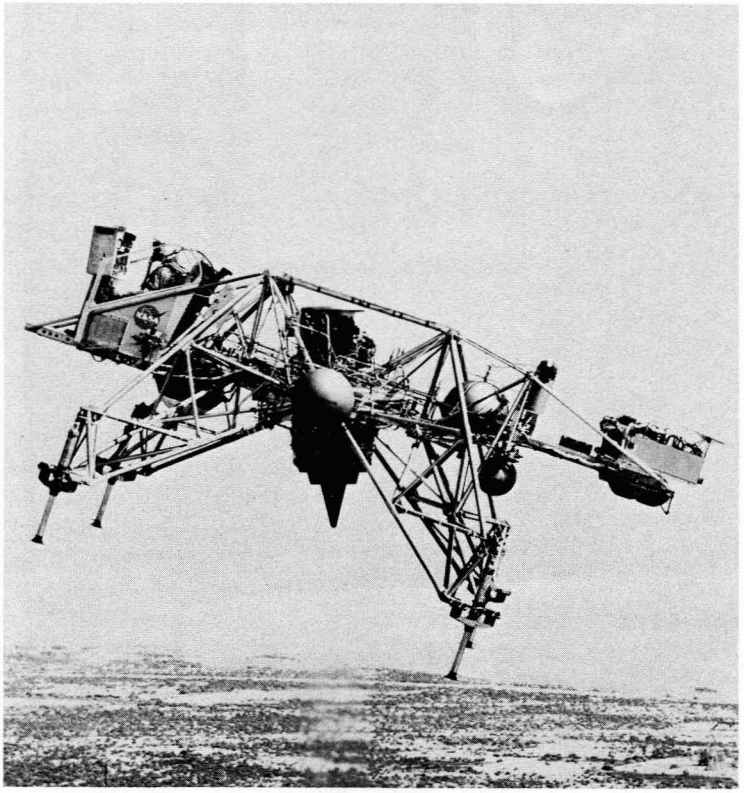
FOR SALE: 16-foot Shoup, convertible top, sleeps two, 50 hp Johnson motor, and trailer. Kulp, PA 3-4553.

FOR SALE: 2-story, 4-bedroom house in Tide Mill Farms-$1300 down. Leonard, 838-0111.

FOR SALE: 1957 Renault - $150. Friesen, 838-2295.

FOR SALE: Youth bedroom suite - twin youth beds, mattresses, dresser, chest of drawers, night stand, mirror, chair - $95. Cyrus, 596-0646.

FOR RENT: 3-bedroom, 1-1/2 bath house with garage and fenced backyard. Stone, 826-5878,



A Lunar Landing Research Vehicle (LLVR) is brought to hover over Rogers Dry Lake, California, by NASA test pilot Donald Mallick prior to making a descent and landing. The wingless machine, built for NASA by Bell Aerosystems, simulates problems of landing a manned spacecraft on the moon in low-gravity conditions.

NASA TO HONOR X-15 PILOT

NASA will award its Expectional Service Medal to Air Force Lt. Col. Robert A. Rushworth for his outstanding contributions to United States aeronautical research programs both as a pilot and as an engineer on the X-15 rocket airplane.

The medal will be presented formally in Washington, D.C., at the annual NASA awards ceremony in October.

Specifically, Col. Rushworth will be cited for his personal efforts in the rapid expansion of the manned flight techniques utilized in the joint NASA-USAF X-15 research program.

Col. Rushworth will leave the X-15 program this summer and transfer to Washington where he will attend the Armed Forces War College.

He made his first X-15 flight November 4, 1960, and has flown the three X-15 aircraft a total of 33 times, more than any other man. During these flights he reached a peak altitude of 285,000 feet and qualified for his Air Force astronaut rating.

He also attained a maximum speed of 4,018 miles per hour and the fastest Mach number attained yet in the X-15, 6.06 times the speed of sound. In 1962, an X-15 flight under his control recorded the highest X-15 skin temperature, 1,320 degrees F.

FOR SALE: Hot Point electric range - $40. Bush, 595-1692.

FOR SALE: Stereo Hi-Fi system - tuner, amplifier, automatic turn table, 2 speakers - $40 each. Davis, 838-4267.

FOR SALE: 1966 Mustang, 6 cylinder, radio/heater, 3-on-floor. Alvarez, 826-2351 after 5 p.m.

OUTSIDE EMPLOYMENT POLICY

Staff members are reminded that in order to engage in private employment outside NASA, prior approval must be obtained from Center officials.

NASA employees may not engage in outside employment which might reasonably result in conflict of interest or an apparent conflict of interest between the private interest of the employee and his official Government duties and responsibilities. Employees are not permitted to work for any firm having a contract with Langley Research Center.

In the absence of such conflict, however, NASA employees are entitled to the same rights and privileges as other citizens and there is no general prohibition against NASA employees engaging in outside employment if the employee's performance of his Government job is not adversely affected by the outside work, and the employee's outside employment does not reflect discredit on the Government or NASA.

When requesting permission to engage in outside employment, a request for approval address to the Director should be submitted to the Personnel Office, through official channels, containing the following information:

1. Employee's name, title, grade, and salary.
2. Full description of specific duties or service to be performed.
3. Name and business of person or organization for which the work will be done.
4. Estimated total time that will be devoted to the activity. (If on a continuing basis, the estimated time per year; if not, the anticipated ending time.)
5. Whether service can be performed entirely outside of duty hours; if not, estimated number of hours of absence from work that will be required.
6. Methods or basis of compensation (for example, whether fee basis, per diem, or per annum) and rate or amount of compensation estimated for a specified period.

LANGLEY SELECTS FIRM TO STUDY MANAGEMENT INFORMATION PLAN

NASA's Langley Research Center has selected Peat, Marwick, Livingston, and Company, Washington, D.C., to conduct a management information system study at the Center.

The contract will call for completion within six months of the study and design of all phases of a management information system. Interviews of representatives from all levels of management will commence on July 18.

The contract will exclude the computer systems design and programming.

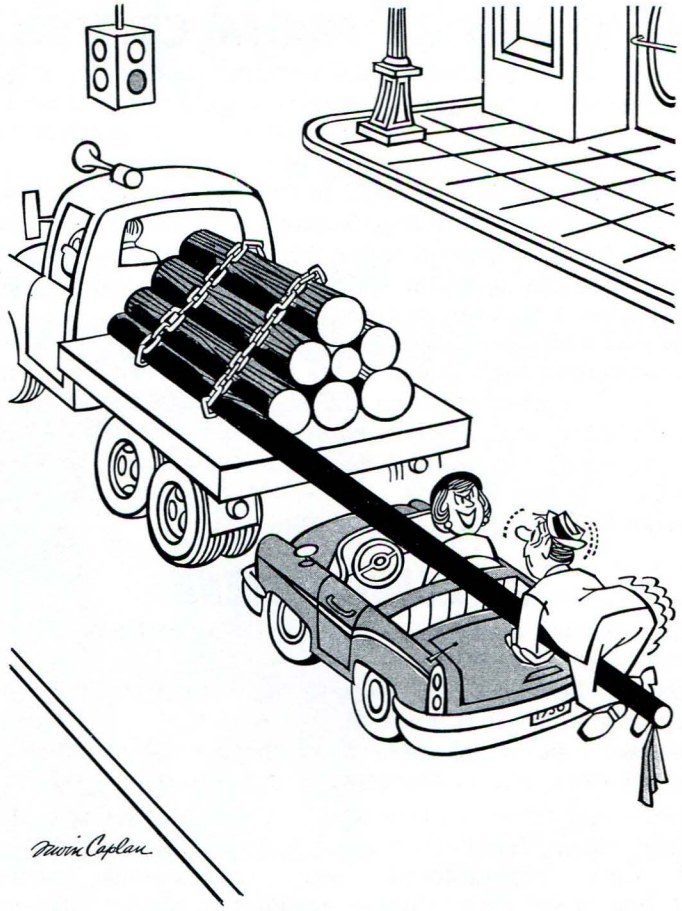
As a result of the study, the management firm will make recommendations on proposed management and information systems, the design of such systems, and a plan for meeting the objectives of its recommendations - together with a manpower estimate and time schedule.

WANTED: Driving combination from Newport News Ave., Hampton, to W.A. on 8 shift. Sleeper, 3561.

WANTED: Amplifier for bass guitar. Current, 868-9070.

FOR SALE: 21-inch Sears electric range - $25. Vann, 596-4157.

FOR SALE: Metropolitan spinet piano by Grand - $350. Reynolds, 244-2747.



"WELL, WISE GUY, STILL THINK YOU CAN STOP ON A DIME?"

ROGALLO ELECTED AIAA FELLOW

(Continued from page 1)

cipients of 1966 Fellow awards are:

Dr. Robert Jastrow, Director, NASA Goddard Institute for Space Studies, New York, N. Y.; Professor Frank E. Marble, California Institute of Technology, Pasadena, California; Dr. George E. Mueller, Associate Administrator, NASA Office of Manned Space Flight, Washington, D.C.; Professor Ascher H. Shapiro, Massachusetts Institute of Technology, Cambridge, Mass.; Dean E. Wooldridge, Director, TRW, Inc., Cleveland, Ohio, and Robert B. Young, Vice-President and General Manager, Aerojet-General Corporation, Sacramento, Clifornia.

WANTED: Driving combination from Portsmouth to E.A. on 8 shift. Stegall, 2231.

FOR SALE: 4-bedroom, 2-1/2-bath brick-front home on dead-end street. Young, 826-0373.

WANTED: Ride from Marlbank Farm to W.A. on 8 shift. Carroll, 4817.

WANTED: Alternate driver from Glendale to W.A. on 8 shift. Fournier, 4573.

WANTED: Ride for 3 from Buckroe to W.A. on 8 shift. Peeks, 4796.

FOR SALE: 10 x 12 tent with sewed-in floor - fully screened - $50. Reynolds, 868-9219.

FOR SALE: Four 650 x 13 w/w tires, new recaps - $10 each. Williams, 826-4793.

TWO RETIRE FROM CENTER

Eric B. Sauls, Building Equipment Service Section, Plant Maintenance Division, retired from the Center on June 17 and Charles L. Carney, Inspection Section, Research Models and Facilities Division, retired on July 18.

Sauls was born June 23, 1902 in Clayton, North Carolina. He attended South Side High School in Durham, N. C., and worked for the Public Housing Administration in Newport News before joining the Center staff on April 5, 1955 as an Equipment Maintenance Mechanic.

Carney was born June 29, 1904 in Gwynn, Virginia. He graduated from high school in his home town of Gwynn and worked a number of years for the Washington Navy Yard in Washington, D.C., Before entering on duty at the Center he was employed as an electrical locks operator in Panama Canal Balboa Heights, Canal Zone. He joined NASA on January 17, 1951 as an electrician.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 18:

Monday - Beef broth with barley, Spanish pot roast, baked lasagna, breaded veal steak, fish sandwich.

Tuesday - Puree of bean soup, barbecued spare ribs, chopped steak, clam croquettes, Welsh-tomato rarebit.

Wednesday - French onion soup, roast leg of lamb, grilled pork chops, fried chicken, hot dog.

Thursday - Vegetable-beef soup, grilled steak, braised beef tips over rice, chicken croquettes, spiced luncheon meat.

Friday - Clam chowder, roast beef, broiled fish, fried fish, franks and beans.

The menu for the week of July 25 is as follows:

Monday - Consomme julienne, hot roast beef sandwich, broiled ham slice, spaghetti and meat sauce, wieners and macaroni.

Tuesday - Tomato-rice soup, broiled Canadian bacon, baked meat loaf, liver and onions, chili-mac.

Wednesday - Chicken-noodle soup, simmered corned beef, stuffed pepper, fried chicken, grilled cheese sandwich.

Thursday - Vegetable-beef soup, grilled steak, baked ham, chicken chow mein, fish cakes.

Friday - Clam chowder, fried fantail shrimp, Swiss steak, broiled perch, barbecued sandwich.

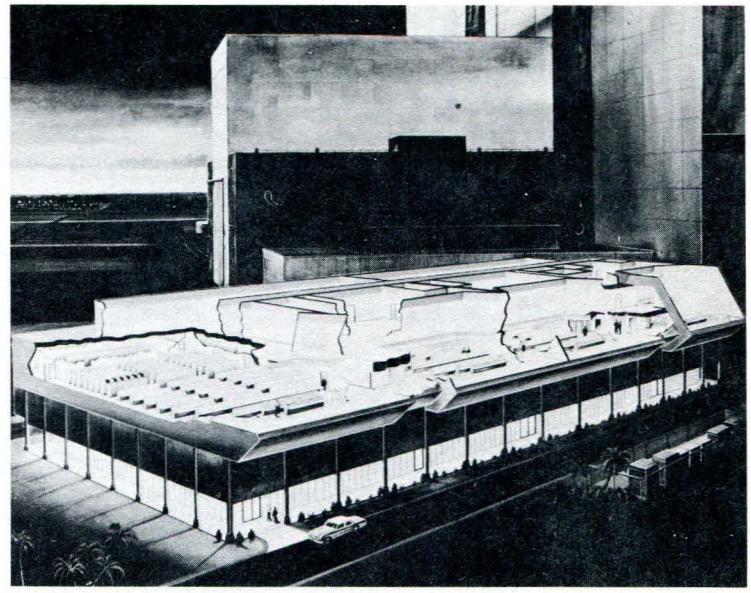
RETIRED NACA EMPLOYEE DIES

Word has been received at the Center of the death of Miss Margaret Muller, former Chief of the Office of Aeronautical Intelligence at NACA Headquarters.

Miss Muller, who joined the Government research agency during the manpower shortage of World War I, retired from NACA in 1949 after 32 years of service. On the occasion of her retirement, she was honored by her Langley friends at a reception and dinner in the Activities Building.

Miss Muller is credited with building up the NACA's Office of Aeronautical Intelligence, which proved of incalculable value to the Army Air Force and the Navy during World War II. For many years she also handled the distribution of NACA's technical reports and other publications.

FOR SALE: 3-bedroom, air contitioned house in Windsor Great Park. Dow, 877-1755.



EYES AND EARS OF THE KENNEDY SPACE CENTER - This is an architect's concept of the three-story Launch Control Center nestled beside the 52-story Vehicle Assembly Building (VAB) at NASA's Merritt Island moonport. The giant Saturn V rocket, which will launch Apollo astronauts to the moon, will be assembled and checked out in the VAB. From the Launch Control Center, launch teams will be able to view all pads directly and on television monitors. The current blockhouse concept has never allowed direct visual access to the launch pads. The third floor of the new control structure will contain identical sets of control and monitor equipment required for rocket checkout and launch, with separate computer facilities for each room. Second floor is designed for telemetry, ground receiving apparatus and recording equipment. Lower floor will house cafeteria, dispensary and offices.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center on July 6 and staff members donated a total of 123 pints of blood.

Richard Moberg completed his quota for six gallons and Joseph A. Siefring reached the five-gallon mark. John T. Benthall and George Kerner were credited with four gallons.

Three-gallon pins were presented to Joseph B. Emerson, James Adams, Harry W. Broskie, Edgar Freeman, Edith Whitley, and Madeline W. Johnson. Joining the list of two-gallon donors were Gerald Rainey, Charles W. Wiggs, Willie G. Goodwin, and Lawrence R. Bradshaw.

One gallon pins were presented to Bill McCloud, Charles Gilman, Richard J. Morgason, Hugh P. Bergeron, Thomas J. Yager, and Stephen P. Horvath.

Assisting during the visit were Dr. Michael G. Dewey and Dr. Samuel K. Ashby.

FOR SALE: 1962 Plymouth Savoy station wagon. Schiess, 838-4811.

FOR SALE: 14-foot Barbour runabout with convertible top, 40 hp Evinrude elec. start motor, Gator tilt-bed trailer. Hudgins, Gloucester 642-2501.

FOR SALE: 1964 Falcon Ranchero truck. Rogers, 826-4094.

WANTED: Home for kittens. Abbott, 723-6680.

FOR SALE: 9-inch portable TV, 1962 Mercury. Richardson, 723-5427 after 5 p.m.

Langley Researcher

VOLUME 5, NUMBER 15 LANGLEY RESEARCH CENTER JULY 29, 1966

REACTOR POWER SYSTEM UNDER STUDY FOR MANNED SPACECRAFT

Reactor power systems to provide electrical energy for manned, earth-orbital spacecraft are under study for the NASA and Atomic Energy Commission by Douglas Missile and Space Systems Division in Santa Monica, Calif.

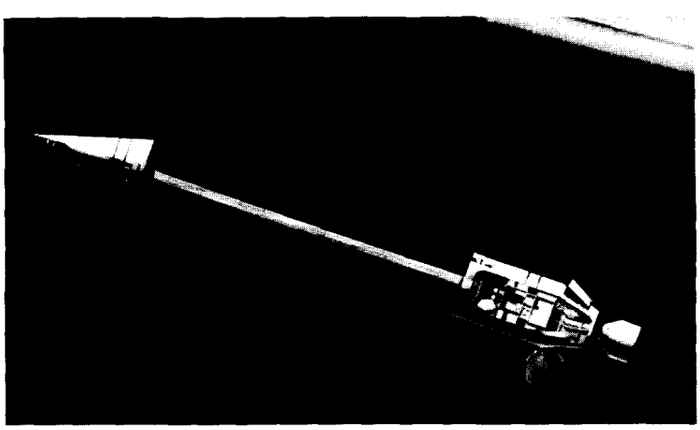
The study program, funded at approximately $400,000 under a contract with Langley Research Center, is an assessment of the need for nuclear systems to meet the increasing power demands dictated by the more ambitious objectives planned for manned space exploration.

Purpose of the 13-month study is to develop guidelines for reactor power systems technology programs, such as SNAP 2, SNAP 8 and SNAP 10A systems, as applied to manned missions and to integrate power system design with the Manned Orbiting Research Laboratory (MORL) class of missions.

MORL, a six-to-nine-man vehicle, was selected as a model for development of nuclear technology programs because it represents an application where design studies are well advanced. (Douglas has carried out a continuing series of MORL study programs for Langley during the past three years.)

Subcontractors to Douglas on the reactor power system study are Westinghouse Electric Corp., Aerojet-General Corp., Atomics International and AiResearch. Atomics International is an associate contractor responsible to the Atomic Energy Commission for the reactor phase of the study effort.

(Continued on page 8)



EXOTIC SPACE STATION - Design concepts utilizing nuclear reactors suspended on booms some 125 feet from manned, earth-orbital spacecraft have been developed by Douglas Missile and Space Systems scientists working under a $400,000 study contract from NASA and the Atomic Energy Commission. The reactor (left) would supply electrical energy to the spacecraft. By locating the reactors on booms far from the manned portion of the space station (right), the need for heavy shielding against harmful radiation would be diminished.

General Maximo Errazuriz, Commander-in-Chief of the Chilean Air Force, visited the Center last week and toured a number of research facilities. He is shown here inspecting the CH-46 helicopter with Charles J. Donlan, Langley Associate Director.

FLIGHT PLAN OF LUNAR ORBITER TO COVER SITE OF SURVEYOR I

The flight plan for the Lunar Orbiter, scheduled for launch next month, has been changed to enhance its capabilities for photographing the Surveyor I spacecraft on the Moon's surface.

The change allows Lunar Orbiter to photograph Surveyor I on two consecutive orbits. The position of the Surveyor I - designated Site 9.1 - is northeast of the crater Flamsteed in Oceanus Procellarum (Sea of Storms).

NASA plans to launch Lunar Orbiter A in the period Aug. 9 through Aug. 13. The project is managed by Langley Research Center.

The planned high-resolution photography by Orbiter will overlap the Surveyor I site on two consecutive orbits. This will make possible stereographic photos of Surveyor with pictures of resolution down to three feet.

Before contact was lost with Surveyor I after the lunar night began (July 13), its solar array and high gain antenna were positioned so as to form the largest possible shadow on the lunar surface. The technique will aid Lunar Orbiter photography of the Surveyor site. Surveyor landed June 2 at a point 43 degrees 34' west longitude and 2 degrees 41' south latitude. Since then, it has sent back to Earth thousands of close-up photographs of the Moon's surface.

The first seven areas selected for Lunar Orbiter photography remain as announced earlier.

In order to cover Site 9.1, it became necessary to shift

(Continued on page 6).

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

GRADUATE SCHOOL. . .All employees planning to attend graduate school at the College of William and Mary during the 1966 fall semester are urged to submit the necessary application for graduate study leave to the Training Branch as soon as possible. If forms are needed, call 2611.

WEDDING PLANNED. . .Wedding bells will ring tomorrow when Betty Sheffield, Analysis and Computation, and Gilbert Walker, Applied Materials and Physics Division, take their final vows.

RECEIVES AWARD. . .Robert L. Weirich, Full-Scale Research Division, was inadvertently omitted in the last issue of Langley Researcher in the list of employees who were recently presented merit awards by the Hampton Roads Jaycees for outstanding service to the chapter and the community.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, August 2 at 7 p.m. at the Central Labor Union Hall, Newport News.

NEW ARRIVALS. . .Celebrating the birth of a six pound, one ounce daughter, Meredith Rowe, on July 22 are Doris, Personnel Division, and Morris Phillips, Electrical Systems Division. . .Weighing in at six pounds, two ounces on July 5 was Carol Lynne, daughter of John H. Crews Jr., Structures Research Division. . .Word has been received at the Center that Joyce Price, formerly of Personnel, became the mother of an eight pound, two ounce daughter, Robin Fairfield, on July 17.

SPECTROSCOPY CLUB. . .Plans are being made to form a NASA Spectroscopy Club. The primary purpose would be to disseminate information among its members on an informal basis. Interested persons are requested to call R. J. Exton, 3446.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will Visit the Center on August 9 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

WANTED: Alternate drivers from Northampton to W.A. on 8 shift. Croom, 3611.

OBSERVE ETIQUETTE OF GOLF

Officials of the Activities Association have received a number of complaints from officials of the Langley Golf Association that a few NASA employees are abusing the privilege of using the Base golfing facilities by failing to observe the simple rules of etiquette. The privilege of using the golfing facilities on week days was extended to NASA employees and their dependents by the Langley Golf Association about two years ago and by the same token these privileges can be rescinded.

To have these privileges denied all Center golfers because of the abuse and inconsideration of an ignorant few would, indeed, be a sad state of affair

The following rules of etiquette should be observed by all golfers:

1. No player should play until the party in front is out of range.
2. When the play of a hole has been completed, players should immediately leave the putting green.
3. Players searching for a ball should allow other players coming up to pass them; they should signal to the players following them to pass, and should not continue their play until those players have passed and are out of range.
4. Before leaving a bunker or trap, a player should carefully fill up all holes made by him therein. Do not drag carts through traps or bunkers.
5. A player should see that any turf cut or displaced by him is at once replaced and pressed down.
6. Players should ensure that no damage is done to the putting green and the flagstick should be properly replaced in the hole before the players leave the putting green.
7. Do not litter the golf course.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 1:

Monday - Cream of tomato soup, roast ribs of beef, sauteed chicken livers over rice, Irish omelette.

Tuesday - Beef broth with barley, roast turkey and dressing, pot roast of beef, fried fish puffies, hamburger.

Wednesday - Chicken-noodle soup, half-pound chopped sirloin steak, chicken pie, pastafazool, hot dogs.

Thursday - Vegetable-beef soup, grilled rib eye steak, baked lasagna, pork chow mein, baked hash.

Friday - Clam chowder, crab cakes, baked meat loaf, broiled perch, chicken cutlet, grilled cheese.

The menu for the week of August 8 is as follows:

Monday - Beef stroganoff, baked ham, pepper topper steaks, grilled spiced luncheon meat.

Tuesday - Minestrone soup, simmered corn beef brisket, veal cutlet, liver and onions, fish cakes.

Wednesday - Chicken-rice soup, roast beef, spaghetti and meat balls, fried chicken, western omelette.

Thursday - Vegetable-beef soup, grilled rib eye steak, shrimp Newburg, chicken croquettes, tamale pie.

Friday - Clam chowder, grilled ham slice, stuffed flounder, fried fish, chicken cutlet, macaroni and wieners.

GOSPEL SING. . .A Gospel Sing Concert featuring the Currier Quartet and the Calvary Quartet will be sponsored by the Activities Association on Aug. 12 at 8 p.m. at Kecoughtan High School. Tickets are $1.50 and may be purchased from representatives to the Activities Association. Children under 12 will be admitted free.

WOMEN IN GOVERNMENT

Howard B. Edwards, Chief of Instrument Research Division, presents a $300 check to Betty Lee S. Phillips for her patentable invention suggestion entitled "File Card Marker." Betty Lee is the first woman employee at Langley to receive such an award. Invention awards are determined by the NASA Inventions and Contributions Board, Washington, D.C.

Betty Lee S. Phillips, a Clerk in the Instrument Support Section of the Instrument Research Division, received a dual award under the Employee Awards Program for her suggestion entitled "File Card Marker." She was present- a $25 cash award for her suggestion by the Incentive Awards Committee and was awarded $300 by the Inventions and Contributions Board to become the first member of the fairer sex at the Langley Center to receive an invention award.

Betty Lee's invention relates to a file card marker, and more particularly to a device for flagging punched-type business cards.

Business machine cards are utilized for a multitude of purposes, one of which is to keep a running inventory on the maintenance of laboratory equipment. To accomplish this, hundreds of cards must be filed according to chronological dates, locations, etc. In order to use such cards in a property control operation, it is necessary to flag the cards to apprise the clerk of various categories of equipment. One difficulty encountered in flagging the cards is the use of a device which will not mutilate the card. This is important since a mutilated card cannot be read by a business machine. Thus, if the card is torn, changed in thickness, or punched, it is no longer of value and must be replaced with a new one. The punching of a new card is expensive and time consuming.

Betty Lee's invention eliminates the difficulties encountered by providing a single piece file card marker through which the business card may be inserted. No adhesive, stapling or other such technique is necessary to secure the marker. A tab or raised portion of the marker is formed integral with the remainder of the device providing a means for ready identification of the particular card.

An object of the invention is to provide a file card marker for business machines which provides a means for flagging the card without mutilating it. Still another object of the invention is to provide a file card marker which is economical to manufacture and maintain, is not bulky and is easily attached or removed from the business machine card.

Betty Lee is a native of Beards Fort, West Virginia. She attended school in Summersville, West Virginia, and first joined the Center staff on February 4, 1944. She had several breaks in service and has a total of 11 years of Government service. She is married to Charles W. Phillips of General Electrical Services Section, Electrical Systems Division. They have two children - Paul, who is 20 years old and a junior at Lincoln Memorial University in Harrogate, Tennessee, and Donna, age 15 and a student at York Academy.

HYPERSONIC RESEARCH ENGINE

NASA has selected Garrett Corporation, Los Angeles, for negotiation of a contract to design and develop the engine for NASA's Hypersonic Research Engine Project.

The contract is for approximately $15 million and calls for final design, development, construction and testing of small research ramjet engines. The engine will have a design weight limitation of 800 pounds with dimensions compatible with mounting it beneath the aft fuselage of the X-15 No. 2 airplane.

The Hypersonic Research Engine is one of the programs of the Aeronautics Division of NASA's Office of Advanced Research and Technology. The work will be carried out under technical direction of Langley Research Center with assistance from Ames, Lewis, and Flight Research Centers.

Liquid hydrogen fuel is specified for the research engine which must be capable of operating at flight speeds between Mach 3.0 and 8.0 (2,000 to 5,000 miles per hour.) Mach 1 is the speed of sound.

The contractor will be required to deliver the first flight engine to NASA within 29 months.

The ramjet engine differs from current aircraft engines, such as the turbojet, in that there are no rotating parts. It must be in motion through the air to begin operation. Operation depends on air being rammed into the inlet. Fuel is introduced into the internal air flow to add energy through combustion. The expanded gases are released through a nozzle to provide thrust.

Because of their fuel economy at hypersonic speed (above 3,500 mph), ramjet engines are expected to be useful for hypersonic transport aircraft, boosters, and for spacecraft flying within the atmosphere.

Garrett was selected for this second phase of the Ramjet Project on the basis of its nine-month preliminary design study completed under Phase I. Two other companies participated in the nine-month competition - General Electric Company, Cincinnati, and Marquardt Corporation, Van Nuys, California.

WANTED: Ride from Elm Ave., Newport News, to W.A. on 7:30 shift. Hutton, 596-0242.

WANTED: Ride or driving combination from Country Club Apts. to W.A. on 8 shift. Berry, 3421.

FOR SALE: Kingston vacuum cleaner with all attachments, $50. Oliver, 722-1733 after 5:30 p.m.

15 PILOTS TEST ARMY XV-5A

As part of an extensive V/STOL evaluation program being conducted by the U.S. Army Aviation Materiel Laboratories (AVLABS) at Fort Eustis, fifteen test pilots have been checked out in the Army's XV-5A lift-fan research V/STOL AIRCRAFT.

A high performance jet aircraft which also has the hover and maneuvering capabilities of a helicopter, the XV-5A has been flown at Edwards Air Force Base by military pilots, government agency pilots and civilian contractor test pilots.

Designed and built for the Army by Ryan Aeronautical Company and General Electric, the XV-5A has been flown by pilots with extensive jet aircraft experience, but little helicopter time and vice versa. During the first phase of the Army XV-5A program, Ryan test pilots performed the flight tests. As part of the Phase II tests which were conducted from January to November 1965, U.S. Army Aviation Test Activity pilots Major William Welter and civilian Bill Anderson flew the XV-5A. Major Paul Curry of AVLABS and Air Force Major Phil Neale were also checked out. General Electric test pilot Dick Scoles was the seventh member of the Phase II flying team.

Following the Phase II tests, eight more pilots went through the Ryan XV-5A flight simulator program at San Diego, preparatory to flying the XV-5A at Edwards. The pilots were checked out in the XV-5A over a two-month period at a rate of five flights per pilot, with the aircraft making up to five flights a day and averaging over one flight per work day for the total period.

Qualifying in the aircraft were NASA pilots Robert Champine, Langley Research Center, and Ron Gerdes, Ames. Also qualifying were Major Tom West and civilian Duane Simon of AVLABS; Air Force pilots Major Robert Baldwin and Major David Tittle; Major Eric Larsen of the U.S. Marine Corps, and Carl Hansen, Federal Aviation Agency.

Each of the pilots began with a conventional jet take-off, flight, and landing. This was followed by two hover and translation flights, climaxed by two transition and conversion flights. Since the co-pilot seat in the XV-5A is currently filled with instrumentation equipment, all of the pilots simply got into the airplane and flew it. Considering the diverse backgrounds of the eight pilots, the debriefing sessions provided the hoped for analysis.

All eight were unanimous in wanting to fly the XV-5A for more than the two-hour period allotted to each. Overall, the pilots considered the XV-5A an "easy learning airplane, pleasant to fly."

The results of the pilot's observations and evaluations are being compiled and studied by the Army for application on future XV-5A tests and Army V/STOL aircraft programs in general. The pilot familiarization program is just one of the many facets of the overall Army V/STOL flight evaluation being conducted with the XV-5A aircraft.

U.S. Army XV-5A V/STOL research aircraft utilizes vertical thrust from fans in wings and nose to hang in a motionless hover above runway at Edwards Air Force Base. Fifteen test pilots have been checked out in the Ryan-built aircraft since start of Phase II test program in January 1965. Test program is scheduled to continue through September. Participating in the program are NASA pilots Robert Champine, Langley Center, and Ron Gerdes, Ames.

WANTED: Driving combination from Yorkshire (Tabb) to W.A. on 8 shift. Wells, 4871.

WANTED: Shallow well pump. Joyner, 722-6588.

WANTED: Ride from Windsor Great Park to W.A. on 7:30 shift. Weaver, 4643.

WANTED: Home for 2 kittens. Edwards, 722-1744.

WANTED: Girl to share apartment in Riverdale Plaza. Barbara Hixon, 4842.

PROFESSORS TO VISIT CENTER

Dr. John W. Cell, Head of Department of Mathematics, North Carolina State University, will present a lecture in the East Area Projection at 10 a.m. on August 11 on "Approximate Methods for Inversion of Laplace Transforms." All interested persons are invited to attend.

The following professors will visit the Center next month to discuss graduate study programs with interested staff members:

August 1 - Dr. Leon W. Rutland Jr., Head, Department of Mathematics, Virginia Polytechnic Institute.

August 3 - Dr. Robert W. Truitt, Head, Department of Mechanical and Aerospace Engineering, North Carolina State University.

August 5 - Dr. James B. Eades Jr., Head, Department of Aerospace Engineering, Virginia Polytechnic Institute.

Persons desiring appointments with the visiting professors are requested to call Training Office. 2611.

NASA TENPIN LEAGUE

The NASA Tenpin Bowling League will hold an organizational meeting on Wednesday, August 17 at 7 p.m. at the Hidenwood Lanes. All teams are requested to have a representative present.

League play will start in September and bowling time will be on Tuesday nights at 6:45 at Hidenwood Lanes.

For further information call Roy Henley, 2594, Marna Cordle, 4815, or Leonard Mayo, 4766.

The Langley Research Center recently served as host to the heads of the federal agencies in the Hampton Roads area for the purpose of exploring the possibility of establishing a local Federal Executive Association. Left photo - Looking over the guest list are (from left): Dr. Floyd L. Thompson, Langley Director; Alfred S. Hodgson, Director of NASA Headquarters Administration; William L. Williams, Langley Staff Assistant; T. Melvin Butler, Assistant Director of Administration at Langley, and William D. Carey, executive Assistant Director, Bureau of the Budget. Carey was guest speaker for the occasion. Right photo - Hodgson and Dr. Thompson talk with Rear Admiral James E. Dietz, Commanding Officer of the Naval Supply Center, who was elected temporary chairman.

SURVEYOR I REPORT ISSUED

A technical report on the first five days of the successful Surveyor I lunar spacecraft has been compiled and published by NASA. It is entitled "Surveyor I - A Preliminary Report."

The report includes the launch phase as well as the flight and soft landing on the moon. It discusses lunar surface properties; topography; geology; thermal properties; location of the spacecraft, including slope of the landing site; shape and structure of terrain around the spacecraft; size distribution of debris; material ejected by spacecraft footpads and surface luminance.

In a foreword to the report, Dr. Homer E. Newell, Associate Administrator for Space Science and Applications, emphasizes: "This publication, preliminary in nature, has been compiled even before the full functioning 'lifetime' of Surveyor I has been established. It does not attempt to present detailed measurements and analyses of the immense amounts of scientific data that the spacecraft has telemetered to Earth; this task will take months and even years."

The document is available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. It costs 75 cents.

FOR SALE: 16-cubic-foot Westinghouse refrigerator. Wright, PA 2-6959.

FOR SALE: 1963 17-1/2-foot Glasspar fiberglas seafarer sedan with head, bow rail, Navy top - sleeps 2; 75 hp Evinrude motor, and trailer - $2500. Parker, 596-4452.

FOR SALE: 1958 Plymouth station wagon, 6 cylinder, straight shift - $100. Summerfield, 898-6122.

FOR SALE: 1966 Ford Fairlane convertible. Gibbons, 838-1900.

FOR SALE: Or trade for boat and motor - 1960 Chevrolet, 6 cylinder, straight shift. Greene, 723-1985.

AREA OFFICIALS MEET TO FORM FEDERAL EXECUTIVE ASSOCIATION

The Langley Research Center recently served as host to the heads of the federal agencies in the Hampton Roads area for the purpose of exploring the possibility of establishing a local Federal Executive Association.

William D. Carey, Executive Assistant Director, Bureau of the Budget, was guest speaker. Carey has assisted in the establishment of the initial ten Federal Executive Boards across the country. He provided an overall view of some of the accomplishments, problems encountered, and personal feelings of the President toward these boards.

Carey was introduced by Stephen Ryder, Regional Director of the Philadelphia Civil Service Region. Ryder has had a wealth of experience in the operation of the Philadelphia Federal Executive Board, having served as chairman and in his current capacity as head of the Committee on Personnel Management. He explained the differences between a Federal Executive Association and a Federal Executive Board - the Board status can only be granted by the President. At present there are 12 such boards and about 30 associations.

It was pointed out that the Hampton Roads area has one of the largest concentration of federal civilian employees remaining without an association or board.

Rear Admiral James E. Dietz, Commanding Officer of the Naval Supply Center, was appointed temporary chairman of the local group.

Alfred S. Hodgson, Director of NASA Headquarters Administration, accompanied Carey from Washington.

WANTED: Driving combination from Norfolk to W.A. on 8 shift. Kennedy, 4557.

WANTED: Alternate drivers from Beechwood to W.A. on 8 shift. Tompkins, 4891.

KNOW YOUR CREDIT UNION

Need money? Maybe not, but it is still comforting to know that the Credit Union has enough readily available to meet any reasonable requirements that members might have. There are not many financial institutions, nowadays, about which this same statement can be made. Most are hurting. Look how the shortage of money-to-lend is helping to dry up the housing market nationwide. Look how local ads have changed. No more is the theme borrow-borrow on "lowest" terms. Now it is save-save at "highest" interest rates.

This demand for money is seemingly insatiable. Corporations want it to buy new homes or automobiles or appliances. For months the demands of these insistent borrowers have pushed interest rates steadily higher throughout the country - but still the cry for funds has persisted.

The Federal Reserve Board itself initiated the clampdown on credit when last December it raised the discount rate - the interest it charges on loans to member banks - from 4 to 4-1/2 percent. Now for the third time in recent months, the nation's top commercial banks have put a new squeeze on credit by raising their prime rate to an all-time high. The rate, which went from 5.25 to 5.75 percent, is the interest the banks charge their biggest and most credit-worthy customers - usually corporations. True, all this is somewhat removed from the local scene but the effects will eventually be felt.

Bank lending rates are scaled upward from the prime rate. Sooner or later the consumer will be affected. First, money for loans with fixed low rates of interest may disappear. One example is Title I Home Improvement Loans where the rate is set by law; another is new car loans where competition keeps the rate at a minimum. Secondly, the consumer may find himself paying more for the money that is available. But through it all, the Credit Union will be doing business at the same old stand - at least until the new building is completed.

Plenty of money for any worthwhile purpose is available at the same low rate of interest. This may be a blessing for forward looking members. Remember the sales tax - the new statewide tax which goes into effect September 1? Well, it will be 3 percent not 2 and is expected to be on the entire amount of the purchase. Gone will be the $200 ceiling which limited the tax to a maximum of $4. For example, three percent of a $3000 automobile is $90 - makes beating the deadline worth thinking about. If you do buy now, don't give the savings back in service charges or unnecessary interest. It is easy to do unless you deal with the Credit Union - then it's impossible.

GALLAGHER DIES AT AGE 47

James J. Gallagher, Operations Office, Aero-Physics Division, died Monday after a long illness.

Gallagher was born April 24, 1919 in Fairfield, Conn. He received his B.S. degree in Aeronautical Engineering from Rensselaer Polytechnic Institute and joined the Center staff on June 1, 1942 as a Junior Aeronautical Engineer.

He is survived by his wife, Mrs. Louise Hull Gallagher, a daughter and two sons.

WANTED: Gentleman to share furnished 2-bedroom apartment. Hawkins, 596-5665 after 4:30 p.m.

WANTED: Ride from Bethel Park area to W.A. on 8 shift. Barrett, 4459.

According to the President's Physical Fitness Program, everyone should find time for some form of physical activity. Many forms of recreation and activity are available in the community. This family enjoys its exercise together - at one of the nearby beach facilities.

PHYSICAL FITNESS PROGRAM

The Activities Association presents for your consideration the President's Physical Fitness Program. How do you feel? Are you overweight? Do you tire easily? The cause may be a lack of exercise, perhaps combined with overeating.

According to the President's program, every adult should find time in his daily schedule for some form of physical activity. Medical evidence tells us that our hearts, lungs, muscles and even our minds need the effects of regular and vigorous exercise. Overweight and flagging stamina, the badges of the unfit, now are recognized as invitations to old age and illness.

The question arises, "What exercise?" Under the sponsorship of the Activities Association, organized programs are available in men's and women's softball, basketball, tennis, football, and golf. The area offers swimming, sailing, water skiing, skin diving and many other water sports.

If you wish to take your exercise in your own air conditioned palace, the booklet "Adult Physical Fitness," prepared by the President's Council on Physical Fitness, will show you a program adjusted to your age and condition. Free copies are available from the Activities Association, telephone 4508.

LUNAR ORBITER FLIGHT

(Continued from page 1)

the original Site 8 slightly north to an area now designated Site 8.1. The new site, about 130 miles east of the Flamsteed crater, contains a series of rilles on the floor of Oceanus Procellarum. It is centered on a point of 3 degrees 00' south latitude and 36 degrees 30' west longitude.

Site 9.1 is centered at a point at 2 degrees 21' south latitude and 43 degrees 22' west longitude. This is a shift of one degree south and slightly east of the original Site 9.

The new site, also in Oceanus Procellarum, covers the rim as well as the floor of an ancient crater in which Surveyor I landed northeast of Flamsteed. The portion of the rim to be photographed by Orbiter includes humps photographed over the horizon by Surveyor I.

Orbiter will not photograph the original Site 10, which was outside the potential landing area of Apollo manned landing missions.

UNDERGRADUATE COURSES

The Undergraduate Training Committee has approved the following courses for the Fall Semester:

Credit courses sponsored by William and Mary: Math 103 - Algebra and Trigonometry - 45 hours - An integrated study of the real number system, sets, functions, graphs, equations and inequalities, systems of equations, matrices and determinants. This is followed by a study of the trigonometric functions and their properties.

Math 202 - Calculus with Analytic Geometry - 45 hours - The definite integral and the Fundamental Theorem of Integral Calculus and their applications to areas, volumes, work, first moments and centroids including improper integrals and solids of revolution. Technique of integration, parametric equations, polar coordinates and vectors.

Math 302 - Differential Equations - 45 hours - Ordinary differential equations. Laplace Transform. Series solutions of Legendre and Bessel equations. Solutions of partial differential equations by separation of variables. Applications in geometry, physics, and engineering.

Non-credit course sponsored by William and Mary - Basic Mathematics for College - 45 hours - The content of this course will include a review of advanced high school algebra, including trigonometry, and the introduction and the relationship of algebra and trigonometry to analytical geometry. Also the basic curves normally used and the equations associated with these curves that are normally encountered with analytical geometry.

Non-credit course sponsored by Christopher Newport College - Chemistry 101 - General Chemistry - 45 hours- An introduction to the chemistry of the common metallic and nonmetallic elements through a study of their properties based on the Periodic Table. Emphasis is placed on the development and application of chemical laws and principles. Essential features of organic chemistry and important reactions of selected metals are discussed.

Non-credit course sponsored by Old Dominion College - Electronic Instrumentation - 45 hours - This course is designed primarily for experimental facilities. The course will include the study of transducers, servo-systems, methods of measurements and basic theory of measurements. Other subjects such as pressure and force, photo devices, vibration and sound will be investigated.

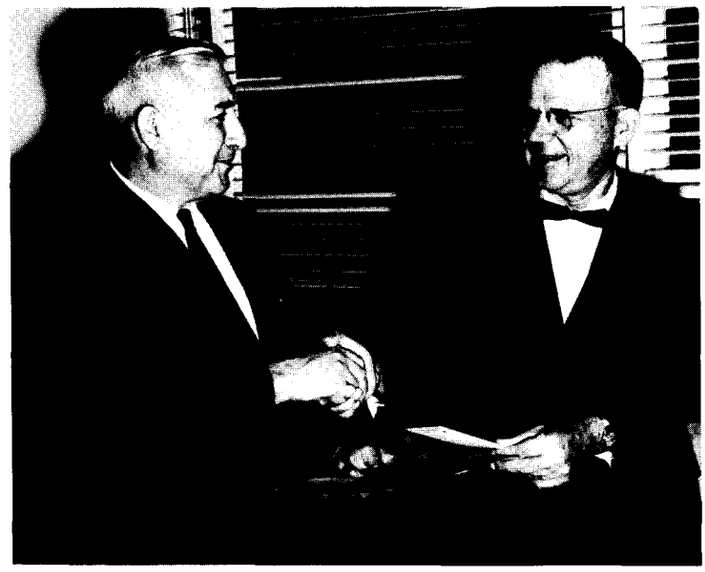
William and Mary courses are scheduled to begin on Thursday, September 22, and will be conducted immediately after work for three hours, one afternoon each week. The course sponsored by Old Dominion College will meet on Monday afternoon from 3:45 to 6:45 for a period of 15 weeks. The chemistry course will be held on Wednesday night at Christopher Newport College from 7 to 10.

Application forms for enrolling in these courses are available in the Training Office and may be obtained in person or by calling 2611. Approval of the supervisor and division chief is required before the applicant will be allowed to enroll in the course. Individual notices will be sent to the applicants as to the time, date, and place the course will be conducted.

WANTED: Ride from Orcutt Ave. and Mercury Blvd. to E.A. on 8 shift. Eggleston, 2553.

WANTED: Ride from Warwick Gardens to W.A. on 7 shift. Horvath, 3358.

FOR SALE: Cleveland Superior student cornet, must sell, $75. Dale Diacont, LY 6-3292.



Three staff members recently received cash awards for applications that might result in the granting of patents. Top photo - Joseph Getsug (left), Chief of Electrical Systems Division, congratulates Milton A. Wallio who won $300 for his suggestion entitled "Arc Driven Vortex Heater and Accelerator." Bottom photo - John V. Becker (right), Chief of Aero-Physics Division, presents an award to Goetz K. Oertel. Oertel shared a $200 award with Roger D. Bengtson, also of Aero-Physics, for their joint suggestion concerning "Fast Opening Diaphragm."

EDWARDS NAMED GEMINI DEPUTY

John A. Edwards has been named Deputy Director, Gemini Program, in the NASA Headquarters Office of Manned Space Flight. He replaces LeRoy E. Day, who becomes Director of Apollo Test.

Edwards was Director of Gemini Flight Operations in charge of mission planning, flight control and operational support. He joined NASA on March 18, 1963 after serving with the United States Air Force. He holds two masters degrees in Engineering.

Samuel H. Hubbard, formerly Special Assistant to the Director, Gemini Program, succeeds Edwards.

REPORT ON SCOUT CENTER FUND

A special solicitation among NASA families in behalf of the Boy Scouts Reservation and Service Center Fund has been completed and resulted in pledges and contributions totalling $16,151, it was announced this week by the co-chairmen of the solicitation - A. I. Neihouse, C. S. Shufflebarger, and Herbert Pelton.

The solicitation was conducted outside of business hours and was handled by a group of volunteers representing all areas of the Center staff. It was designed to provide an opportunity for those Center personnel wishing to support the important community project to participate.

The total announced did not include pledges and contributions made by other Langley Research Center personnel who are more directly associated with Scouting activities and who were previously contacted through Scouting channels.

Neihouse, Shufflebarger, and Pelton expressed their pleasure that the solicitation has been so successful and stated that the response is indicative of the continued dedication of Center personnel to the improvement of the community in which they work and live. They added that this special community project to provide a first-class Scouting Center for the enjoyment of Scouters had received the enthusiastic support of responsible community leaders and it was natural that NASA personnel would want to have a part in the effort.

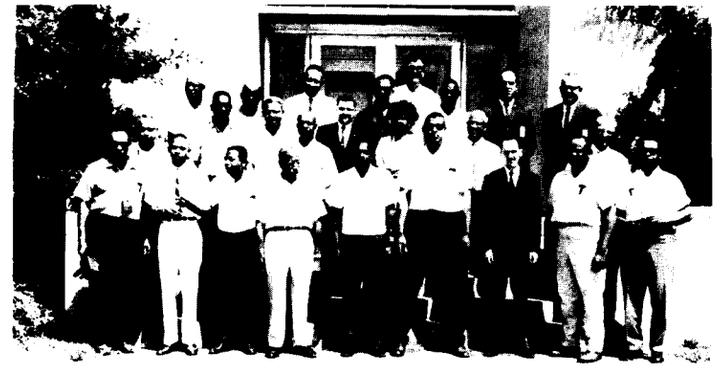
The co-chairmen also expressed their individual thanks for the manner in which volunteers from the Center staff assisted them in the formulation of the solicitation plans and for their individual efforts in carrying out their duties on their own time. They added that there is still an opportunity for any staff member who may not have been contacted or who was unavailable during the solicitation and who desires to make a contribution or pledge to do so by contacting any of the three co-chairmen.

AVOID MOWER ACCIDENTS

This is the time of year when local doctors expect the usual seasonal influx of victims of power-mower accidents. Most of these accidents will occur because of carelessness on the part of the owner or operator of the mower.

The Institute of Outdoor Power Equipment recommends these sensible precautions:

1. Study the maker's manual and learn your equipment. Learn how to turn off the engine fast, as well as how to start it.
2. Never add fuel to an engine while it is running or while you're smoking. Store gasoline in approved containers, in a safe place.
3. Clear your lawn, before mowing, of all debris that the blade could throw.
4. Keep children and pets at a safe distance. Don't let youngsters operate the mower.
5. Don't use the mower while you are barefoot or shod in sandals, or when the grass is wet and slippery.
6. Always stop the engine when you leave the machine, even for a moment.
7. Don't over-speed the engine or tamper with the governor. Use the slowest possible speed for efficient cutting.
8. Don't pull mower toward you.
9. Keep your machine in good condition; have a serviceman inspect it yearly.



Seventeen college and high school teachers from five states and Washington, D.C., including eleven from Virginia, toured Langley Research Center last week as part of their class in Fluid Power being taught at Hampton Institute. The eleven Virginia teachers included six from the Tidewater area - Arthur J. Armstead of George Wythe High School, Hampton; John F. Burrell and Edwin H. Miller of I.C. Norcum High School, Portsmouth; Joseph W. Gilliard, Hampton Institute; William L. Jones of Huntington High School, Newport News, and Samuel C. McGhee of Hampton Institute. John L. Frank is director at Hampton Institute and Morton B. Hopkins of Virginia State College, Norfolk Division, is the instructor. Teachers were from North Carolina, South Carolina, Kansas, Florida, Washington, D.C., and Virginia.

REACTOR POWER SYSTEM

(Continued from page 1)

Robert L. Gervais, Douglas study director, said 11 distinct reactor-power conversion cycle designs will be investigated, covering thermoelectric, Brayton, SNAP 2 and SNAP 8 conversion cycles for power outputs of 10, 20 and 30 kilowatts.

System lifetime will be five years, and primary mission, for the purposes of the study, calls for a MORL launch between 1974 and 1977 into a nominal 200-nautical mile circular orbit. Alternate missions also considered include polar and synchronous orbits for MORL.

Gervais said reactor shielding is a dominant factor in establishing the basic configuration and location of the power system relative to the orbiting station and the operational restrictions placed upon the station by the power source.

Because weight of the shield - probably an arrangement of alternate layers of materials which would block neutron and gamma ray penetration - represents a substantial portion of total payload weight, the reactor would be deployed from the spacecraft on a boom, permitting use of a lighter shield. The orbiting station and the reactor would be separated by some 125 feet.

Typical launch of a MORL with a reactor power system module would utilize an ungraded Saturn IB launch vehicle. Solid rocket motors would be attached to the booster stage for additional thrust to accommodate the added weight of the power system. The MORL should be mated to the S-IVB stage of the Saturn and the power system, housed in a conical-cylindrical fairing, would ride atop the vehicle and serve as nose cone.

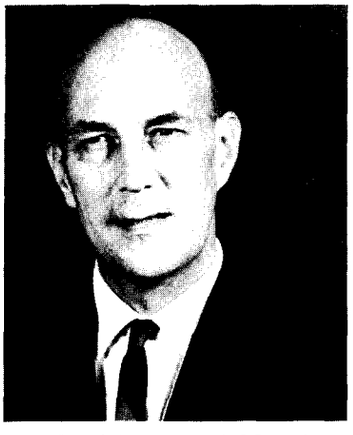
After orbit is attained and the MORL is separated from the S-IVB stage, the reactor would be deployed on the boom in pendulum fashion on its operating location.

Langley Researcher

VOLUME 5, NUMBER 16 LANGLEY RESEARCH CENTER AUGUST 12, 1966

BOSWINKLE NAMED HEAD OF UNITED FUND CAMPAIGN

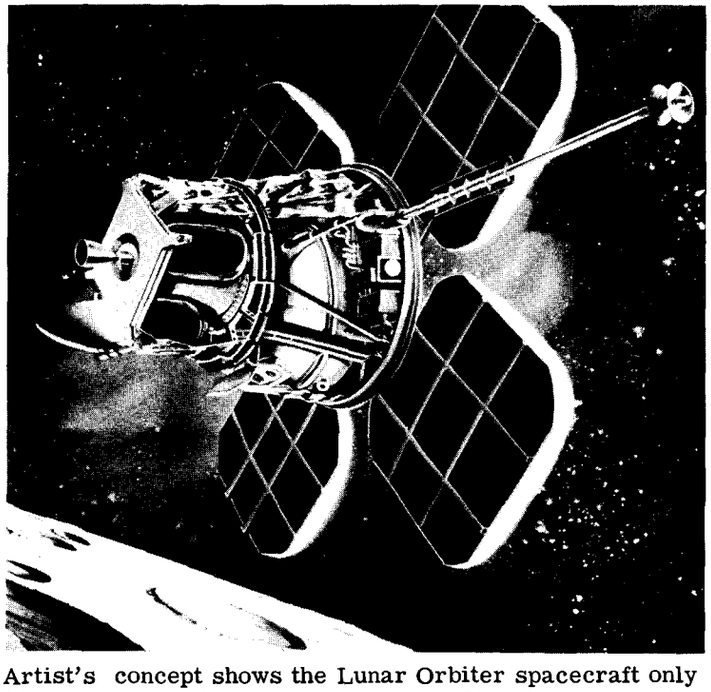
Robert W. Boswinkle Jr., Technical Assistant to the Assistant Director (Group 3), has been appointed as chairman of the Center's thirteenth annual United Fund Drive scheduled for September, it was announced this week by Dr. Floyd L. Thompson, Director.



Robert W. Boswinkle, Jr.

Assisting Boswinkle in the campaign will be James Hamilton, Head of Research and Development Support Branch, Mechanical Service Division, who will be in charge of the general solicitation, and P. M. Lovell, Executive Assistant, Ap-

(Continued on page 4)



Artist's concept shows the Lunar Orbiter spacecraft only 28 miles above the lunar surface, circling the Moon while taking pictures. Four paddle-shaped solar panels are facing the Sun, drawing power from sunshine. Internal parts of the Orbiter are protected from temperature extremes by a thermal barrier of aluminized mylar, but artist has left most of insulating shroud off to show camera system and electronic equipment in lower module. The Lunar Orbiter program is managed by Langley Research Center. Boeing's Space Division is the prime contractor.

LUNAR ORBITER SCHEDULED TO TAKE PICTURES OF MOON

As Langley Researcher went to press on Wednesday, the United States was preparing to launch the first in a series of photographic laboratory spacecraft to orbit the Moon.

Lunar Orbiter spacecraft are planned to continue the efforts of Ranger and Surveyor to acquire knowledge of the Moon's surface to support Project Apollo and to enlarge scientific understanding of the Earth's nearest neighbor.

Lunar Orbiter A was scheduled for launch from Cape Kennedy in a period from Aug. 9 through 13. The 850-pound spacecraft would be launched by an Atlas Agena-D vehicle on a flight to the vicinity of the Moon which would take about 90 hours.

If successfully launched, this first of five Lunar Orbiters will be named Lunar Orbiter I.

The basic task of Lunar Orbiter A is to obtain high resolution photographs of various types of surface on the Moon to assess their suitability as landing sites for Apollo and Surveyor spacecraft.

During its journey to the Moon, the spacecraft will be oriented to the Sun and the southern hemisphere star Canopus, except when it is executing one or possibly two mid-course correction maneuvers.

At a point about 550 miles above the Moon, a liquid fuel retro engine will fire to slow down the spacecraft to permit it to be captured by the Moon's gravitational field. As a satellite of the Moon, the Lunar Orbiter will enter an initial elliptical orbit about 1150 by 125 miles.

Later, a retro-rocket fired by ground command will drop the low point of the payload's orbit to just 28 miles above the lunar surface. Then, for a period of seven days, as the Moon revolves beneath it, the spacecraft's camera will record on film views of nine selected locations in far greater detail than they have been viewed through Earth-based telescopes.

All of Lunar Orbiter's photographs will be transmitted to NASA Deep Space Network stations after site photography is finished. They will be received in reverse order from which the pictures were taken.

From launch to complete read-out of all photography will require about 35 days. At least 30 more days will be required for a preliminary analysis of the pictures.

The Lunar Orbiter program is directed by NASA's Office of Space Science and Applications. The project is managed by Langley Research Center.

The Langley team is composed of the following Center staff members: Dr. Floyd L. Thompson, Center Director; Charles J. Donlan, Associate Director; Eugene C. Draley, Assistant Director for Flight Projects; Dr. Samuel Katzoff, Chairman of Langley Lunar Orbiter Advisory Committee; Clifford H. Nelson, Project Manager, and James S. Martin, Assistant Manager.

(Continued on page 4)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

ENGAGEMENTS. . .Dan Cupid scored a victory when Joy Rasnick, Aero-Physics Division, announced her engage- to Gordon Helsel, Poquoson. The wedding will take place September 3. . .Making plans for her wedding this month is Maureen Ironmonger, Personnel Division. She is engaged to Ernest H. Diggs, Poquoson. . .Rossalyn W. Smith, Dynamic Loads Division, is engaged to Kenneth Duane Hampton, Newport News. Plans call for a late fall wedding. . . Wedding bells will ring on September 10 when James Ellison, Aero-Physics Division, takes his final vows with Tommy Ellington, Hampton.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on August 17 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

TOUCH FOOTBALL. . .Plans are being made to organize a NASA Touch Football League. Teams planning to enter the league are requested to call Charlie Woerner, 4840, or Kam Kersey, 4457, as soon as possible. The games will be played at 9:30 a.m. on Saturdays at Kecoughtan High School.

NOTE OF THANKS. . .The family of James J. Gallagher wish to thank all his friends and co-workers for the spray and basket of flowers sent to his funeral. Gallagher, former member of Aero-Physics Division, died July 25.

TENPIN NOTICE. . .The NASA Tenpin Bowling League will hold an organizational meeting at 7 p.m. on Wednesday, August 17 at the Hidenwood Lanes. All teams are requested to have a representative present. The league will start play in September and the bowling time will be at 6:45 p.m. on Tuesdays at Hidenwood Lanes. For additional information call Roy Henley, 2594, or Marna Cordle, 4815.

FOR SALE: Singer vacuum cleaner, $30. Koller, 826-4285.
FOR SALE: 3-4-acre wooded lot in Queens Lake. Malley, 877-2994.
FOR SALE: Wrought iron patio table and 4 chairs - $75. Britt, LY 6-1498.
FOR SALE: Reconditioned upright piano - $200, 9,000 btu air conditioner - $30. Hassel, 723-4497.

Joint Account

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 15:

Monday - French onion soup, Swiss steak, broiled Canadian bacon, sauteed chicken livers, cheese omelette.

Tuesday - Cream of tomato soup, chopped sirloin steak, crab cakes, ham and noodle casserole, baked hash.

Wednesday - Chicken-rice soup, Spanish pot roast, grilled pork steak, fried chicken, hot dog.

Thursday - Vegetable-beef soup, grilled steak, barbecued pork chunks, baked lasagna, chili con carne.

Friday - Clam chowder, roast beef, broiled Pacific perch, fried fish sticks, barbecued sandwich.

The menu for the week of August 22 is as follows:

Monday - Consomme julienne, pepper steak, broiled ham slice, chicken chow mein, franks and beans.

Tuesday - Chicken noodle soup, chicken and dumplings, breaded veal steak, meat loaf, grilled cheese sandwich.

Wednesday - Puree of bean soup, simmered corn beef brisket, liver and onions, chicken cutlet, Austrian ravioli.

Thursday - Vegetable-beef soup, grilled steak, chicken pie, stuffed pepper, hot dog.

Friday - Clam chowder, roast ribs of beef, stuffed shrimp, broiled fish, deviled crab, weiners and macaroni.

FOR SALE: 1960 Mobile Scout camp trailer, double Butane bottle, fully equipped - $650. Myers, 826-0837.
FOR SALE: Toy Poodle pups. Katzberg, 764-3555.

COST REDUCTION REPORT

In Fiscal Year 1966 Langley Research Center reported savings of $11,662,889 through its Cost Reduction Program. A complete audit of acceptable cost reductions has not been made by NASA Headquarters so the total reported will likely be reduced. However, the savings will significantly exceed the $6,637,000 goal which Headquarters had set for the year.

Dr. Floyd L. Thompson, Director, in reviewing the Center's contribution to the NASA Cost Reduction Program stated, "I am particularly pleased with the emphasis which has been given to cost reduction by all of Langley's organizational units. The accomplishments which we have made this year in reducing costs have permitted us to perform research which might have otherwise been impossible due to insufficient funds. Although our accomplishments this year have been highly significant, we must continue our efforts to further reduce costs. By making cost reduction a prime consideration in all of our expenditures of either manpower, material or equipment we will quite effectively acquire savings. A compromise of reliability or program schedule is not intended as a means of reducing costs. Good cost reduction practices merely trim the nonessential items from our expenditures and cause us to continually search for more economical ways to perform any task."

SCHEDULE OF COMING EVENTS

Listed below are special events planned by the Activities Association:

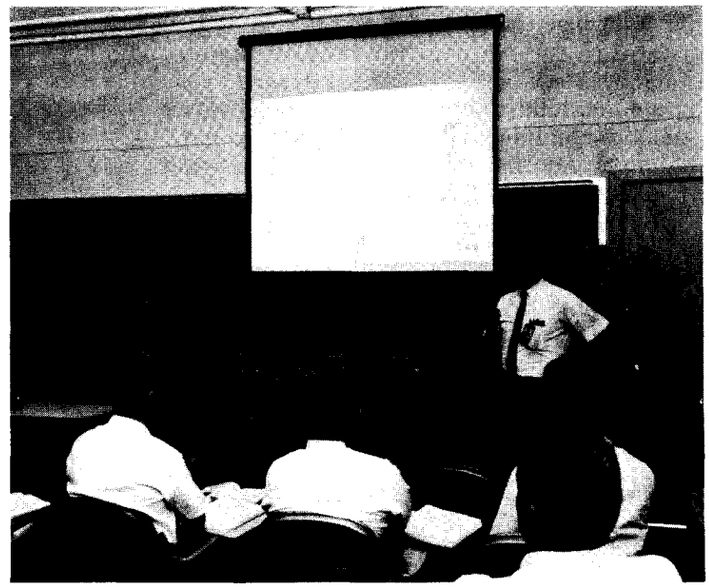
Tonight - Gospel Sing at 8 p.m. at Kecoughtan High School. Featured on the program will be the Curriers Quartet and the Calvary Quartet. Tickets are $1.50 and may be purchased from representatives to the Activities Association or at the door. Children will be admitted free.

August 26 - The Activities Association will sponsor a NASA golf day at the Langley Air Force Golf Course. The tournament will start at 8 a.m. and continue throughout the day. Men and women are eligible to enter. Play will be limited to foursomes. For tee time contact Frank Lawrence, telephone 4489. Upon completion of play, turn in score cards to the Pro Shop. Green fees for non-members will be $1.50 and the tournament fee will be $1 for all players. The Calloway system will be used.

August 29 - The Association will sponsor another NASA Night at Peninsula Memorial Stadium when the Grays meet Winston-Salem at 7:45 p.m. Tickets will be half-price and may be purchased from representatives or at the Activities Building. Tickets purchased at the gate will be full price. Children under 12 and accompanied by adults will be admitted free. In case of rain the date will be September 3.

September 11 - Tickets are now available for the Redskin vs. Brown Football Game to be played September 11 in Washington, D.C. Arrangements are being made for busses to be at the Activities Building at 9 a.m. Game time is 1:30 p.m. Total cost for transportation, one meal and the game is $15. For tickets contact Les Powell, 4835, or Joe Siefring, 3446. Only a limited number of tickets are available.

FOR SALE: Boy's 20-inch bicycle - $18. Scher, 596-1604.
FOR RENT: 2-bedroom house with stove and refrigerator- $70 per month. Boswell, 838-3235.



A first at Langley is a course in Electromagnetic Field Theory which is being taught by the telelecture and electrowriter system. The course is taught by Dr. H. M. Ebert Jr., Associate Professor of Electrical Engineering at Virginia Polytechnic Institute. The course is relayed from VPI to the classroom at Langley. Questioning the equation that has been flashed on the screen is Herbert R. Kowitz, Flight Instrumentation Division.

SPECIAL COURSE TAUGHT HERE

Virginia Polytechnic Institute is conducting a 12-hour lecture course in Electromagnetic Field Theory at the Center through August 26. Instructor for the non-credit course is Dr. H. M. Ebert Jr., Associate Professor of Electrical Engineering, VPI.

The class meets in Building 1229 and the lectures are relayed to Langley from VPI over the telelecture and telewriter system.

The Chesapeake and Potomac Telephone Company installed the telelecture system at Langley and Blacksburg. Speakers in the class room are located so that students may ask questions and carry on other discussions with the instructor in Blacksburg. The electrowriter system is owned by VPI and is plugged into a data set supplied by the telephone company.

The Electromagnetic Field Theory course will include a review of basic concepts, vector analysis review, solution of Laplace's equation, calculation of self and mutual inductions, and skin effect.

FOR SALE: 7-room rancher in Bayberry, attached garage and new detached 14 x 22 garage - large wooded lot. Yenni, 595-2089.
FOR SALE: 1956 Chevrolet - $100. Pokorski, 722-0044.
FOR SALE: New transistor radio for Volkswagon. Mattare, 723-5372.
WANTED: Boat trailer. Staggs, 851-0134.
FOR SALE: Super Sailfish with trailer. Coombs, PA3-3916.
FOR SALE: 1961 Chevrolet Impala. Lane, 826-8661.
FOR RENT: 3-bedroom house in Tabb. Crowther, 245-0566 between 6 and 8 p.m.
FOR SALE: 1963 Super Sports Chevrolet convertible - $200 down and take over payments. Femiani, 826-1232.

LUNAR ORBITER LAUNCH

(Continued from page 1)

Israel Taback, Spacecraft Manager; William I. Watson, Assembly and Integration; G. Calvin Broome, Photographic Subsystem; J. E. Harris, Power Subsystem; Royce H. Sproull, Velocity and Attitude Control Subsystem; T. W. E. Hankinson, Thermal, Structure and Mechanisms Subsystem, and I. W. Ramsey, Spacecraft Testing.

William J. Boyer, Operations Manager; Dalton D. Webb, Space Flight Operations Director; Donald H. Ward, Spacecraft Launch Operations; John B. Graham, Operations Integration; Kenneth L. Wadlin, Lunar Orbiter Resident Engineer, Boeing, Seattle.

Norman L. Crabill, Mission Integration Manager; Edmund A. Brummer, Communications and Tracking Manager; Gerald W. Brewer, Mission Assurance Manager; William L. Ervi, Department of Defense Field Support; I. G. Recant, Data Analysis Manager; Robert L. Girouard, Space Vehicle System Manager; Theodore H. Elder, Technical Administration Manager, and F. E. Jennings, Funding and Schedules.

UNITED FUND CAMPAIGN

(Continued from page 1)

plied Materials and Physics Division, who will be chairman of advanced solicitations.

Boswinkle stated that an intensive one-day campaign of all staff members will be held during the latter part of September. The general solicitation will be preceded by advanced solicitation of key personnel.

During the drive held last year staff members, contractors and representatives of local companies assigned to the Center donated or pledged a record total of $68,090.61 to organizations benefitting under the solicitation program. This figure represented a total of $65,697.71 from 4029 Center employees for 93 percent participation and an average contribution of $16.31. Contract employees donated $2,392.90.

Boswinkle is a native of Thayer, Indiana. He graduated from Mount Ayr High School, Mount Ayr, Indiana, and received his B.S. degree in Aeronautical Engineering from Purdue University.

He joined the Center staff on September 1, 1943 as an Aeronautical Engineer in the Propeller Research Tunnel. When the tunnel was decommissioned he was assigned to Full-Scale Analysis. In 1952 he was assigned to General Aerodynamics Section, Low Turbulence Branch, and was appointed Head of the Dynamics Branch, Full-Scale Research Division, in 1958. He was named to his present position in 1964.

GRADUATE STUDY NOTICE: Dr. Richard T. Eppink, Department of Civil Engineering and Applied Mechanics, University of Virginia, will be at the Training Office on Thursday, August 18. Employees wishing an appointment with Dr. Eppink should call the Training Office. 2611.

FOUND: Pair of prescription glasses - green tinted. Clyde Hall, 3358.

WANTED: Ride or driving combination from Norfolk to W.A. on 7 shift. Land, 4637.

FOR SALE: Rifles - 30/06 Springfield Sporter - $40, and MI carbine - $40 - both for $75. Ward, 596-8757.

DR. LEONARD ROBERTS NAMED DIRECTOR OF MISSION ANALYSIS

Dr. Leonard Roberts

Dr. Leonard Roberts, Dynamic Loads Division, has been named Director of the Mission Analysis Division, Office of Advanced Research and Technology. He succeeds Clarence A. Syvertson who becomes Assistant Director for Astronautics of the Ames Research Center. Both appointments are effective on September 1.

Although a part of NASA Headquarters, the Mission Analysis Division is located at Ames Research Center. The division was formed in February 1965, with Syvertson as its head, to conduct a program of advanced planning for future aeronautical and space missions.

Dr. Roberts has been Head of the Mathematical Physics Branch at Langley since October 28, 1959. Before joining the Center staff in June 1957, he was a Research Associate at Massachusetts Institute of Technology from 1955 to 1957.

Born in Prestaty, North Wales, United Kingdom, on September 27, 1929, Dr. Roberts earned the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy in the fields of aerodynamics, fluid mechanics, and applied mathematics from the University of Manchester, England, between 1952 and 1955.

Dr. Roberts is well known in the fields of aerodynamics, atmosphere entry, and lunar and planetary landing, and has served as a technical advisor and consultant to government agencies, industry, and educational institutions in this country and abroad. He is an Adjunct Professor of Applied Mathematics at North Carolina State University and was formerly a lecturer for Virginia Polytechnic Institute and University of Virginia.

He is the author of many technical publications and other documents and has served on several technical committees at Langley, including the Reentry Science Program Steering Committee, as Chairman of the Manned Orbiting Telescope Study Committee, and as Chairman of the Planetary Missions Technology Steering Committee. He is a member of the American Institute of Aeronautics and Astronautics and the American Association for Advancement of Science.

Dr. Roberts became a naturalized citizen of the United States in ceremonies at Norfolk on March 4, 1964.

Syvertson, a specialist in hypersonic aerodynamics, played a major role in NASA's lifting body research program. He joined Ames in 1948, was appointed Chief of the 3.5-foot Hypersonic Wind Tunnel in 1959, and Acting Assistant Director in 1964.

Born in Minneapolis in 1926, Syvertson earned the degree of Bachelor of Aeronautical Engineering in 1946 and his M.S. degree in 1948 from the University of Minnesota. He received the Lawrence Sperry award in 1957 for his hypersonic research work.

FOR SALE: 1963 Rambler station wagon. McKee, 898-3201.

PAY BILL OFFERS NEW BENEFITS

The Federal Salary and Fringe Benefits Act of 1966, approved July 18, increases salary rates for General Schedule (GS) employees and provides other improved fringe benefits. Key features of the new law are:

1.8 million salaried workers, including postal employees, receive salary increases averaging 2.9 percent.

Employees aged 55 with 30 years of service, or employees aged 60 with 20 years of service, have the option to retire on full annuity.

In most cases the Government's contribution to health insurance premiums is increased to $1.68 bi-weekly for employees enrolled for self-only, and to $4.10 for employees enrolled for self-and-family.

Health benefits for unmarried children as family members are extended up to age 22.

Survivorship benefits for unmarried children attending school are extended up to age 22.

Overtime pay for Classification Act employees and postal supervisors is liberalized. Most Classification Act employees will get overtime pay for all work in excess of 8 hours a day.

Classification Act and blue-collar workers will receive 25 percent pay differential for Sunday work.

The maximum dollar rate for overtime pay is now based on the first rate of GS-10 rather than the first rate of GS-9.

Widows and widowers of present and future members of the Civil Service Retirement System who die in service or after retirement will continue to receive their survivor annuities if they remarry at or after age 60. Also, survivor annuities will be restored for these future widows and widowers if they remarry under age 60 and the subsequent marriage ends in annulment, divorce, or death.

Widows and dependent widowers of Federal employees who died or retired prior to October 11, 1962, will get a 10 percent increase in their annuities.

EYE INJURIES AND SPRAY CANS

Careless or improper use of spray cans should be avoided or eye injuries may result. With more household products marketed in spray cans naturally the opportunity for careless or improper handling of these cans increases.

It is easy to point the can in the wrong direction and accidentally spray the contents into the eyes. Room fresheners and insecticides, for example, are often used at eye level in front of the face. Persons usually bend over the spray cans of wax when dusting furniture.

Exercise care, do not spray toward your eyes. This may result in serious burns and sometimes loss of sight.

Hair spray is used close to the face. The spray itself is developed to be safe for the health of the hair but could cause damage if it gets directly into the eye.

Most safety equipment supply companies sell what is known as a "visitor's safety goggle" for less than one dollar. The temples are perfectly straight and slip under the hair so the hair style is not disturbed. This type of goggle should protect the eyes while the hair is being sprayed.

A recent study of 380 eye injuries showed that 7 percent were caused by apparent misuse of spray cans.

FOR RENT: 3-bedroom, 1-1/2-bath house in Tuckahoe. Goble, 595-5176.

In keeping with the President's Physical Fitness Program, a group of women at the Center have formed a NASA Softball Team. Members are (from left): Kathleen Oakes, Carol Anderson, Sharon Haythorne, Judy Pettigrew, Lonna Hudgens, Kay Eggleston, Jean Spinney, Rae Fergusson, Linda Nelson, Ivy Small, kneeling with team mascot Jimmy Small, Kay Voglewede, Gayle Routten, Mary Coburn, Sandy Dunn, Ann Tichenor, and Pat McClean. Not shown in the picture are Janet Robertson and Sybil Coleman.

CURRAN RETIRES FROM CENTER

Bernard H. Curran

Bernard H. Curran, Assistant Head, Modelmaking Branch, Mechanical Services Division, retired on July 31 after completing almost 27 years of Federal service.

Curran was born July 11, 1896 in Glasgow, Scotland. He served his apprenticeship as a Patternmaker in Glasgow and joined NASA on October 9, 1939 as a Senior Patternmaker.

Last year he was one of seven employees to receive a Group Achievement Award "for the team effort involving the application and combining of techniques in the engineering, design, metal casting and plastic sizing for dimensional control of aircraft models which has provided a method for the production of a large number of different configurations at substantial savings."

Curran recently received a Sustained Superior Performance Award "for significant contributions in the concept and development of a new technique for construction of large-scale contoured lunar maps for Project Lola."

WANTED: Driving combination from Waldon area to W.A. on 8 shift. Page, 3797.

FOR RENT: 3-bedroom furnished house from Sept. 15 to March 15 - $110 per month. Pace, 723-6876.

WANTED: Alternate driver from Norfolk to W.A. on 7:30 shift. Hefner, 4571.

FOR SALE: Kelvinator refrigerator with 40-pound freezer - $35. Nye, 596-9189.

QUESTIONS AND ANSWERS CONCERNING POLITICAL ACTIVITY

The Civil Service Commission emphasizes that Federal employees and members of their families have the right and obligation to register and vote. Queries and comments of Federal employees, addressed to the Commission, indicate that many people do not realize the extent of permitted activities under political activity rules governing Federal employees.

Specifically, 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. By partisan candidate is meant one representing a National or State political party such as the Democratic or Republican party. A Federal employee may not run for office, even as an independent, in an election in which partisan political designations are used, unless he lives in one of the communities to which the Civil Service Commission has given partial exemption in connection with his local government.

The following questions and answers have been prepared for the guidance and information of employees:

Q. What employees are prohibited by the Hatch Act from active participation in politics?

A. Employees of the executive branch of the Federal Government and the Government of the District of Columbia, including temporary and part-time employees. The political activity of employees of any State or local agency whose principal employment is in connection with a Federally financed activity is also restricted.

Q. Explain for employees affected by the Hatch Act just what their responsibilities and rights are under the act.

A. They have the right to vote and to express their political opinions, but are forbidden to take an active part in partisan political management or in partisan political campaigns. In connection with Federal employees' right to vote, the Commission emphasizes that political-activity restrictions do not relieve employees of their obligation as citizens to inform themselves of the issues and to register and vote.

Q. The Civil Service Commission enforces the Hatch Act for the competitive civil service. Does this mean that employees holding excepted positions (outside the competitive civil service) are not subject to the Act.?

A. No. Excepted employees are subject to the act, but in these cases the employing agency, not the Civil Service Commission, is responsible for enforcing it.

Q. What is the penalty for violation of the Hatch Act by a Federal employee?

A. The most severe penalty for violation is removal from his position. The minimum penalty is suspension without pay for 30 days.

Q. Is it possible for a Federal employee to run for public office on the ticket of a national or state political party?

A. No. Federal employees cannot be candidates for any national, state, county, or municipal office filled by partisan elections. They may run for local office only in elections that are nonpartisan.

Q. May employees covered by the Act attend political rallies and join political clubs?

A. Employees covered by the Hatch Act can attend political rallies and join political clubs, but they cannot take an active part in the conduct of the rally or operation of the club. Other things they are prohibited from doing are becoming involved in soliciting or collecting political contributions, distributing campaign material, and selling dinner tickets, or otherwise actively promoting such activities as political dinners.

Q. May an employee who is subject to the Hatch Act write a letter to the editor of a local newspaper, expressing his opinion on a partisan issue?

A. Yes, but he must not solicit votes for or against any political party or partisan candidate. If he solicits votes, it is a Hatch Act violation.

Q. May he make a campaign contribution to his party?

A. Yes, but he cannot be required to do so. The contribution cannot be made in a Federal building or to some other employee who is prohibited by Federal law from accepting contributions. Of course, as a Federal employee, he cannot solicit political contributions.

Q. Does an employee violate the Hatch Act by merely wearing a campaign button or displaying a bumper sticker on his car.?

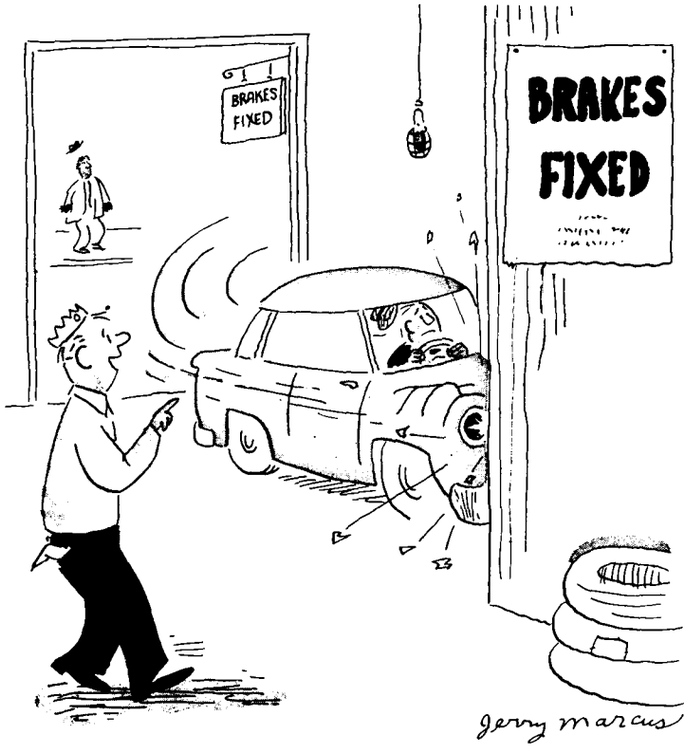
A. No. This is not prohibited by the Hatch Act. However, employees must observe any rules of their agencies restricting a partisan political display on the job.

Q. May a Government employee's wife who is not a Government employee engage in political activity?

A. Yes. The Act does not restrict the activities of an employee's wife or of other members of his family in any way.

Q. What should an employee do if he does not know whether a certain activity violates the Hatch Act?

A. Since ignorance of provisions of the law will not excuse a Government employee from penalties for violation, he should present the matter in writing to the U.S. Civil Service Commission, 1900 E Street NW., Washington, D.C. 20415, before engaging in the activity.



"Yes Sir! What can I do for you?"

STAFF MEMBERS RECEIVE ADVANCED DEGREES

Joseph R. Chambers
FMTD
M.S., Aerospace Eng.
Virginia Polytechnic Inst.

Lawrence R. Greenwood
AMPD
M.S., Mechanical Eng.
Virginia Polytechnic Inst.

Gale A. Harvey
AMPD
M.S., Physics
Virginia Polytechnic Inst.

Leland A. Imig
Structures Research Div.
M.S., Engineering Mech.
Virginia Polytechnic Inst.

STUDY UNDERWAY TO USE BALLOON AS VENUS PROBE

Negotiations are underway on a study contract to investigate the feasibility of exploring cloud-shrouded Venus using an inflatable buoyant device or devices floating in the planet's atmosphere. Weight of the payload will not exceed 5,000 pounds.

Langley Research Center has asked the Martin Company, Denver, Colorado, to determine the feasibility of acquiring detailed scientific information about the Venusian atmosphere from a mobile station. In addition, the study will include the feasibility of releasing descent and impact probes to obtain data on lower atmosphere and surface conditions. Cost of the study is not expected to exceed $150,000.

The high surface temperature of the planet (about 800 degrees F according to data received from NASA's Mariner II in December 1962) precludes long-term surface exploration by standard probes.

In the concept under study, scientific information would be relayed to Earth from the floating station by a spacecraft orbiting Venus. This information is expected to include altitude and horizontal position of the floating station; atmospheric pressure, temperature, density, composition, and wind velocity; information on electromagnetic fields, gravitation, and radiation; measurements below the buoyant station on surface radiation and characteristics, cloud top and heights and composition of cloud particles.

William L. Grose
Aero-Physics Division
M.A., Physics
William and Mary

Floyd Shipman
Analysis and Computation
M.S., Applied Mathematics
N. C. State University

CIVIL SERVICE EXAM OPENED

The Board of U.S. Civil Service Examiners at Langley Research Center announces employment opportunities for Office Draftsman, GS-3, $4269 per annum.

All applicants will be required to pass a written test. The test will cover general abilities and specific abilities required in the performance of office drafting work.

Applications will be accepted by the Executive Secretary, Board of U.S. Civil Service Examiners, NASA, Langley Research Center, Langley Station, Hampton, Virginia 23365, until further notice. However, persons interested in immediate consideration should file by August 16.

WANTED: Ride from Parrish Ave. to E.A. on 8 shift. Harriett Bolden, 2214.

FOR SALE: Garrard model 88 turntable, Heathkit tube-type amplifier (14-watt), 2 GE crystal mono pickups - diamond. Hellbaum, 838-3087.

WANTED: Ride or driving combination from Old Farm Estates, Glendale area, to E.A. on 8 shift. Kyle, 838-0041.

WANTED: Ride from Stuart Gardens to E.A. on 8 shift. Coburn, 2621 or 245-8118.

WANTED: Alternate driver from Glendale to W.A. on 8 shift. Fournier, 3611.

WANTED: Girl to share apartment. Connie Kline, 838-1414.

FOR SALE: 2-door Hudson - $200. Hudson, PA 2-8774.

FOR SALE: 1959 Ford station wagon, 4-door, automatic transmission - $275. Childs, Norfolk 587-3578.

FOR SALE: Automatic Kodak 35. LaPrade, LY 6-4947.

WANTED: 12 or 16 gauge shotgun, automatic or pump. Evans, 722-4676.

WANTED: Ride or driving combination from Beechwood to E.A. on 8 shift. Worth, 2200.

NEW FACILITY OPENS AT AMES

A major facility able to simulate return flight into the Earth's atmosphere from the moon or planets is in full operation at the Ames Research Center. The new Hypervelocity Free Flight Facility contains three huge light gas guns which can fire free-flying spacecraft models at 20,000 miles an hour.

The scale models of actual spacecraft fly into an air stream flowing at 10,000 mph from the opposite direction. This combined speed of 30,000 mph is far above "escape speed" and is fast enough to simulate Earth return stages of many of the planet missions now under consideration as well as entries into planet atmospheres.

These speeds also represent the fastest aerodynamic simulation known. Other facilities for attaining partial simulation of very high speed flight have reached speeds only about half as fast.

The tunnels will be used in testing many future U.S. spacecraft.

Atmosphere reentry speed for spacecraft coming back from the Moon is 24,500 mph. Minimum and maximum practical speeds for spacecraft returning from planet missions will range from about 28,000 to 44,000 mph.

The new facility uses free-flying, one-inch or one and one-half inch diameter models. Increases in tunnel air pressure are employed to make models behave as though they were full-scale spacecraft.

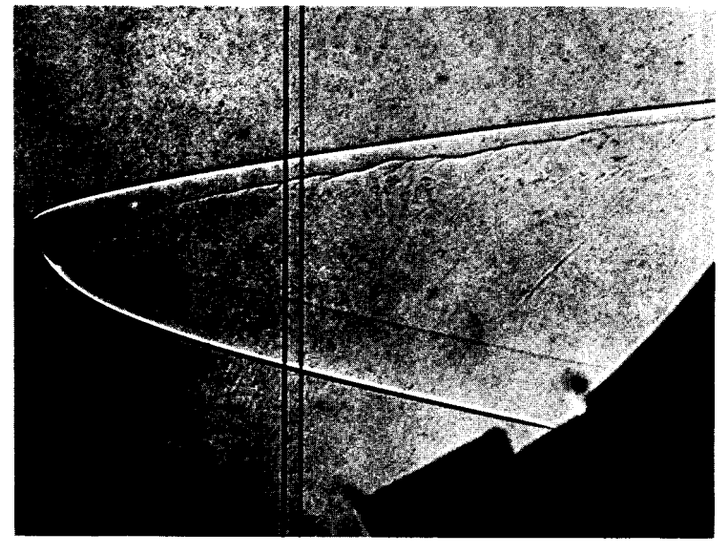
The models are photographed many times at millionths-of-a-second exposures during each flight. These "shadowgraphs" permit precise determination of the models' motion (speed, deceleration, pitching, yawing, rolling, and swerving).

Shadowgraphs and other measurements provide determination of full-scale flight characteristics and heating rates for altitudes above 100,000 feet. (These are the altitudes where slowing down from space flight speeds is accomplished, in order to land safely on Earth.)

The new 30,000 square foot facility contains three major tunnels: an aerodynamic tunnel to study spacecraft flight characteristics; a radiative heating tunnel to study heating characteristics; and a gun development tunnel to improve launch guns.

All three tunnels use light gas guns to attain the highest controlled speeds yet reached under laboratory conditions.

These guns work by using ordinary gunpowder to drive a plastic piston down a long tube. The piston compresses a charge of hydrogen to pressures in excess of 200,000 pounds per square inch so quickly that the temperature rises to about 8,000 degrees F. The hot hydrogen is an exceedingly efficient propellant for pushing the model down the launch tube because it uses only a small amount of the energy it receives from the piston to accelerate itself. A great deal of energy is left over to continue pushing on the model, even after it has attained very high speeds.



Shadowgraph picture showing a model of the command module of the Apollo spacecraft in flight at 15,120 mph. Flight was made in the aerodynamic tunnel of the new Hypervelocity Free Flight Facility at Ames Research Center. The model was flown during checkout operations for the new tunnel and provided data on lift, drag, and in-flight stability for the Apollo spacecraft.

NEW X-15 PILOT APPOINTED

A new pilot has been appointed to the X-15 research program. Air Force Major Michael J. Adams will succeed Captain Joe H. Engle who transferred last spring to Manned Spacecraft Center as an astronaut.

Adams was released from duty as pilot in the Air Force's Manned Orbiting Laboratory program at his own request in order to transfer to the X-15 program, which is sponsored jointly by NASA and the Air Force.

Born May 5, 1930, in Sacramento, California, Adams received his Aeronautical Engineering degree from Oklahoma University in 1958. He completed 18 months of astronautics study at Massachusetts Institute of Technology.

First joining the Air Force in 1950, Adams received the Air Medal for combat service in Korea. He is an honor graduate of the Aerospace Research Pilots School at Edwards Air Force Base.

Adams will become the 12th man to fly the rocket-powered X-15. There are four other current X-15 pilots: William H. Dana, John B. McKay, and Milton O. Thompson, all NASA, and Major William J. Knight, USAF.

Adams will undergo an extensive air and ground training program. He is expected to make his first flight later this year.

FOR SALE: 4-bedroom, 2-1/2-bath, 2-story colonial house on wooded lot in Denbigh. Hilt, 877-3845.

FOR SALE: New Garrard automatic turntable type A70 with ADC 660/E elliptical style cartridge - $85. P. Kurbjun, 826-7455.

FOR SALE: Rabbits. Houghton, 826-4304 after 5 p.m.

FOR SALE: 3-bedroom, 2-bath brick colonial home at 12 Ridgewood Parkway. Ransdell, 877-0008 after 5 p.m.

FOR SALE: 1962 Porsche. Halsey, 720 McLawhorne Dr.

FOR SALE: 1957 Ford Fairlane. Redd, 595-1458.

FOR SALE: 1951 Chevrolet. Davidson, 595-0809.

FOR SALE: 4-year-old mare. Wright, 838-0916.

FOR SALE: Super Sailfish Mark II, fiberglas hull - $325. Snyder, 851-1207.

FOR SALE: 5,000 btu Westinghouse air conditioner. Hellbaum, 838-3087.

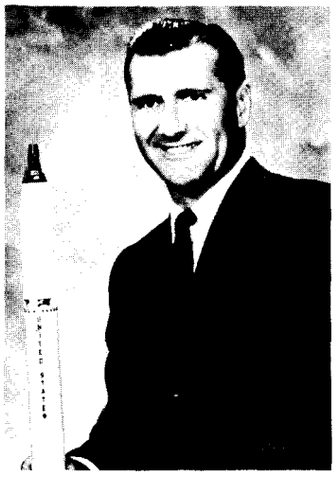
FOR SALE: Pair of Junior West Coast mirrors - $7.50. Fuller, 596-7548 after 5 p.m.

FOR SALE: 6-room brick colonial house in Burkedale. Bradshaw, 877-0968.

Langley Researcher

VOLUME 5, NUMBER 17 LANGLEY RESEARCH CENTER AUGUST 26, 1966

Charles Conrad



Richard F. Gordon

GEMINI II WILL BE LAUNCHED NEXT MONTH ON 3-DAY FLIGHT

NASA will launch the Gemini 11 mission no earlier than September 9 from Kennedy Space Center.

The three-day mission includes a plan to rendezvous with an Agena target vehicle on the first spacecraft revolution and to use a fully automatic controlled reentry by the Gemini onboard computer.

The flight plan calls for the use of a power tool in space, maneuvering of two spacecraft linked together by a tether, and maneuvering the spacecraft to an apogee or high point of 865 miles.

Gemini 11 command pilot is Charles (Pete) Conrad and Richard F. (Dick) Gordon is pilot. Backup command pilot is Neil A. Armstrong with William A. Anders as backup pilot.

Launch time for the Agena target vehicle is 8:48 a.m. EDT with liftoff of Gemini 11 scheduled 97 minutes later at 10:25 a.m. EDT.

The Agena 11 will be launched into a 185-mile circular orbit by an Atlas Standard Launch Vehicle which develops 390,000 pounds of thrust. Gemini 11, boosted by a modified Titan II, will be launched for a direct ascent to the orbiting Agena, with docking programmed during the first pass across the United States.

Gordon is scheduled for two activities outside the spacecraft - the first on a 30-foot umbilical lasting 55 minutes, the second is a 2-1/2-hour standup activity during which he will take photographs. During this extravehicular activity (EVA), on the 15th and 16th revolutions, Gordon is to link the Gemini and Agena with a two-inch-wide, 100-foot tether stowed aboard the Agena.

On the second day of flight, the Gemini 11 crew will use the Agena's 16,000-pound thrust primary propulsion sys-

(Continued on page 4)

BOSWINKLE NAMES WORKERS FOR UNITED FUND DRIVE

Robert W. Boswinkle Jr., Chairman of the Center's annual United Fund campaign, announced that an advanced solicitation of top staff officials will open the Center's United Fund effort. Advanced solicitation will get underway on Thursday, September 15. A general one-day solicitation of staff members will be held on Friday, September 23.

Assisting Boswinkle in the campaign will be James Hamilton, who will be in charge of the general solicitation, and P. M. Lovell, who will be chairman of advanced solicitations.

Other members of the drive committee include William L. Williams, promotion; Malcolm P. Clark, employees at school; Elva L. Rollins, employees on travel; Harrison B. Favre, company representatives; Marvin Forrest, service contractors; C. Willis Cross, PUF movie showings; Barbara J. Durling, financial chairman, and Helen H. Willey, financial vice-chairman.

Boswinkle has annnounced the appointment of the following division chairman for the drive:

Office of Director, F. T. Hoban; Research Reports, P. E. Weatherwax; Flight Reentry Programs, D. G. Stone; Lunar Orbiter Project, A. P. Plott; MORL Studies, G. R. Alto; Scout Project, Abe Leiss; Applied Materials and Physics, J. M. Hallissy; Analysis and Computation, Sarah Bullock; Flight Instrumentation, J. F. Zanks; Instrument Research, D. R. Johnson; Space Mechanics, J. B. Whitten, Dynamic Loads, H. L. Runyan; Structures Research, R. W. Peters; Aero-Physics, A. Henderson; Flight Mechanics and Technology, J. W. Jewel; Full-Scale Research, D. L. Loving.

Office of Chief of Engineering and Technical Service, Marvin Forrest; Electrical Systems, A. O'Kelly; Flight Vehicles and Systems, B. C. Carr; Mechanical Services, H. C. Roehm; Plant Maintenance, Dale Emswiler; Research Models and Facilities, W. R. Cofer.

Office of Assistant Director for Administration, E. T. Maher; Administrative Services, L. C. Burcher; Fiscal, Helen B. Talbott; Personnel, M. P. Clark; Photographic, C. W. Williams, and Procurement, J. F. Braig.

Chairmen for advanced solicitations are as follows:

Office of Director, W. D. Mace; Research Reports, H. A. Fedziuk; Flight Reentry Programs, D. G. Stone; Lunar Orbiter, A. P. Plott; MORL Studies, R. N. Parker; Scout Project, R. D. English; Applied Materials and Physics, C. L. Gillis; Analysis and Computation, T. B. Andrews; Flight Instrumentation, A. R. Sinclair; Instrument Research, W. B. Jones; Space Mechanics, W. H. Phillips; Dynamic Loads, D. J. Martin; Structures Research, R. R. Howell; Aero-Physics, M.C. Ellis; Flight Mechanics and Technology; J. L. Johnson; Full-Scale Research, A. W. Carter.

Office of Chief of Engineering and Technical Service,

(Continued on page 8)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

TV SHOW. . .The Hampton Lions Jug Band, which has several Center employees in its membership, was in New York City recently. They met Mike Douglas and taped a program with him which will be shown over Channel 10 at 4 p.m. on September 5 (Labor Day).

BOWLING NOTICE. . .Additional teams and individuals interested in bowling this year are needed to complete the NASA Mixed Tenpin League. Individuals or teams interested are requested to call Roy Henley, 2543, or Marna Cordle, 4815.

NEWLYWEDS. . .Wedding bells rang on Saturday, July 30 when Joyce Anthony, Personnel Division, and Richard S. Gray, Research Staff Office, took their final vows in the Denbigh Presbyterian Church. Sue H. Kidd, Personnel, served as matron-of-honor. . .Sandra S. Swank, Technical Editing, and James H. Spalding, Instrument Research Division, were married on August 6.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, September 6 at 7 p.m. at the Central Labor Union Hall, Newport News.

NEW ARRIVALS. . .Weighing in at five pounds and one ounce on August 18 was Kelly Elisa, daughter of Sandra Ruehl, Full-Scale Research Division. . .Announcing the birth of a six pound, fourteen ounce daughter, Jamie Lynn, are Sally, Administrative Services Division, and James Puffenberger, Research Models and Facilities Division. The proud grandfather is George M. Dudley, Mechanical Services Division.

TOUCH FOOTBALL. . .The NASA Touch Football League is being expanded to accommodate those who cannot participate on Saturday and those who would like to play more than once a week. Additional players are needed to complete the league. For further information contact Floyd Howard, 3431, Fred Jones, 4481, or Charles Woerner, 4840.

FOR SALE: Two 6.00-6.50/13 Goodyear snow tires, less than 2000 miles. Berry, 119 Tidemill Lane, Apt. 55-D.
WANTED: Home for kittens. Eggers, 595-1686.
FOR SALE: 1949 Chevrolet, $75. Zorumski, 722-0667.

"Daddy feels like that every payday."

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 29:

Monday - French onion soup, Swiss steak, grilled pork chops, chicken croquettes with cream sauce, baked hash.

Tuesday - Cream of tomato soup, half-pound chopped sirloin steak, broiled Canadian bacon with apple sauce, deep fried fish puffies, chili-mac.

Wednesday - Chicken-rice soup, Spanish pot roast, baked ham with plum-raisin sauce, fried chicken, western omelette.

Thursday - Vegetable-beef soup, grilled steak, spaghetti and meat balls, stuffed pepper, fish cakes and cole slaw.

Friday - Clam chowder, roast beef, fried flounder, broiled fish, chicken cutlet.

The menu for the week of September 5 is as follows:

Monday - H O L I D A Y

Tuesday - Puree of bean soup, shrimp Newburg, veal cutler, liver and onions, tamale pie.

Wednesday - Hot roast beef sandwich, stuffed pepper, baked lasagna, cheese omelette.

Thursday - Vegetable-beef soup, grilled steak, fried fantail shrimp, chicken cutlet, franks and beans.

Friday - Clam chowder, roast turkey with cranberry sauce and dressing, fried fish sticks, broiled fish, Austrian ravioli.

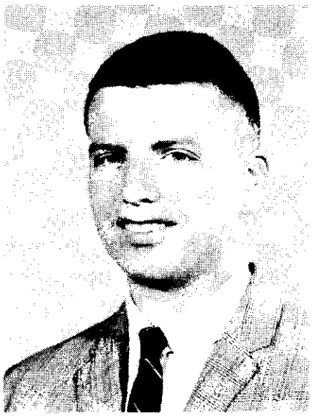
FOR RENT: 2-bedroom furnished apartment at Grandview. Verser, 851-2412.
FOR SALE: 3-bedroom, 1-1/2 bath brick rancher in Thornhill - assume loan. Shearin, 826-7461.
FOR SALE: Girl's 26-inch bicycle - $15. Engle, 838-1735.
FOR SALE: 1964 Volkswagon, $1250. Graves, 838-1010.
FOR SALE: 1960 Bonneville, air conditioned - $695. Southerland, 838-4141.

STUDENT TRAINEES RECEIVE BACHELOR DEGREES

William T. Davis
Instrument Research
B.S., Elec. Engineering
VPI

J. David Dearing
Aero-Physics
B.S. Aerospace Eng.
VPI

Alphonso V. Diaz
Instrument Research
B.S., Eng. Physics
St. Joseph's College

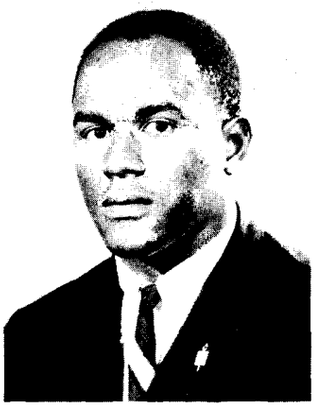


Arthur O. Gudikunst
Full-Scale Research
B.S., Aerospace Eng.
VPI

William F. Hampshire
AMPD
B.S., Physics
VPI

John Q. Howell
Flight Instrumentation
B.S., Physics
Miss. State University

Earle K. Huckins
AMPD
B.S., Aerospace Eng.
VPI



Robert B. Lee
AMPD
B.S., Physics
Virginia State College

PUT BOTTLES IN BOTTLE RACKS

The practice of depositing partially filled and empty soft drink bottles in wastepaper baskets has resulted in the spillage of soft drink beverage and glass breakage.

The spillage of beverages during the removal of trash creates a problem requiring additional and unnecessary cleaning operations. Broken bottles create a hazard to the janitors while they are handling the paper waste.

Racks are provided adjacent to drink vending machines for the proper storage of empty bottles. The staff is requested to utilize these racks and to discontinue the practice of depositing soft drink bottles in trash containers.

FOR SALE: 1964 Volkswagon - $1250. Bowie, 877-1102.
FOR RENT: Split-level, 3-bedroom brick house in Northampton. Bertoci, PA 3-8096.
FOR SALE: Large chair with slip cover - $5. Long, 596-3586.
FOR SALE: 15-foot fiberglas boat, 40 hp electric start motor and extras - $750; also custom trailer hitch for 1962-66 Volvo - $10. Braski, 877-4011.

Robert M. Thomas
Flight Instrumentation
B.S., Elec. Engineering
VPI

James A. Titus
AMPD
B.S., Nuclear Eng.
Miss. State University

GEMINI LAUNCH SCHEDULED

(Continued from page 1)

tem (PPS) to boost the spacecraft to an apogee of 750 nautical miles (865 statute miles). The Gemini-Agena will remain in this elliptical orbit (865 apogee by 185-mile perigee) for two revolutions until the PPS is fired for the second time and the spacecraft is returned to a 185-mile circular orbit.

After undocking, the crew will fly formation with the Agena linked to the Gemini by the tether. This exercise is designed to determine the feasibility of performing extended station-keeping to a tethered vehicle by using a gravity gradient technique.

Eleven technical and scientific experiments will be performed during the 70-hour mission. They are mass determination, night image intensification, power tool evaluation, radiation and zero g on blood, synoptic terrain photography, synoptic weather photography, nuclear emulsion, airglow horizon photography, UV astronomical camera, ion wake measurement, and dim sky photographs/orthicon.

Provisions have been made for two additional experiments that involve lunar and libration regions photography. Libration regions photography will be conducted if there is no change in the launch date. Lunar UV spectral reflectance measurements, however, will be made only if a change in the launch schedule should result in more favorable lighting conditions on the Moon.

Retrofire is scheduled for 70 hours, minutes after launch with splashdown planned for the western Atlantic Ocean (Recovery Area 45-1) about 725 miles east of Cape Kennedy.

Gemini 11 reentry will be controlled by the spacecraft onboard computer. The computer and inertial guidance system will feed reentry steering information into the thruster electronics in place of manual crew inputs. The crew will monitor the flight director indicator needles during reentry but will assume control only if the need arises.

This is Conrad's second flight. A Navy commander, he was pilot on Gemini 5, the eight-day mission of August 21-29, 1965. This is Gordon's first flight. He is a Navy lieutenant commander.

Armstrong, a civilian, was command pilot on Gemini 8, the first successful docking flight which was terminated after seven revolutions when trouble developed in one of the Gemini thrusters. Anders, an Air Force captain, has not yet made a flight in space.

After spacecraft splashdown, the Agena will be placed in a higher parking orbit where it will be left for possible use as a passive target on future manned missions.

FOR SALE: 1947 Chevrolet - $125. Brabrand, 851-1576.

FOR SALE: 3-bedroom rancher, ceramic tile bath, pay equity - $89 per month. Siviter, 31 Westmoreland Dr., 723-1989.

FOR RENT: 2-bedroom, 1-1/2 bath furnished house near VARC - available Sept. 15 through Jan. 25. Couple preferred. Fowke, 596-1445.

FOR SALE: 18,200 btu 210-volt air conditioner. Brown, 851-5125.

FOR SALE: 22 Remington rifle, Model 12 Nylor, bolt action, tubular fed - $40. Wyatt, 898-2481.

FOR SALE: RCA portable stereo. Butler, 596-0014.

Two staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Top photograph - Charles F. Barnett, Chief of Personnel Division, presents a check to Mary E. Carmines for her suggestion concerning "Langley Forms Order Form." Bottom photograph - Mercedes F. Hobbs receives a check and congratulations from Henry A. Fedziuk, Chief of Research Reports Division. Mercedes suggested improved methods for drawing irregular and compound curves.

LUNAR ORBITER ON PHOTOGRAPHIC MISSION OF MOON

At 12:36 p.m. EDT August 23, Lunar Orbiter 1 spacecraft was commanded to make a photograph of the Earth from its position in orbit around the Moon.

The frame exposed was one of those periodically required to maintain proper position of the film in the spacecraft's camera. Purpose of the photograph was to obtain data which has long been of interest to scientists on the appearance of the terminator (line dividing the sunlit and shadowed portion of the planet) as viewed from a distance of about 240,000 miles. While from Earth, the Moon's terminator is a sharply defined phenomenon, atmospheric effects are expected to diffuse the sunlight and yield a view of the Earth's terminator as a gradual shading from light to dark.

The photograph of the Earth was expected to be read out from Lunar Orbiter I by the Deep Space Network Tracking Station at Goldstone, Calif., on August 25.

Recent photographs read out from the spacecraft include a partial frame of high resolution photography acquired at 5:07 p.m. EDT August 22; a high and a medium frame read out at 5:39 a.m. EDT August 23; a full medium and two partial high resolution pictures at 8:50 a.m. EDT August 23.

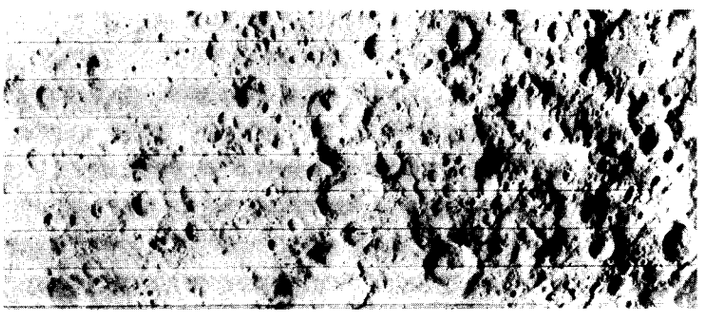
At the present time, Lunar Orbiter I has completed photography of its primary target sites 1, 2, and 3, having exposed 16 frames at site 3 at 4:47 p.m. EDT August 23.

The standard resolution camera in the spacecraft is continuing to provide excellent photography at each read out although the high resolution system is still not functioning as intended.

Lunar Orbiter project officials at Langley Research Center report that Orbiter has completed photography of the first three primary target sites being surveyed as potential Apollo manned landing areas.

The medium resolution pictures taken at those sites were of high quality although the high resolution camera system is still not functioning as intended and photographs read out from sites 1 and 2 had a perceptible image smear.

Langley engineers controlling Orbiter's mission are continuing their analysis of the difficulty in the high resolution portion of the system and are currently investigating an hypothesis that a spurious signal from the image motion compensator may be triggering the high resolution camera shutter at a time when the film is in motion. Project officials emphasized, however, that they will continue to carry out Orbiter's prime task of photographing all nine selected sites along the equator of the Moon. Information of value to the Apollo program is expected to be obtained on those sites, especially on the steepness of slopes in those areas. The Apollo program requires landing sites with slopes no greater than about seven degrees.



This is another United States photograph of the backside of the Moon taken by Lunar Orbiter I spacecraft on August 20. The picture shows an area of the lunar surface approximately 590 by 220 miles.

This is the first United States photograph of the backside of the Moon taken with the high resolution camera. It was taken by Lunar Orbiter I spacecraft on August 20 and radioed to the Goldstone, Calif., station of the Deep Space Network at 1 p.m. PDT, on August 21. North is approximately at the top of the photograph when it is viewed with the narrow strip of photographic test patterns on the right side. The test patterns are used to calibrate the photography. When the picture was taken, the Sun was on the left at an elevation of 20 degrees. The spacecraft was moving from left to right across this area of the Moon's surface as it took the photograph. The pictures shows an area of the lunar surface approximately 75 by 100 miles. It is centered on a point which is approximately 150 degrees west longitude and 5 degrees south latitude. This photograph shows objects about 8 times smaller then the moderate resolution photograph of the same area. This is the most highly detailed photograph of the Moon's unseen face ever taken.

WANTED: Driving combination from Riverdale to W.A. on 7:30 shift. Everhart, 4879.

PIONEER V11 FIRED INTO ORBIT

The United States launched the second in the new series of Pioneer spacecraft into orbit around the Sun from Cape Kennedy by a Delta rocket on August 17.

Called Pioneer VII, it will seek to produce as much new knowledge as Pioneer VI, which was launched last December.

Pioneer VII will fly an "out" mission, moving in 28 weeks to a position about 12 million miles outside the Earth's orbit, 105 million miles from the Sun, and 34 million miles behind the Earth on a parallel orbit.

The spacecraft is expected to pass close to the Sun-Earth line about 3.5 million miles from Earth, where it may detect the Earth's magnetosphere tail.

Observations of atomic and sub-atomic particles and magnetic fields will be coordinated with other NASA spacecraft: Pioneer VI, Mariner IV, Explorer XXXIII, and three Orbiting Geophysical Observatories.

Together, these spacecraft can gather data continuously from events on a strip of the solar surface extending nearly half way around the Sun.

Pioneer VII, like Pioneer VI, will be able to "see" better than previous interplanetary spacecraft.

The new 140-pound, drum-shaped Pioneers are unique in that they are "spinners," i.e., continuously scanning a full circle in the plane of the Earth's orbit. They have a data rate 10 times higher than previous interplanetary spacecraft for major parts of their missions.

To date, Pioneer VI has returned 400 million instrument readings. With its seeing ability, Pioneer VI has made a number of discoveries. These include:

The non-straight-line flow of the solar wind.

First measurement of average numbers of electrons in interplanetary space (five to ten per cubic centimeter).

Presence of singly-charged helium ions.

Many well-defined streams of solar cosmic rays channeled by intertwined magnetic field lines.

Scientists put together these results in the first detailed description of the tenuous solar atmosphere (the region around the Sun containing the solar wind and at least the near planets).

This "model" will help predict the arrival of dangerous high energy solar particles at specific points in space, and thereby could play an important role in insuring protection of Apollo astronauts.

The Pioneer program is directed by NASA's Office of Space Science and Applications. Project management is by Ames Research Center. The Delta launch vehicle is managed by Goddard Space Flight Center and launched by Kennedy Space Center.

Communications and tracking is by the Deep Space Network, operated by Jet Propulsion Laboratory.

The Pioneer spacecraft are built by TRW Systems Group, Redondo Beach, California. The Delta rocket is built by Douglas Aircraft Company, Santa Monica, California.

Pioneer VII is virtually identical to Pioneer VI. The Delta launch rocket flies a different third stage (FW-4D) which reduces launch forces on the spacecraft from 27 g to about 23 g.

The design life of the mission is six months, but if the spacecraft continues to function well, Pioneer VII could return data to DSN antennas as far as 130 million miles from Earth up to two years after launch.

Montage of 14 photographs taken by Automatic Picture Transmission System (APTS) of the Nimbus II weather satellite shows the continental United States and Mexico. The photos were taken as the world's most advanced meteorological satellite circled the earth every 108 minutes in a 700-mile-high, near-polar orbit. The satellite, whose structure was designed and built by the General Electric Company's Missile and Space Division, was developed under contract from Goddard Space Flight Center. Nimbus II, with its APTS, Advanced Vidicon Camera System, High Resolution Infra-red Radiometer and Medium Resolution Infra-red Radiometer, has taken more than 260,000 day and night photographs of the earth. Its cameras have tracked Hurricane Alma, Typhoon Irma, and Tropical Storms Dora and Ella.

SLOWPITCH LEAGUE STANDINGS

Final standings in the NASA Slowpitch League show that ACD took first place with a perfect record of 16 wins. Ball Busters and Packers tied for second with 13 wins and 3 losses each. Other final standings were: Structures 9-7, Knads 8-8, Frosties 5-11, Hasbeens 4-12, Batmen 3-13, and Sluggers 1-15.

Leading batters were as follows: Tracy Callis .714, Thayer Sheets .578, Buck Fichter .574, Mickey Rowe .542, Mitch Thomas .531, Bob Peabody .519, Bob Reynolds .517, and Charles Miller .510.

Tracy Callis led with homeruns with 11 and Buck Fichter and Charles Miller connected for 9 each.

ACD led the league in defense by allowing only 56 runs. Packers allowed 68 runs for second place and Ball Busters allowed 81 for third. In offense the Ball Busters scored 181 runs in 16 games. In 15 games actually played Packers scored 176 runs and ACD 170.

Leading in runs-batted-in were Callis with 44, Jay Lambiotte with 31, Miller 28, Sheets 25, and Fichter 24.

FOR SALE: 26-foot cabin cruiser with head, galley, dinette, sleeps 4, has Chrysler Marine engine. Lawson, 723-9204.

FOR SALE: 4-piece walnut bedroom suite - $200. Buchanan, 877-3130.

FOR SALE: 1935 5-window coupe. Adkins, 868 Harpersville Rd.

FOR SALE: 14-foot fiberglas canoe - $125. Sutton, 838-2699.

FOR SALE OR RENT: 3-bedroom brick rancher near Hidenwood. Elliott, LY 6-9766.

SCANNER EXPERIMENT LAUNCHED

A 550-pound instrument package was rocketed to about 380 miles altitude August 16 in an experiment to study the Earth's horizon.

The suborbital experiment was conducted by NASA as part of Project Scanner to obtain data needed to design and develop improved horizon-scanning instrumentation for future space missions.

The 13.5-minute flight was launched from Wallops Station at 2:18 a.m. EDT. Preliminary radio data indicated the flight achieved its objectives.

A two-channel radiometer measured radiated energy from the horizon in two wave-length bands: 14 to 16 microns, associated with carbon dioxide in the upper atmosphere, and 20 to 40 microns, associated with water vapor.

A star mapper telescope provided data on the attitude of the spin-stabilized payload.

Project Scanner is a phase of horizon definition research managed by Langley Research Center. Horizon definition and measurement are important to spacecraft stabilization and navigation techniques.

Howard J. Curfman, Applied Materials and Physics Division, is Project Manager. Ralph D. Welsh is the Launch Coordinator for Wallops Station.

The spacecraft and a portion of the instrumentation were designed, fabricated, assembled, and tested by the Systems and Research Division of Honeywell Company, Minneapolis, Minn.

The dual-radiometer assembly, the prime instrument aboard the spacecraft, was developed by the Santa Barbara Research Center, a subsidiary of the Hughes Aircraft Company, Goleta, California. The star mapper was built by Baird-Atomics, Inc., Waltham, Massachusetts.

VARC OFFERS COURSES

The Virginia Associated Research Center, through arrangements with the University of Virginia and Virginia Polytechnic Institute, has announced a program of graduate courses in aerospace engineering, applied (engineering) mechanics, and electrical engineering for the 1966-67 academic session.

Interested employees who have not received a copy of the announcement may receive one by calling the Training Office, 2611.

Courses being offered include Engineering Mathematics, Vehicle Dynamic Stability, Space Flight Mechanics, Gas Dynamics I, Gas Dynamics II, Advanced Mechanics of Solids, Continuum Mechanics and Elasticity, Continuum Mechanics and Elasticity II, Vibrations I, Vibrations II, Intermediate Dynamics, Intermediate Compressible Inviscid Flow, Intermediate Viscous Flow, Electromagnetic Fields I, Electromagnetic Fields II, Analysis of Feedback Systems, and Synthesis of Feedback Systems.

The Medical College of Virginia is offering a course in Radiology 501-502. This course will be given at VARC during the first and second quarters of the 1966-67 academic year. The course will begin on September 15 and the class will meet on Monday afternoons from 2 to 4 p.m. Dr. Stuart Lippiniott, nationally know biologist, will be the instructor.

FOR RENT: Small one bedroom bungalow suitable for couple, refrigerator, stove and water furnished - $65 per month. Smith, 838-1007 or 722-1810.

Edward T. Maher, Chief of Administrative Services Division, presents an award to Arletha Kerns. The award was given to Arletha by the Department of the Army for "Sustained superior performance and outstanding performance rating for the period April 4, 1965 to April 30, 1966. During this period, Mrs. Kerns, as Secretary (Stenography) in the Office of the Adjutant General, Headquarters Eighth U.S. Army Support Command, consistently demonstrated outstanding ability in the performance of her duties which contributed greatly to the effective overall operations of the office."

YOUR ATTITUDE

Attitude is the sum total of a lifetime of experiences which, when mixed with the proper ingredients such as patience, humor, temperament and character adds up to emotional balance.

What does all this have to do with safety? Well, since attitude affects behavior it may cause us to have an accident or it may motivate us to prevent one. Attitudes can cause accidents!

The record books are replete with cases where the primary cause of an accident was anger, aggressiveness, overconfidence, or some other strong emotion. Here are a few examples:

a. Following a violent argument with his wife, the man storms out of the house, jumps into his car, slams it into reverse and backs over a neighbor's child who was playing in the driveway.

b. After being on the receiving end of a bawling out by the boss, an employee leaves the building in a blind rage and walks off the step. The fall broke his leg.

c. After following a long string of slow moving vehicles for about 20 minutes, this driver takes the desperate chance of passing several vehicles at one time - result 5 dead in a head-on collision.

d. In another case a man got so excited when his partner trumped his ace that he fell backward in his chair and cracked his skull on a radiator.

Safety is a way of life, a state of mind, an attitude. If your safety attitude is convincing, your enthusiasm will infect others. If you are indifferent, antagonistic, apathetic, or skeptical, you may be in for more than your share of accidents.

SCHEDULE OF COMING EVENTS

NASA NIGHT - On Monday, August 29 at 7:45 p.m. the Peninsula Grays will be host to Winston-Salem at the War Memorial Stadium. The baseball game will be sponsored by the Activities Association and will be "recognition night" for the NASA at Langley. Tickets are available at half price from district representatives. Tickets purchased at the stadium will be full price. Children accompanied by adults wil be admitted free. Rain dates will be September 2 or September 3.

REDSKIN RESERVATIONS - Will the persons who reserved tickets for the Redskins-Brown football game at Washington D. C. Stadium on September 11 please pick them up at the Activities Building before August 31. Reservations for the dinner have to be made in advance. All seats for the game are in the lower deck, section 218, rows 8 through 12. Busses will be at the Activities Building at 9 a.m. on September 11. Game time is 1:30 p.m. For additional information contact Les Powell, 4835, or Joe Siefring, 3446.

PAYDAY GAME NIGHT - The Activities Building has been reserved for official use during the Lunar Orbiter Program and Payday Game Night has been cancelled until further notice.

LITTLE THEATER OPENS SEASON

When "West Side Story" opens in Kecoughtan High School's auditorium September 7, kicking off the Peninsula Community Theater's 1966-67 season, NASA families will be well represented both on the stage and behind the scenes.

One of the lead roles, Anita, a fiery Puerto Rican immigrant to New York's West Side, will be played by Marcia Otero whose husband, Robert, is an experimental machinist in Instrument Research.

Supporting the leading players as members of the singing-dancing chorus will be four other NASA relatives. They are Susan Carmel whose father is Melvin Carmel, Full-Scale Research; Miriam Corson, daughter of Blake who is head of 16-foot Transonic Tunnels; Gary Bruce, son of Jean Bruce of Research Models and Facilities, and Jerry Panz, son of Mike of Mechanicsl Services.

Other NASA personnel, while not appearing on stage, have had an indispensable part in the production. Clyde Winters, Applied Materials and Physics, is producer of the show and supervised the design and construction of the sets. Helping Winters in set construction and painting is Bill Haraway, Mechanical Services.

When the theater found that the Kecoughtan auditorium had never been charted for seating, it enlisted the services of Dr. Richard T. Whitcomb, head of 8-foot Tunnels Branch and a theater board member, to devise a numbering system. The actual numbering in the auditorium is being undertaken by Betty Church with help from husband Doug of Scout Project Office.

"West Side Story" will play through September 10. Further information on this play and the entire season is available by calling CH 4-1411.

FOR SALE: Webcor portable transistor tape recorder - $75. Fox, 723-2601.

FOR SALE: Green wrought iron dining table with 4 chairs. Shearin, 826-7461.

FOR SALE: 1964 MG Midget. Swaim, 723-1586.

MINGA RETIRES FROM CENTER

Herman Minga

Herman Minga, Structural Steel Worker Leader, Fabrication Shop, Mechanical Services Division, retired from the Center on August 18 after serving almost twenty-four years with NASA.

Minga was born October 18, 1907 in Carrollton, Virginia. He attended Carrollton High School and was self-employed for several years as a contractor.

Before starting his NASA career he worked for the Newport News Shipbuilding and Dry Dock Company and the Virginia Engineering Company. He entered on duty at the Center on November 28, 1942 as a Senior Sheetmetal Worker.

UNITED FUND CAMPAIGN

(Continued from page 1)

Marvin Forrest; Electrical Systems, M. W. Cole; Flight Vehicles and Systems, E. B. Geer; Mechanical Services, R. H. Turner; Plant Maintenance, M. E. Cook; Research Models and Facilities, H. I. Maxwell.

Office of Assistant Director for Administration, E. T. Maher; Administrative Services, J. G. Ross; Fiscal, Sidney Parker; Personnel, Charles F. Barnett; Photographic, C. W. Williams, and Procurement, S. L. Butler.

A meeting of division chiefs, advance solicitors, and division chairmen will be held at 10 a.m. on September 8 in the Conference Room, Building 1212. Guest speaker will be Lt. General Harvey H. Fischer, Deputy Commanding General of Continental Army Command.

A kickoff luncheon will be held at 12:30 p.m. on September 13 in the private dining room. Attending will be division chiefs, advance solicitors, and division chairmen. Speaker will be William T. Roos, PUF Campaign Chairman.

A general solicitation meeting will be held on September 16 at 10 a.m. in Building 1222 (Activities Building). Attending will be division chiefs, division chairmen, and general solicitors. Speaker will be Larman S. Sherwood, Travelor, Educator, and Commentator.

PART-TIME EMPLOYEES NEEDED

Additional applications are needed for the roster of former Government employees who are interested in temporary jobs on a day-to-day basis.

The roster includes former NASA as well as other Government employees who are eligible for employment by reinstatement in the positions of typists, stenographers, and math aides.

Appointments will be made on an 8-hour-day basis for short periods of time. If the eligible person is not available when called, her name will remain on the roster for future vacancies.

Persons interested in being considered for these positions may contact Jane Swartzwelder, Employment Branch, Personnel Division, telephone 2568.

Langley Researcher

VOLUME 5, NUMBER 18 LANGLEY RESEARCH CENTER SEPTEMBER 9, 1966

The world's first view of the Earth taken by a spacecraft from the vicinity of the Moon. The photo was transmitted to Earth by the United States Lunar Orbiter I and received at the NASA tracking station at Robledo de Chavela near Madrid, Spain. This crescent of the Earth was photographed August 23 at 16:35 GMT when the spacecraft was on its 16th orbit and just about to pass behind the Moon. This is the view the astronauts will have when they come around the backside of the Moon and face the Earth. The Earth is shown on the left of the photo with the U.S. east coast in the upper left, southern Europe toward the dark or night side of Earth, and Antartica at the bottom of Earth crescent. The surface of the Moon is shown on the right side of the photograph.

LUNAR ORBITER TEAM RETURNS AFTER SUCCESSFUL MISSION

Most of the members of the Lunar Orbiter Mission team have returned to Langley Research Center following what has been described as a very fine and successful mission. This marked the launch of the first in a series of five photographic laboratory spacecraft to orbit the Moon.

The 850-pound spacecraft was launched by an Atlas Agena-D vehicle on a flight to the vicinity of the Moon on August 10 from Cape Kennedy. The spacecraft went into lunar orbit on August 14 to obtain high resolution photographs of various types of surface on the Moon to assess their suitability as landing sites for Apollo and Surveyor spacecraft.

William I. Watson, in charge of Assembly and Integration of the Lunar Orbiter vehicle, stated that a smear problem developed in the high resolution photographs, but the medium resolution photographs were of excellent quality. He pointed out that all systems worked as planned and the smear in the high resolution photographs was partly rectified by changing the photographic orbit by approximately six miles from a perilune of 30.7 miles to 24.8 miles.

"An immense amount of knowledge has been derived from Mission A. What we have learned and will learn from this first flight will be applied to the subsequent flights to achieve an even greater success," Watson stated.

The Lunar Orbiter program is directed by NASA's Office of Space Science and Applications. The project is managed by the Langley Research Center. The spacecraft are built and operated by the Boeing Company, Seattle, Wash., as prime contractor. Eastman Kodak Company, Rochester, N.Y., (camera system) and the Radio Corporation of America, Camden, N.J., (power and communications systems) are principal subcontractors to Boeing. Lewis Research Center is responsible for the launch vehicle and Kennedy Space Center supervised the Launch operation.

Tracking and communications for the Lunar Orbiter program are the responsibility of the NASA Deep Space Network, operated by the Jet Propulsion Laboratory.

The Langley team is composed of the following Center staff members: Dr. Floyd L. Thompson, Center Director; Charles J. Donlan, Associate Director; Eugene C. Draley, Assistant Director for Flight Projects; Dr. Samuel Katzoff, Chairman of Langley Lunar Orbiter Advisory Committee; Clifford H. Nelson, Project Manager, and James S. Martin, Assistant Manager.

Israel Taback, Spacecraft Manager; William I. Watson, Assembly and Integration; G. Calvin Broome, Photographic Subsystem; J. E. Harris, Power Subsystem; Royce H. Sproull, Velocity and Attitude Control Subsystem; T. W. E. Hankinson, Thermal, Structure and Mechanisms Subsystem, and I. W. Ramsey, Spacecraft Testing.

William J. Boyer, Operations Manager; Dalton D. Webb,

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

CAMERA CLUB. . .The Langley Camera Club will meet on September 15 at 7:30 p.m. at the Langley Service Club. The subject will be "Study of Prints." Over 50 professional photos will be on display. An open category color slide contest will be held.

REPRESENTATIVES TO VISIT. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on September 13 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on September 21 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

NEWLYWEDS. . .Sandra Bowles, Photographic Division, and Taylor Chaney, Hampton, were married August 23 in Hilton Baptist Church. . .Maureen Ironmonger, Personnel Division, took her final vows with Ernest Diggs, Poquoson, on August 20 at Tabernacle Methodist Church, Poquoson.

BOATING CLASSES. . .The Hampton Roads Power Squadron is offering a free 10-week course in boating. The course covers safety afloat, seamanshipm rules of the road, compass and navigation. Registration will be held at 7 p.m. September 13 at Ferguson High School. The public is invited.

EVENING CLASSES. . .Registration for evening classes of York Adult and Technical School will be held Thursday, September 22 at 7 p.m. at York High School. Courses offered include: Mathematics for Electronics, Math for Engineering Technicians, Direct Current Electricity, Alternating Current Electricity, Vacuum Tube and Semiconductors, Typing, Bookkeeping, Business Machines, Introduction to Digital Computer Programming. For further information call 898-5957.

PROFESSOR TO VISIT CENTER

Professor Klaus Oswatitsch, Head of the Institute of Fluid Mechanics at the Vienna Institute of Technology, will give a lecture at the Langley Center at 10 a.m. on September 20 in the East Projection Room, Building 587.

Professor Oswatitsch will speak on "Nonlinear Problems in Wave Propagation." The problems and methods to be discussed will have relevance to many areas of Langley research. Following the lecture, Professor Oswatitsch will be available for consultation.

William T. Kesselring, Coordinator, Career Development Programs, U.S. Civil Service Commission, welcomes a group of approximately 100 staff members who recently attended an intra-agency training program on "You Meet the Public."

'YOU MEET THE PUBLIC'

Approximately 100 staff members took part in the intra-agency training program on "You Meet the Public" on August 16 in the East Area Projection Room. The program was sponsored by the Philadelphia Region, U.S. Civil Service Commission.

"The task of government is to serve the public," so wrote President Johnson in a November 1 memorandum to heads of departments and agencies. "It has been my deep and continuing concern," he said, "to assure that each American receives from his government the fastest, most efficient and most courteous service...The time for action is now."

The President requested each department and agency head to assign a top staff member to develop a program to improve the quality of service to the public, to report to CSC Chairman John W. Macy Jr. the steps taken to improve service and plans for future improvements, and to take full advantage of the new and special training courses developed by the Civil Service Commission to improve standards of service and to open up more lines of communication to the public.

H. Lee Dickinson, Head of the Center's Communications Program, spoke to the group on "The Public Service - A Positive Force." Featured speakers were Robert Haakenson, Community Relations Manager of Smith, Kline and French Laboratory, who spoke on "Communications - A Human Process" and Richard P. Jackman, Manager, Communications and Community Relations, General Electric Company, who spoke on "Barriers and Gateways to Communications."

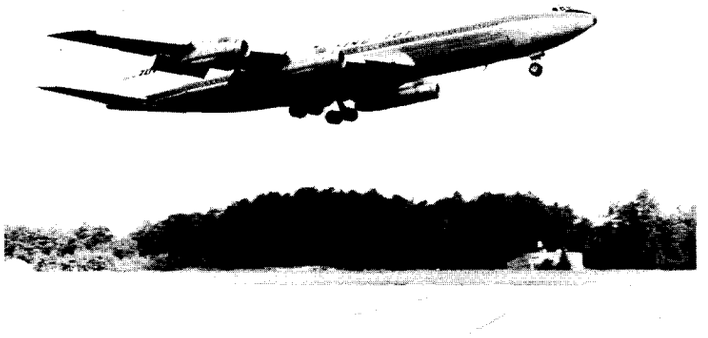
Program Directors were William T. Kesselring, Coordinator, and Donald J. McMullen, Associate Coordinator, Career Development Programs, Philadelphia Region, U.S. Civil Service Commission.

FOR RENT OR SALE: 3-bedroom house with stove, refrigerator and washer. Harrison, 1849 Kensington Dr.

FOR SALE: 14-foot fiberglas boat, 35 hp Evinrude, trailer and accessories. Spear, 245-0566 from 6:30 to 9 p.m.

FOR SALE: 1961 Ford Fairlane 500, 4-door sedan, automatic transmission. Mullins, 229-8995, Williamsburg.

LANGLEY TEAM COMPLETES NOISE RESEARCH PROGRAM



Boeing 707-320C airplane is shown during a recently-concluded two-week noise measurement and noise abatement research program conducted by the Langley Research Center. The flight program took place at Wallops Station.

A Langley Research Center project team has completed a two-week noise research program using the Boeing Company's 707-320C intercontinental jet in flight tests conducted at the Wallops Station.

Project engineer for the noise measurement and noise abatement program was William T. Schaffer Jr., of the Airworthiness Branch of Flight Mechanics and Technology Division.

The airplane made repeated approaches to the Wallops Station runway while Langley staff members measured engine noise generated by the turbofan-powered transport during flight on conventional glide slope angles and on noise abatement approach profiles. Acoustic stations were located along the approach track.

Pilots varied the approach angle and engine settings to determine which landing pattern results in the least noise. Some measurements were made during take-off of the aircraft, which is equipped with standard Pratt and Whitney JT3D turbofan engine.

Previous investigations of several aircraft have indicated that the steeper-than-normal approach capability of each airplane was determined by the combination of aerodynamic and engine characteristics. The recent flights at Wallops sought to expand these results to include in the investigation a Boeing 707-320C turbofan-powered transport.

Objectives of the flight program were to determine the noise abatement approach capabilities of the 707-320C airplane; to determine optimum approach and climbout profiles that result in reduced noise levels without increasing pilot control input and maintaining an acceptable level of safety; and to measure the ground noise levels at several stations below the flight path tracks of conventional glide slopes and noise abatement approach and climbout profiles.

The tests, which involved approximately 45 flight hours, are expected to add appreciably to this country's store of knowledge of the characteristics of aircraft noise and the measures which can be taken by designers and operators for noise abatement.

Other members of the Langley team included J. M. Patton, FMTD, project pilot; Jerry Thibodeaux and David Healey, aero-space technologist in FMTD who provided technical assistance; Walter Leigh and Young Houston, FMTD, who handled operations maintenance; Alton Moore, Photographic Division, project photographer, and William L. Copeland, project acoustic engineer, assisted by Andrew Dibble, both of Dynamic Loads Division.

UNITED FUND CAMPAIGN

Robert W. Boswinkle Jr., Chairman of the Center's annual United Fund campaign, has received the following memorandum from Dr. Floyd L. Thompson, Director:

"I hope that the employees of the Langley Research Center will again provide wide and generous support for the 13th Annual LRC United Fund Drive which occurs during the present month. As a guide to you and your coworkers in the drive, it has occurred to me that it might be instructive to examine the results of past years' drives which show the following: 1963 - 95.7 percent participation for an average contribution of $14.97, 1964 - 95.4 percent participation for an average contribution of $15.60, and 1965 - 93 percent participation for an average contribution of $16.31.

"A commendable rise in average contributions took place over the years shown, reflecting in part, no doubt, higher wages of the employees and possibly a growing awareness among a great many of them of the urgent needs satisfied by the fund. However, a downward trend is indicated for the percent participation. Perhaps your group can find the means to reverse this trend by emphasizing to the entire staff the usefulness of the fund and the desirability of full participation. Such a result would be particularly commendable.

"Best wishes to you and your coworkers for a successful drive."

Boswinkle stated that advanced solicitation of top staff officials will open the drive on September 15, followed by a general one-day solicitation of staff members on Friday, September 23.

LUNAR ORBITER LAUNCH

(Continued from page 1)

Space Flight Operations Director; Donald H. Ward, Spacecraft Launch Operations; John B. Graham, Operations Integration; Kenneth L. Wadlin, Lunar Orbiter Resident Engineer, Boeing, Seattle.

Norman L. Crabill, Mission Integration Manager; Edmund A. Brummer, Communications and Tracking Manager; Gerald W. Brewer, Mission Assurance Manager; William L. Ervi, Department of Defense Field Support; I. G. Recant, Data Analysis Manager; Robert L. Girouard, Space Vehicle System Manager; Theodore H. Elder, Technical Administration Manager, and F. E. Jennings, Funding and Schedules.

WANTED: Ride from Southampton or Wythe to W.A. on 8 shift. Brown, 3771.

FOR SALE: Zosia Matrella and Meyer Z52 grass plugs. Schmidt, 245-1714.

FOR SALE: 1958 Plymouth 2-door hard top - $195. Miotke, LY 6-8684.

FOR SALE: 1964 26-foot Chris Craft, 65 W. radio, DF, D/S, hard top, spot, fighting chair, outriggers. Kidd, 838-3088. May be seen at slip 38, Langley Marina.

NEWS MEDIA PRAISE LAUNCH

The launch and successful photographic mission of Lunar Orbiter I has been hailed by the news media throughout the Nation as another historic first for the United States space program.

The following excerpts from the various news media are reprinted in praise of the Lunar Orbiter mission:

The New York Times - "The remarkable pictures of the moon's surface radioed back by Lunar Orbiter represent another historic first for the United States space program. Now that this vehicle has shown what can be done, the way is open for it and its successors to provide unprecedentedly detailed photographs of every square inch on both sides of the moon."

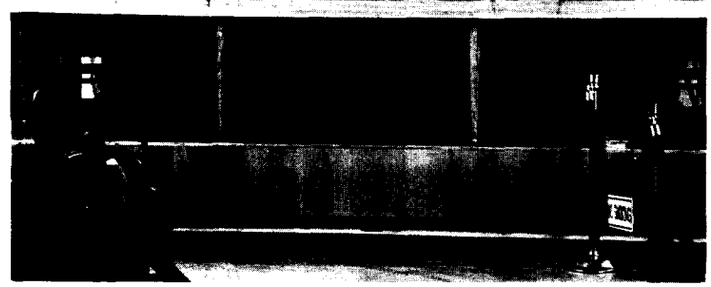
The Washington Post - "The profusion of astonishing American space accomplishments in recent months is continuing with the voyage of Lunar Orbiter. The spacecraft's successful 236,000-mile flight to the moon and its obedient reaction to commands setting it in orbit bespeak man's growing familiarity with space...Beyond showing how deftly a spacecraft can be maneuvered, scientists count on the orbiting robot photographer to provide views of potential landing places for manned spacecraft. The Soviet Luna X, which went into orbit in April, apparently has not transmitted photographs. If the more sophisticated and better positioned Orbiter performs as well as NASA officials anticipate, the mapping of man's first trip to the moon will be much advanced."

Newsweek - "Lunar Orbiter was idling across the moon's sky last week, taking a break from its photo reconnaissance of potential astronaut landing sites, when the command crackled up from its earth-bound masters at the Jet Propulsion Laboratory in Pasadena, Calif. Obediently, the spacecraft rolled, pitched and swung sideways through an intricate set of maneuvers until its camera eyes were gazing homeward. Then, just as Lunar Orbiter was about to disappear behind the moon's eastern rim, it snapped man's first full self-portrait of the Earth from the moon, 239,000 miles away.

"Two days later, technicians had the picture assembled from the data Lunar Orbiter transmitted to a U.S. scientific outpost in Spain. As it developed, the first shot (a second was snapped two days later) was more remarkable as a historic curiosity than anything else. Indeed, scanning the snapshot of the cloud-mantled planet (in its 'fourth quarter,' all but a crescent plunged in darkness), an astronomer might be hard put to spot signs of life on Earth. Even so, the Earth picture was an intriguing fillip to a remarkably successful mission.

"Through the mission, a bug in Lunar Orbiter's system blurred moon close-ups taken by the spacecraft's high-resolution camera. But the medium-resolution camera took stereo pairs of images from which NASA can deduce the slope of the ground at the landing sites - a critical consideration since a slope greater than 15 degrees could upset a descending Project Apollo lunar landing craft."

The New York Times - "For all the earth based observations and mathematical calculations of the past, there is nothing like an on-the-scene visit to clear up some of the mysteries and uncertainties about the moon. In two weeks of circling Earth's only natural satellite, astronomers say, Lunar Orbiter I has returned more revealing data about the moon than had been gathered from the Earth in the last 50 years."



LUNAR ORBITER MISSION - Upper left photo - Shown at a press conference at Jet Propulsion Laboratory following the launch of the Lunar Orbiter are the following members of the launch team (from left): William J. Boyer, Israel Taback, Capt. Lee R. Scherer, Lunar Orbiter Program Manager, NASA Headquarters; Clifford H. Nelson, James S. Martin and Dalton D. Webb. Upper right photo - Answering a question for newsmen are G. Calvin Broome and Nel-

son. Center left photo - Eugene C. Draley (left), Assistant Director for Flight Projects, and Dr. Floyd L. Thompson, Langley Director, talk with Dr. William H. Pickering, Director of Jet Propulsion Laboratory. Center right photo- The Lunar Orbiter operational team is shown at work at JPL. Lower left photo - John F. Newcomb gives a detailed illustration to members of the press. Lower right photo - Dr. Thompson relaxes after a successful mission.

DOWNING COMMENDS STAFF

Representative Thomas N. Downing of Newport News, a member of the House Committee on Science and Astronautics, made the following statement before the House of Representatives on August 23 concerning the Langley Research Center's role in the Lunar Orbiter mission:

"Mr. Speaker, at the present time, Lunar Orbiter I is orbiting the moon and taking photographs of its surface in great detail. The Lunar Orbiter mission, in conjunction with Surveyor landing missions, will provide data important to the selection of landing sites for Apollo spacecraft carrying the first U.S. citizens to the moon.

"It is very fitting that the NASA Langley Research Center at Hampton, Va., is responsible for the important Lunar Orbiter project. Langley was established as part of the National Advisory Committee for Aeronautics in October 1917, to provide a foundation of research in support of our Nation's new aviation industry. Since then almost every airplane serving the commercial aviation industry and the defense of friendly skies has benefited from the research work done there. It was from the Langley Research Center that most of the other NASA research centers were born in years past. The space task group which managed this country's first successful manned space flight effort, the Mercury program, was a Langley organization which later moved to Houston as the nucleus for the manned spacecraft center.

"The Lunar Orbiter I assignment has been difficult. The Langley Research Center recognized the need for such missions in early 1963 and late that year, NASA announced the project as one of the three major projects for unmanned exploration of the moon in advance of Project Apollo. In December 1963, NASA selected the Boeing Co., Seattle, Wash., to be the prime contractor for the program, and a formal contract was negotiated in May 1964. Now about 2-1/2 years later, the first Lunar Orbiter is in flight.

"The Lunar Orbiter spacecraft is truly a sophisticated system. While it has the capability of conducting many operations on the basis of intelligence stored within its programer, it is also responsive to direct commands at any time from NASA engineers and scientists in the space flight operations facility here on earth. Minor difficulties encountered in this first flight have placed great demands on the skill of the project team as performance has been evaluated, problems diagnosed, and solutions applied during the course of the flight. This has required a 24-hour-a-day effort, and many of the principal individuals have had to spend most of the 24 hours a day making important decisions.

"The first already provided by this mission are numerous: It is the first U.S. spacecraft to successfully establish an orbit about the moon; it has provided the first high resolution photographs of the backside and the eastern face of the moon; it has performed the first controlled orbit changes around the moon; it has provided the first conclusive information on the mass distribution and shape of the moon; and in doing these things, it has been remarkably responsive to over a thousand commands while being actively "flown" by engineers and scientists here on earth.

"The performance of the spacecraft and the project team on this activity thus far have surely proved the greatness of our Nation's research efforts. The Langley Research Center of NASA deserves the highest praise of the people of the United States for this remarkable project."

KNOW YOUR CREDIT UNION

This month the Langley Federal Credit Union comes of age. On a yet to-be-determined date, a brand new Credit Union building will be officially dedicated to service to the membership. It is hoped that members and non-members alike will attend the ribbon-cutting ceremony and inspect the new facility - one in which all base personnel may justifiably take pride. The next issue of Langley Researcher will contain necessary details as to time and place as well as a discussion of some of the less obvious benefits members may expect. This article reviews the events leading up to the forthcoming happy occasion and gratefully acknowledges the assistance received along the way.

In a very real sense, the building belongs to the members. Not only do they own it collectively, but each one - saver or borrower, large or small, military or civilian - is entitled to feel that some small portion of it is his, that without his individual contribution it could never have been built. NASA management, too, deserves special mention not only for the friendly support and full cooperation evidenced over the years but also for the practical assistance, advice, and guidance furnished once the decision was reached to build. And, finally, the Air Force made available, at a nominal rental, the land upon which the building stands.

But a short four years ago, in 1962, the future was not so bright. Despite the admission of the military to membership in 1958, business was leveling off. On June 30, 1962, both the number of members (6471) and the value of assets ($2,210,000) were down from the previous December 31 totals. Two Board-instituted steps turned the tide. The first was the establishment on October 1, 1962, of a share-life and loan-life insurance program - at no out-of-pocket cost to members. Share-life insurance was a new concept and of real benefit to most individuals. As presently refined and improved - depending on age at time of deposit - shares up to $2000 are normally matched with life insurance with no limit on age at date of death. The appeal to older members, as well as to those who wish to provide modest coverage for wife or child, is obvious.

The second step was the revitalization of the member education program. Under Board direction, a base-wide committee was organized to function at grass root level. Many of the original committee members are still serving. To them and to all the others, the Credit Union owes its gratitude. It has been a long time since anyone said, "I wish I had known the Credit Union made automobile loans."

Of course, there were ups and downs but in early 1964 with members over 8,000 and assets up around $3-1/2-million, problems of growth arose. The first to surface was the fact that the bookkeeping machines were beginning to approach maximum capacity and, right behind that, came another - the need for a first class facility of the Credit Union's very own. It is a fortunate coincidence that the careful thought, planning, checking and rechecking devoted to both problems bore fruit at the same time. Inside the new building will be Burrough's latest - a brand-new, third-generation E4000 with all the computer capability needed for the forseeable future and at an acceptable cost. With accounts over the 11,000 level and assets of $6-1/2-million, the relief comes none too soon.

It is impossible to list all the members who have played an important part in this realization of a once described "dream." There was the Board overseeing, as a whole, the entire project and with its experts in various areas assuring the best of cost/return ratios. And there was Harold Turner, now retired, a long-time battler for a Credit Union facility and the proposer of the present site. And there were also George Hayes, Air Force, and Boris Rosenfeld, NASA, who gave so freely of their time and engineering talents. But to the people best qualified to judge, five individuals stand out: C. S. Hudgens, Treasurer, who first recognized the need and fathered the idea; Robert L. Girouard, President, who made it both practical and possible; Colonel Glenn Riggle, Director, who got it off the ground as the original chairman of the Building Committee; Ben Ellis, Director, who supervised the awarding of the final contracts and all of the construction as Colonel Riggle's successor; and T. Melvin Butler, NASA, whose encouragement at critical moments kept the project alive.

Remember, it is - or can easily be - your Credit Union. Plan now to witness its proudest moment; be there for the ribbon-cutting festivities.

AIAA TO HEAR RECHNITZER

Dr. A. B. Rechnitzer

Dr. A. B. Rechnitzer, Director of Ocean Sciences, Ocean Systems Operations, North American Aviation, Inc., will be guest speaker at the meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on Wednesday, September 14 at the Warwick Yacht and Country Club.

Dr. Rechnitzer will talk on "Oceanology - Yesterday, Today and Tomorrow." His experience in undersea activities encompasses a broad spectrum of effort involving more than 17 years of active work in oceanography. He joined North American Aviation, Inc., Autonetics Division, in 1961.

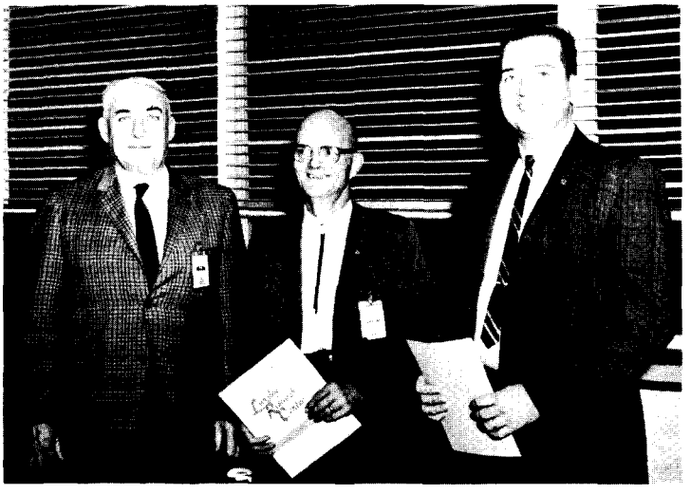
As scientist-in-charge and coordinator of the U.S. Navy bathyscaph program he was awarded the Navy Department Distinguished Civilian Service Award by President Eisenhower in 1960 for his contributions to the field of oceanography. He is a recipient of the Richard Hopper Day Memorial Award and also received the 1961 International Underwater Film Festival Award for Outstanding Contributions to Underwater Photography. He was presented the Gold Medal for scientific accomplishment in geography by the Geographical Society of Chicago in February 1961.

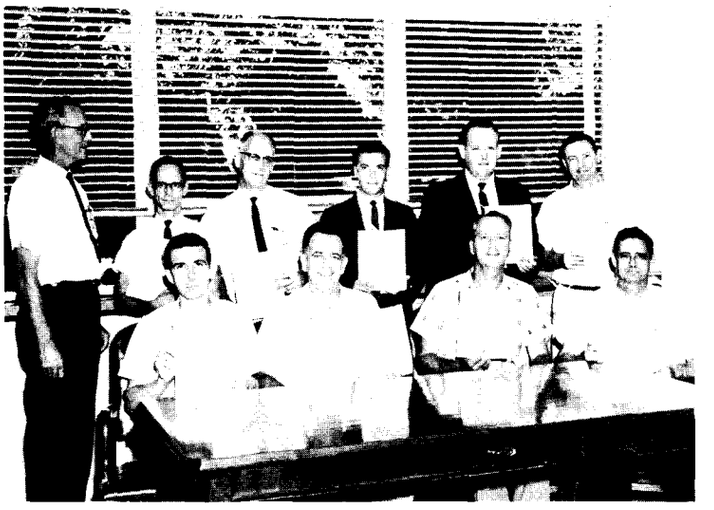
Dr. Rechnitzer received his B.S. degree in 1947 from Michigan State University and earned his M.A. and Ph.D. degrees from the University of California.

The meeting will be preceded by a social hour at 6 p.m. followed by dinner at 7 and the meeting at 8. Reservations may be made by calling Tom Foughner, 722-1587; Bob Keynton, 826-5549, or George Jones, 898-5760.

WANTED: Ride from Bethel Trailer Court to W.A. on 8 shift. Riley, 4701.

WANTED: Ride from Sussex-Hampton to W.A. on 8 shift. Brumfield, 4840.





Fourteen staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Top left photo - Joseph Getsug (left), Chief of Electrical Systems Division, presents awards to James R. Maley for his suggestion concerning "Coil Winding Table" and Patrick H. Seabolt for "Traffic Safety." Top right photo - P. M. Lovell, Executive Assistant of Applied Materials and Physics Division, presents awards to Agnes W. Dunkley for "Visitor's Aid (map)" and John T. Hughes for "Automatic Hydraulic Lift Platform." Lower left photo-Ralph W. Stone (left), Assistant Chief of Space Mechanics Division, presents a check to George J. Hurt for "Adaptable Astronaut Couch for Space Vehicle Simulators." Lower right photo - William B. Mayo (left), Chief of Mechanical Services Division congratulates front row (from left): William L. Derby for "Spinning Solar Collector," William J. Leftwich for "Control Limit Plates for XH51N Helicopter, and Ellery N. Vandenbree and Walter L. Jernigan for their joint suggestion concerning "Precision Spinning Tube Coupling Technique. Back row - Albert B. Stacey for "Measuring Device," Leonard P. Wells for "High Temperature Cement," Richard B. Sweeney for "Oiling Device," Rucker A. Clark for "Motorized Mechanical Feedthrough," and Boyd L. Williams for "Heating Small Electric Motors in a Space Environment." Derby's suggestion was made jointly with E. J. Hartmangruber.

MARTIN TO BUILD SPACECRAFT

The Martin Company, Denver Division, has been selected by NASA for negotiation of a contract to build 11 experimental spacecraft equipped with parachute payloads.

The flight units will be used in experiments to investigate parachute designs and techniques for landing instrumented capsules on Mars. Four will be launched by high-altitude balloon systems. Seven will be carried aloft on Honest John-Nike rockets.

The incentive-type contract with Martin is expected to amount to $3 million. In addition to designing and building the spacecraft and parachutes, Martin will be responsible for operational support activities, launch vehicle-spacecraft integration and range-spacecraft integration.

The government will provide both the balloon and rocket launch vehicles, range facilities and portions of the required flight and ground equipment.

Martin was selected by Langley Research Center, manager of the research project which is called the Planetary Entry Parachute Program.

FOR SALE: 1959 TR3 Triumph. Byers, 877-0168.

FOR SALE: 150 x 190 wooded lot at Queens Lake. J. L. Jones, 596-0855.

FOUND: One pair safety glasses and pair of sun glasses. Security Office, 2297.

FOR SALE: Lady Kenmore portable dishwasher, coppertone - $150. Anderson, 595-2319.

EMPHASIS - COST REDUCTION

One of the major design problems associated with hypersonic wind tunnels is that of providing adequate cooling in the throat area where the aerodynamic heating rates are much greater than in the test section. For the 31-inch Continuous Flow Hypersonic Tunnel at Langley a stainless steel throat was designed with internal coolant passages carrying water. This design required a very thin cover sheet to separate the coolant from the tunnel air. The machining problems were monumental and the construction of the cover sheet was accomplished in Langley shops.

These stainless steel throats, initially placed in operation in 1961, were subject to repeated structural failures. The cause of these throat failures was the high thermal stresses developed from temperature differentials across the cover sheet and throughout the throat block and residual stresses which remained after welding previous cracks. Also contributing to the structural failure was the poor thermal fatigue characteristics of the stainless steel from which the covers were machined.

To avoid these structural failures a throat of beryllium-copper, with cooling tubes imbedded in the air surface in silver was constructed in 1964. However, calculations showed that the use of this nozzle would be restricted to the less severe heating of the low pressure range of the facility.

In 1965 W. J. Nelson, Applied Materials and Physics Division, suggested a coating of zirconium-oxide be applied to the air surfaces of the new throat by a flame spraying method. Calculations indicated that a layer of this material only a few thousandths of an inch thick would, because of its very low thermal conductivity, significantly reduce the heating of the throat. Zirconium-oxide provides a very hard surface capable of withstanding very high temperatures, thus protecting the relatively soft silver from erosion under test conditions. A throat coated with this material has been operated without failure for one year over the entire operating range of the tunnel.

In addition, the application of a zirconium-oxide coating over an aluminum-oxide primer offers a very effective means of extending the operational capabilities of existing nozzle designs and can permit significant simplifications in the design of cooling systems for new facilities.

APPRENTICE SCHOOL NOTICE

The Fall Semester of the Apprentice School will start on Monday, September 12 and classes will be held in the Apprentice classrooms located on the first floor of Building 586.

Courses which are being offered and the instructors are:

Tuesday - College Trigonometry, J. G. Shearin; Basic Electricity, C. C. Berry; Machine Shop Theory, S. E. Devan, College Physics II, F. A. Kern.

Wednesday - College Physics III, V. G. Collins; Metallurgy, W. A. Wright; Environmental Testing, D. G. McSmith, Strength of Materials I, Gordon Owsley.

Thursday - Principles of Electronics I, A. L. Jones; College Physics II, G. C. Moen; D. C. Fundamentals I, J. J. Roberts, Machinery Handbook II, J. G. Mulqueen.

Friday - A. C. Fundamentals II, J. A. Coleman.

FOR SALE: 1965 13-foot fiberglas sailboat, dacron sails, boat cover, trailer - $700. Morris, 826-8905.

The Activities Association awarded $25 Savings Bonds to six staff members during the Center's recent Savings Bond drive. Receiving bonds were (from left): Kay Martin, Applied Materials and Physics Division, who won as a new subscriber; Harold V. Stanley, Heavy Machine Shop, who increased his allotment; William Gaskins, Procurement Division, who was one of the Activities Association's most outstanding workers during the drive; George A. Wentland, Research Models and Facilities, who increased his allotment; Charles Burcher, Heavy Machine Shop, who was also an outstanding worker for the Association, and William L. Terrill, Program Schedules and Analysis Unit, a new enrollee.

ASTROLETES WIN CHAMPIONSHIP

This spring a group of NASA personnel independently organized a slow pitch softball team and entered the Newport News Softball Association Denbigh League. The team was highly successful in its first season, coming from two games behind late in the season to gain a tie for first place. In a best of three series playoff to determine the league champion, the Astroletes won the first two games by scores of 4-1 and 7-2.

The Astroletes continued their winning ways in the first game of the Newport News City Tournament, a single elimination event. They progressed on to the semi-finals where their season came to an abrupt end with a loss to one of the tourney favorites.

Due to their fine showing in both league and tournament play, the Astroletes have been invited by the NNSA to parricipate next year in the city's toughest competition, the Class A league. The Astroletes have accepted.

The following personnel were members of the team: Lee Avis, Tracey Callis, Leo Daspit, Joe Drazdowski, John Drummond, "Buc" Fichter, Tom Hansen, Cecil Kirby, Don McCracken, Tom Moore, Steve Park, Bob Peabody, Bob Reynolds, Bob Schmitz, Thayer Sheets, Joe Talbot and Phil Young.

FOR RENT: Room for gentleman. Moore, 723-2896.

FOR SALE: One season ticket for Community Concert Association, blue series. Pyle, 838-3454.

FOR SALE: 3-piece Kroble living room suite with end table - $50. Anastasio, 723-8367.

FOR SALE: 1962 Chevrolet Impala, 4-door -$350 cash and take over payments. Lamm, 642-4212 Gloucester after 6.

Langley Researcher

VOLUME 5, NUMBER 19 LANGLEY RESEARCH CENTER SEPTEMBER 22, 1966

Dr. Floyd L. Thompson, Director, launched the Center's annual United Fund campaign effort with his donation to solicitor William D. Mace (left). Looking on is P. M. Lovell, Chairman of Advanced Gifts.

LUNAR ORBITER REVEALS MOON TO BE PEAR SHAPED

NASA reports that data from the Lunar Orbiter I spacecraft indicate the Moon may be slightly pear shaped with the stem near the North Pole.

William H. Michael, Space Mechanics Division and investigator of the spacecraft's selenodesy experiment, told newsmen at NASA Headquarters, that the Moon, like the Earth, seems to be slightly pear shaped. He said calculations of lunar gravity from the tracked path of the Langley-managed Lunar Orbiter satellite indicate the Moon bulges out about a quarter-mile at its north pole and is flattened by about the same amount at its south pole. The Moon's midsection seems to be pinched in about an eighth of a mile above and below the equator, which bulges slightly.

The biggest bulge is only a little more than a hundredth of one percent of the Moon's 2,200-mile diameter. Michael said such features are scientifically important because of the clues they may give to the Moon's - and the Earth's - origin and history.

The effect is somewhat similar to that of Earth, which also has been described as somewhat pear shaped, based on conditions discovered in 1958 by Vanguard I. Michael noted it would be impossible to say at present whether the slightly pear shaped conditions of Earth and Moon are related.

Michael stated that the calculation which pointed to what mathematicians call "a very large third harmonic" as-

(Continued on page 8)

ONE-DAY SOLICITATION SET FOR TOMORROW IN DRIVE

"Give your fair share" will be the slogan used tomorrow when a corps of over 300 solicitors contacts each employee in an effort to complete the Center's United Fund effort in an intensive one-day campaign, according to Robert W. Boswinkle, Chairman of the Center's drive. The general solicitation phase of the effort will be directed by James Hamilton.

Boswinkle stated that the Peninsula United Fund organization is using "1 hour's pay per month" as a fair share guide. Employees who contribute or pledge this amount will be given a gold check pin.

The pace of the Center's effort was set this week when the advanced solicitation of key personnel was conducted under the direction of P. M. Lovell.

Lovell reported that as of press time on Tuesday, advanced gifts had reached a total of $23,500.65. This repsents an average donation of $53.65 from 438 staff members. Lovell stated that the total is expected to reach a higher figure as a number of persons have not been contacted because they are on travel or leave.

Boswinkle stated that the Center's drive has two aims this

(Continued on page 8)

Shown above are division chairmen for the United Fund drive. Front row (from left): Harris B. Favre, Robert W. Boswinkle, Chairman of the Center's effort, Philip E. Weatherwax, Herbert C. Roehm, Donald L. Loving, Wayne Williams, Robert H. Turner, Abe Leiss, Henry A. Fedzuik, and M. Patrick Clark. Second row - James Hamilton, Chairman of General Solicitations; Clarence L. Gillis, Joseph F. Braig, Sherwood L. Butler, Helen B. Talbott, Sarah Bullock, Edward T. Maher, Sidney Parker, Anna B. Plott, Joseph L. Johnson, and Harry Runyan. Third row - E. Barton Geer, P. M. Lovell, Chairman of Advanced Gifts, Joseph M. Hallissy, D. R. Johnson, Charles F. Barnett, Harold I. Maxwell, William D. Mace, Joseph W. Jewell, Thomas B. Andrews, Arthur W. Carter, Dale Emswiler, David G. Stone, Aubrey L. O'Kelley, Marvin Forrest, and C. Willis Cross.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

IDENTIFICATION BADGES. . .Langley employees are responsible for: (1) wearing a LRC badge in plain view while on duty, (2) surrendering the badge to the Security Office upon termination of employment or transfer, or upon receipt of a new badge, (3) neither borrowing, loaning, altering, transferring, or using a LRC badge as collateral, (4) immediately reporting the loss, destruction, or mutilation of a LRC badge to the Security Office, (5) challenging anyone attempting to enter a facility without proper identification. Violators are to be reported to the Security Office immediately.

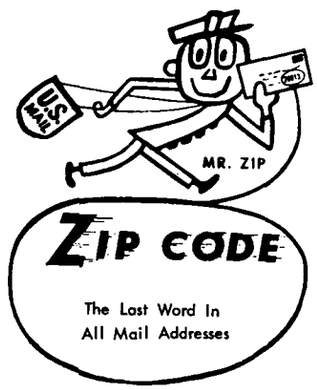
WEDDINGS BELLS. . .Sandra DeBlasio, Personnel Division, took her final vows with Jeffrey D. Anthony, Hampton, on September 17 at the Church of the Centurion, Fort Monroe. Sandra Dunn, Flight Vehicles and Systems Division, was a bridesmaid.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, October 4 at 7 p.m. at the Central Labor Union Hall, Newport News.

CALCULUS COURSE. . .A four-semester-hour credit course in Calculus I is being offered by the University of Virginia extension. The class will meet on Saturday, October 1 at 9 a.m. in Building 1348. For further information call Kenneth Margolis, 2559.

STAFF MUST USE ZIP CODES

All Government departments and agencies are directed to include ZIP Codes in the address of all official mail and in the return address of envelopes, letterheads, and in official publications when addresses are shown.



All applications, questionnaires, and other forms which contain spaces for inserting addresses must contain the heading "ZIP Code" and space for the insertion of ZIP Codes.

Mail is still being sent out at the Center by individuals and groups without the ZIP Code. Sections that do not have a copy of the National ZIP Code Directory and have the need for one should call Administrative Service Division, telephone 3511.

Employees should also include ZIP Codes in their personal mail, both in the address and in the return address.

Dr. Floyd L. Thompson (left), Director, presents a Special Service Award for Exceptional Service to James J. Buglia, Head of Space Mechanics Section, Applied Materials and Physics Division. Buglia received his award "for outstanding achievements in development and application of highly specialized and complex analytical techniques in the field of space-mechanics to meet critical needs of major LRC flight programs in a timely and effective manner."

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of September 26:

Monday - French onion soup, pepper steak, crab cakes, Polish sausage, chili-mac.

Tuesday - Cream of potato soup, pot roast of beef, baked ham, fried fish sticks, tamale pie.

Wednesday - Chicken-noodle soup, simmered corn beef, breaded veal steak, fried chicken, Austrian ravioli.

Thursday - Vegetable-beef soup, grilled steak, ham and noodle casserole, sauteed chicken liver over rice, Irish omelette.

Friday - Clam chowder, beef stroganoff over buttered noodles, stuffed flounder, broiled perch, western omelette.

The menu for the week of October 3 is as follows:

Monday - Beef broth with barley, roast ribs of beef, barbecued pork chunks over rice, spaghetti and meat balls, fish cakes and cole slaw.

Tuesday - Split green pea soup, half-pound chopped steak, broiled ham slice, chicken chow mein, cheese omelette.

Wednesday - Puree of bean soup, chicken shortcake, liver and onions, stuffed pepper, franks and beans.

Thursday - Vegetable-beef soup, grilled steak, baked Smithfield ham, fried chicken, long hot dog.

Friday - Clam chowder, fried clams, Swiss steak, broiled fish, grilled cheese and bacon sandwich, baked hash.

WANTED: Young professional man to share apartment. Dicus, 2681 or 595-2124.

PARACHUTE TEST SUCCESSFUL

Data from on-board cameras and other recovered instruments have confirmed that a pioneering space experiment over New Mexico on August 30 employing the Earth's upper atmosphere as a Martian research laboratory was a complete success.

The experiment, launched aboard a balloon by NASA, was the first of a series of high-altitude investigations. NASA is seeking information on parachute designs and techniques that might be used to land instrumented capsules on the surface of Mars.

All instruments and equipment performed as planned and the desired basic engineering information was obtained, John C. McFall, Applied Materials and Physics Division and NASA project manager of the Planetary Entry Parachute Project, reported.

"The experiment has provided a solid data base with which we can compare and correlate the results of later flight tests involving parachutes and flight units of different sizes and shapes," McFall said.

At the 24-mile altitude where the flight unit was released from the balloon and rocket-propelled to 800 mph, density of the thin atmosphere closely corresponds to that estimated for Mars.

In the test a 15-foot diameter, disk-shaped body, or aeroshell, was employed. Soon after rocket burnout the parachute was deployed and within seconds the parachute and its cylindrical instrument payload separated from the aeroshell.

Recovery of the two separate instrumented portions of the flight unit required more than a day. All were in good condition.

Langley Research Center is manager of the project for NASA's Office of Advanced Research and Technology. The project supports the Voyager planetary exploration program of the Office of Space Science and Applications.

The series has four more balloon-launched, full-scale flight experiments and 10 rocket-launched experiments with sub-scale flight units.

TWO EMPLOYEES RETIRE

John L. Gooden and Harold W. Schell, both of Mechanical Services Division, retired from the Center on August 31 with a combined total of over 51 years of Federal service.

Gooden was born August 29, 1896 in Norfolk County, Virginia. He served in the U.S. Army from June 19, 1918 to July 8, 1919. He worked at Fort Eustis from February to April 1945 and joined the Center staff on August 3, 1945.

John L. Gooden

Schell was born August 27, 1896 in Batavia, New York. He graduated from Lafayette High School in Buffalo, New York. Before starting his career with NASA, he worked a number of years for Bell Aircraft Company, Seversky Aircraft Company and Curtiss Wright Aircraft Company. He entered on duty at the Center on January 2, 1941 as a Senior Aviation Metalsmith.

Dr. Floyd L. Thompson (standing), Director, was host at a luncheon recently for the Center's Youth Opportunity Campaign employees. These are students who are given an opportunity to work for the Federal government during their summer vacation.

EMPLOYEES ATTEND LUNCHEON

Dr. Floyd L. Thompson, Director, was host at a luncheon recently for the Center's Youth Opportunity Campaign employees. These are students afforded an opportunity to participate in Federal government work during their summer vacation.

Jack Karika, who is working for the second year at Langley, addressed the group. In speaking for his co-workers, he expressed their appreciation to Dr. Thompson, their supervisors who so carefully worked out their assignments, and to the personnel with whom they worked. The interesting and challenging work at Langley had made the summer a most profitable one, concluded Karika.

William B. Mayo, Chief of Mechanical Services Division, spoke to the group citing his experiences with these employees during the past two summers. He stated that his organization had found these youths to be most responsive and that their employment at Langley had been profitable to both the young employees and the government.

Dr. Thompson expressed his appreciation for the excellent services performed by the Corps members. He recognized their achievements as being most significant especially when their inexperience was related to the highly sophisticated research work being performed at the Center. He noted the challenge with which these young people are faced as they acquire the basic education needed to actually commence learning the highly advanced technologies involved in today's engineering, scientific and business endeavors. Dr. Thompson concluded his remarks by exhibiting and discussing some of the Lunar Orbiter photographs of the lunar surface and the Earth.

The luncheon was concluded after the showing of a NASA film on Lunar Orbiter.

WANTED: Ride from Foxbridge to W.A. on 8 shift. Paucher, 4691 or 851-1139.

WANTED: Ride from Riverdale Apts. to W.A. on 7:30 shift. Kim, 4691.

WANTED: Fifth driver from vicinity of Hampton High School to W.A. on 8 shift. Eichenbrenner, 4424.

WANTED: Two alternate drivers from Whealton Rd. and Todds Lane to W.A. on 8 shift. Ashe, 4753.

RETIREMENT ACT AMENDED

The Federal Salary and Fringe Benefits Act of 1966 amends the Civil Service Retirement Act in several significant respects. The major amendments are as follows:

RETIREMENT ELIGIBILITY LIBERALIZATION - On and after July 18, 1966, an employee who attains age 60 and completes at least 20 years of service is eligible to retire and receive an immediate annuity without reduction. As in other optional retirements, the employee must have had at least 5 years of civilian service and must have been employed under the Act for at least 1 year within the 2-year period immediately preceding the separation on which the annuity is based.

RETIREMENT BENEFIT LIBERALIZATIONS - Reduction eliminated for optional retirement at ages 55-59. Heretofore, the annuity of an employee who retired optionally at ages 55 through 59 after at least 30 years of service was reduced by 1/12 of 1% for each full month he was under age 60. For employees so retiring on and after July 18, 1966, this reduction is eliminated so that now an employee with at least 30 years of service may retire on a full annuity at any time after he attains age 55.

Reduction eliminated for discontinued-service retirement at ages 55-59. Heretofore, discontinued-service (involuntary separation after at least 25 years' service, or after attaining age 50 with at least 20 years' service) annuity was reduced by 1/12 of 1% for each full month the employee was under 60 but not under age 55, and 1/6 of 1% for each full month the employee was under age 55. For employees so retiring on and after July 18, 1966, the 1/12 of 1% per month reduction between ages 55 and 59 is eliminated. The only reduction for age in a discontinued-service case is now 1/6 of 1% for each full month (2% a year), if any, the employee is under age 55.

SURVIVOR BENEFIT LIBERALIZATIONS - More than half support of child by employee no longer required. The requirement that a child must have received more than one-half his support from the deceased employee-parent in order to receive a survivor annuity is eliminated. This requirement has been eliminated for a surviving child (but not a widower) in the case of the death of (1) an employee on or after July 18, 1966, or (2) a retired employee whose retirement was based on a separation from service on or after July 18, 1966.

Annuity to student-child extended from age 21 to 22. The maximum age for a student-child to receive survivor annuity is raised from 21 to 22 (i.e., the end of the school year in which the 22nd birthday occurs). This amendment applies to student children of persons who retired, or of employees who died, on or after February 28, 1948, provided of course, the children are otherwise eligible for survivor annuity. A student-child who could not qualify for a survivor annuity because he was over age 21 may have his survivor annuity begin July 18, 1966, if he is under age 22. Also, a student-child's annuity that was previously terminated may be restored beginning July 18, 1966, if he is under age 22.

Annuity to widow or widower continued upon remarriage after age 60. Heretofore, the survivor annuity of a widow or widower generally terminated upon remarriage. Under the amendment, the annuity payable upon death of an employee occurring on or after July 18, 1966, or upon death of an annuitant whose retirement was based on a separation from service which occurred on or after July 18, 1966, does not terminate if the wodow or widower remarries after she or he attains age 60.

Annuity to widow or widower restored upon termination of remarriage. An annuity to a surviving spouse which is terminated because of remarriage while under age 60, may be restored if the remarriage is later terminated by death, annulment, or divorce. The spouse must pay back the lump-sum benefit, if any, that was paid upon termination of the annuity. As in the above paragraph, this applies only to annuity payable upon death of an employee occurring on or after July 18, 1966, or upon death of an annuitant whose retirement was based on a separation from service which occurred on or after July 18, 1966.

Annuity to certain survivors increased. The annuity being paid to a spouse because of the death of (1) an employee prior to October 11, 1962, or (2) an annuitant whose retirement was based on a separation from service before October 11, 1962, is increased by 10% effective September 1, 1966.

SHALLON TO ADDRESS IEEE

Sheldon C. Shallon

Sheldon C. Shallon, Chief Scientist of the Surveyor Program, Hughes Aircraft Company, will speak at a meeting of the Hampton Roads Section of the Institute of Electrical and Electronic Engineers on Wednesday, September 28 at the Giant Open Air Market, West Mercury Blvd.

Shallon will discuss the planning, development, and success of Surveyor Project. His talk will feature color slides and a 16mm film.

Shallon joined Hughes Aircraft Company in 1953. From that time until 1960 he was associated with the design of electronic guidance circuitry for the Falcon series of air-to-air missiles.

In 1960 he became a part of the proposal team that brought the Surveyor Spacecraft Project to Hughes. Following contract award in March 1961, he served as Spacecraft Chief Engineer for the first two years of the program. For the past three and one-half years he has served as Chief Scientist on the Surveyor Program.

Prior to joining Hughes Aircraft Company, he was with Collins Radio in Cedar Rapids, Iowa, and Offner Electronics in Chicago.

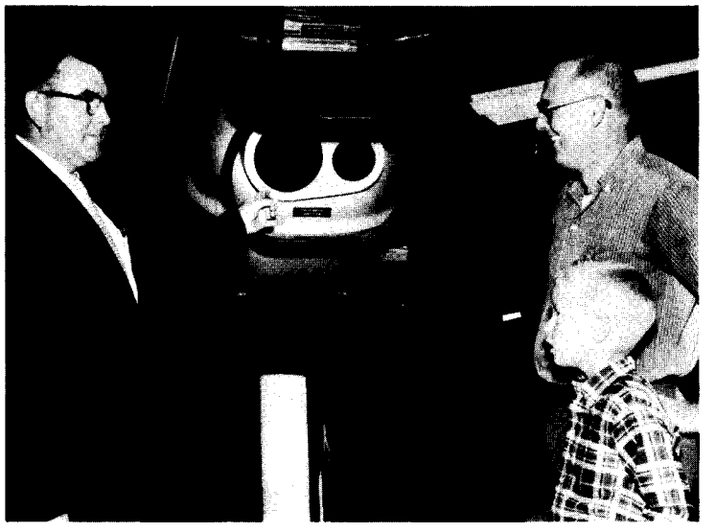
Shallon holds the B.S. and M.S. degrees in Electrical Engineering from Northwestern University.

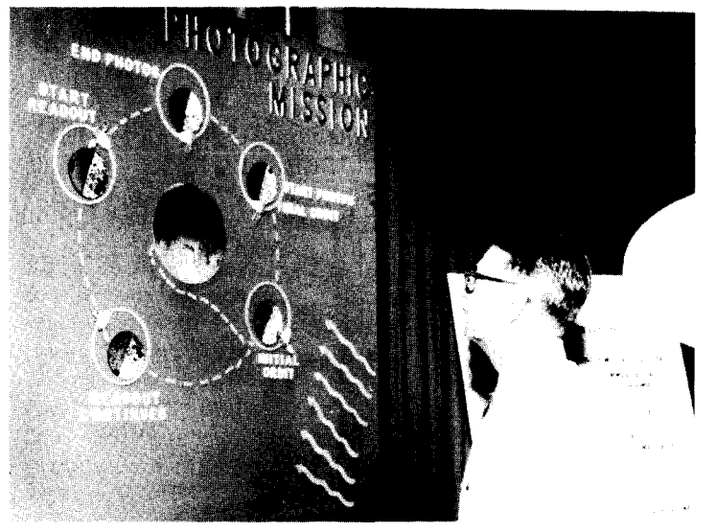
Preceding the meeting a social hour will be held at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. Persons desiring to make reservations for the dinner are requested to call Bill Fuller, 4766, by noon September 26.

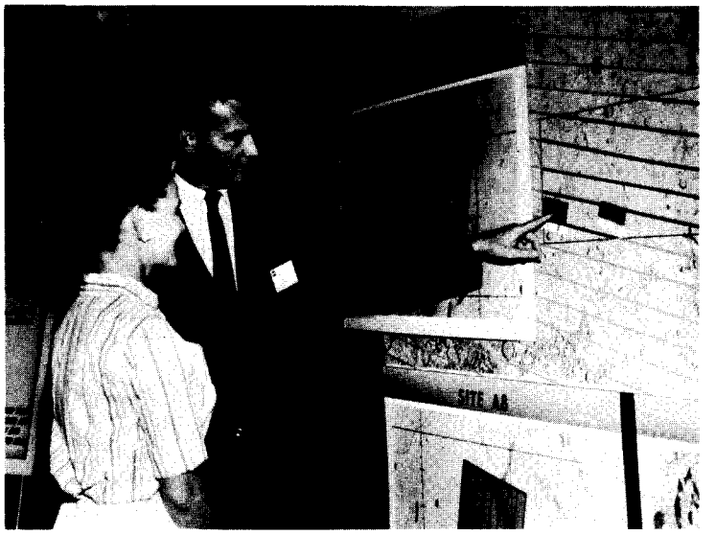
WANTED: Ride from Fox Hill Rd. to W.A. on 8 shift. Diane Foster, 851-0413.

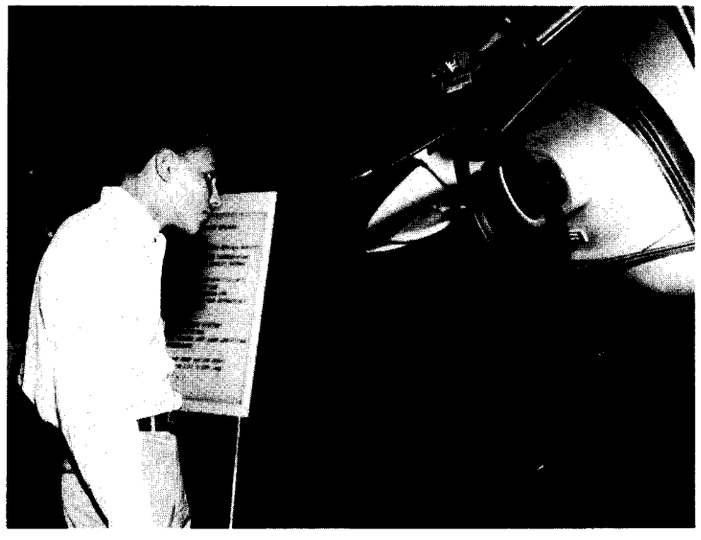
WANTED: Girl's 20-inch bicycle. Kelly, TW 8-5589.

WANTED: Alternate driver from Brentwood area to W.A. on 8 shift. Malcolm, 4871.









Over 1,500 employees and members of their families attended the introductory briefings on the Lunar Orbiter Mission held September 12, 13, and 14 in the Activities Building. Upper left photo - William H. Forrest, Lunar Orbiter Project Office, points out the lens of the full scale Lunar Orbiter model to John R. Cunningham, Photographic Division, and his son Randy. Upper right photo - James C. Emery, Aero-Physics Division, views the photographic mission chart. Lower left photo - William I. Watson, Lunar Orbiter Project Office, points out a proposed Apollo landing site to Betty Joyner, Aero-Physics. Lower right photo - Bobby Phillips, son of William H. Phillips, Chief of Space Mechanics Division, inspects the full-scale model of the Lunar Orbiter.

HULTEN RECEIVES AWARD

William C. Hulten, General Research Instrumentation Branch, Instrument Research Division, recently received a letter of commendation and a cash award from the Langley Incentive Awards Committee for sustained superior performance.

William C. Hulten

He was cited for "his outstanding leadership in the implementation of a pioeering program of research on the effects of space radiation on electronic and instrument components leading to significant improvements in component reliability."

Hulten received his B.S. degree in Electrical Engineering from Tri-State College in Angola, Indiana, and joined the Center staff on October 23, 1945.

LEVY NAMED NASA CONSULTANT

Lawrence Levy, founder and president of Allied Research Associates, Inc. of Concord, Mass., was sworn in recently as a consultant to NASA Administrator James E. Webb.

He will serve Webb in the areas of cooperation with western Europe and future space programs and their broader policy applications.

Levy served the government previously as Defense Representative, North Atlantic and Mediterranean areas, and as Defense Advisor to the U.S. Ambassador to NATO.

He has a graduate degree in Aeronautical Engineering from Massachusetts Institute of Technology, and is a graduate of New York University.

EMPLOY THE HANDICAPPED WEEK

National Employ the Physically Handicapped Week will be observed throughout the Nation during the week of October 2. Employment of the handicapped is a continuing year-round program in the Federal service but a week is set aside each year to acquaint the public with the efforts that Federal agencies are making to place and utilize handicapped citizens.

The NASA's policy is to give first consideration in the proper placement of physically handicapped persons on jobs where their physical disability is not a handicap. During Fiscal Year 1965 the Langley Center hired 21 handicapped persons.

Stephen P. Ryder, Director of the Civil Service Commission's regional office in Philadelphia, stated that 1965 was a "banner year" in the Federal program for employment of the handicapped. He reported that 13,617 physically handicapped workers were hired, and that they accounted for a record 2.6 percent of all new hires made by the Government.

Additionally, he said, 1,617 mentally retarded workers were placed in Federal jobs between the time the Government began hiring specially trained retarded workers in January 1964 and the end of June 1966.

Other Federal programs for extending job opportunities to the handicapped include special procedures for the severely disabled and the mentally restored, and cooperation between Federal agencies to place disabled veterans in jobs.

Ryder said, "In view of the serious manpower shortages now facing public and private employers, job opportunities for handicapped workers are excellent. The Federal Government, as a large employer, will continue to exert every effort to place qualified handicapped workers in jobs where they will be a credit to themselves and their employers."

LIFE INSURANCE NOTICE

Employees who are not members of the NASA Group Life Insurance plan, which is underwritten by the Home Life Insurance Company of New York, are being given an opportunity to join this group without a medical examination through the use of a medical information form. All full-time, permanent NASA employees are eligible to enroll.

The insurance will becaome effective October 1, provided the application, completed medical information form, and full payment of the first quarter premium is turned in to the Employee Services Branch, Room 101, Building 587, Mail Stop 305, by September 30.

If an individual's application should not be accepted by Home Life Insurance Company because of medical problems, the premium payment will be refunded in full.

The present cost is $1.30 per $1,000 of life insurance and $1,000 of accidental death benefits.

The amount of insurance available to employees is shown on the schedule which has been sent to all non-participants.

WANTED: Used antenna rotator. Youngblood, 877-1224.
FOR SALE: Volkswagon cartop luggage rack - $15. Swanson, 229-8024.
FOR SALE: Augusta Academy uniforms. Spence, 722-5368.
WANTED: Used oil drum, 150 gallons or larger, Redden, 722-4070 after 5 p.m.
FOR SALE: 21-inch Philco TV - $15. Berryman, 596-3988.

Five employees recently received cash awards for applications that might result in the granting of patents and one received a suggestion award. Top photo - G. B. Graves Jr. (left), Chief of Flight Instrumentation Division, presented awards to (from left): Alfred L. Jones for his suggestion concerning "miniature bidirectional coupler," Peter J. Lebel for his invention entitled "Ablation Sensor," and to Archibald R. Sinclair and James M. Russell for their joint invention entitled "Ablation Sensor." Center photo - Seymour Salmirs (left) receives his award from James R. Hall, Acting Deputy Head of Scout Project Office. Bottom photo - Edwin C. Kilgore (left), Chief of Flight Vehicles and Systems Division, congratulated Otis J. Parker. Salmirs and Parker shared a joint award for their invention entitled "Spacecraft Separation System for Spinning Vehicles and/or Payloads."

PROGRAM SEEKS TO LESSEN NOISE OF JET AIRLINERS

Four aircraft manufacturers have been invited by NASA to submit proposals for a research program that could lead to significant reductions in the noise generated by commercial jet transports.

NASA has responsibility in the Government's Interagency Aircraft Noise Abatement Program for research and development required to reduce engine noise and to provide information upon which judgments can be made for the most effective overall approach to solving this problem.

Information is needed on the extent to which jet engine noise can be reduced (in practical, full-scale applications) and the cost of these reductions in terms of hardware and aircraft operating expenses.

As a first step in this interagency program, Langley Research Center has invited industry proposals for developing, fabricating and testing modified engine nacelles applicable to operational commercial transports.

Boeing Company, Lockheed Aircraft Corp., Douglas Aircraft Co., and Convair Division of General Dynamics Corp., were invited to participate.

The program is designed specifically to minimize fan-compressor noise radiation. The effort, fully coordinated with the Federal Aviation Agency and the airline and aircraft industries, is of major importance to the potential total solution of aircraft noise problems. All methods that produce aircraft thrust, unfortunately, involve airflow processes that generate noise.

Industry is being asked to define a program that will include the necessary engineering studies, design analyses, fabrication, ground run-up and flight testing required to determine the effectiveness and feasibility of modifying a front-fan jet engine.

The effort will be directed toward achieving a reduction in fly-over noise level on the ground of 15 decibels as a measured noise level. Such a reduction is the equivalent of moving the noise source about five times as far away.

The program outlined by NASA calls for the production of hardware suited to flight testing on all four engines of a jet transport. The necessary analyses will be performed to estimate the acoustical benefits and changes in performance characteristics of an aircraft equipped with the modified nacelles. The analyses will include evaluation of operating procedures during takeoff, initial climb, approach and landing.

Industry proposals are to be submitted by September 30 and the study and development through flight testing is estimated at 18 months.

NASA studies are continuing with small scale compressors and inlets to see how the geometric details of components affect noise from the front of jet engines. A large-scale, three-stage compressor is near completion and laboratory research with the equipment soon will be underway. NASA also is developing ground test equipment for full-scale studies of acoustically treated engine nacelles.

FOR SALE: Knight kit 50 watt stereo amplifier, needs slight repair. Langhans, 826-5944.

FOR SALE: 16-foot ladder - $5; new Volkswagon luggage rack - $15; VW magazine rack - $5; Sears cartop boat loader - $7.50; book on "Estimating General Construction Cost" by Dallava - $3. Hudgens, LY 6-1997.

At a recent meeting of Cost Reduction monitors, L. K. Loftin (right), Assistant Director, assigned goals to the division monitors for Fiscal Year 1967. The Center's goal is approximately $7,000,000.

COST REDUCTION MONITORS MEET

The Center's Cost Reduction monitors were assigned goals for Fiscal Year 1967 at a meeting on September 2. L. K. Loftin, Assistant Director, presented a discussion regarding economy in managing research and project tasks. He noted that cost reduction is an essential consideration by any successful manager.

Loftin pointed out that cost is a governing factor in all of our work considerations; that we must be governed in our planning by the cost factor. He reminded the monitors that we frequently fail to record our cost reduction achievements - that too often we do not identify those determinations we make which are based on cost considerations. He cited examples of cost avoidances such as modifying and converting research facilities for new functions rather than constructing new facilities. These are reportable cost reductions.

A. I. Neihouse and Marvin Forrest, area cost reduction representatives, followed Loftin in reemphasizing the Center's Cost Reduction Program and directing monitors to the type documentation required to support the program.

Goals were assigned each division monitor in support of the Center's approximate $7 million goal. Cost reduction handbooks were distributed and a presentation of the proper method of preparing individual cost reduction reports and validation was made.

A need for all scrap metals, in particular mercury, brass and copper, was identified. Monitors were asked to survey their divisions for excess metals and equipment.

CIVIL SERVICE EXAMS OPEN

The NASA Board of U.S. Civil Service Examiners announce the opening of examinations for Mathematics Aid GS-3, $4269 per annum, Mathematics Aid GS-4, $4776 per annum, and Mathematics Technician GS-5, $5331 per annum.

These positions are with Langley Research Center. Similar positions, however, in other Federal agencies within a normal commuting distance of Hampton, may also be filled from these examinations.

Applications will be accepted by the Executive Secretary, Board of U.S. Civil Service Examiners, NASA, Langley Research Center, Langley Station, Hampton, Virginia 23365 until further notice.

--Give your fair share to the United Fund Campaign--

UNITED FUND CAMPAIGN

(Continued from page 1)

year - to reach the goal of $63,000 and to reverse the downward trend of 93 percent participation.

Boswinkle pointed out that he is confident that employees of the Langley Research Center will again provide wide and generous support to this annual project. He reminded staff members that, although he is anxious to put the drive over the top tomorrow, pledges and cash donations will be accepted by solicitors after the one-day campaign.

Division chairmen, who are directing the activities of the corps of solicitors, are reminded to make a report by the end of tomorrow to the respective financial chairmen to facilitate a proper evaluation of the one-day drive effort.

Barbara Durling, Building 1229, telephone 4458, is West Area financial chairman and Helen Willey, Building 641, telephone 2631, is East Area Financial chairman.

MOON IS PEAR SHAPED

(Continued from page 1)

sumed the Moon has uniform density - that is, a certain size piece of the Moon would weigh the same no matter what part of the Moon it was taken from.

If the Moon consists of unevenly distributed heavy and light materials, he cautioned, it could be perfectly round and the uneven gravitation field could produce the same effects observed on Lunar Orbiter. But the odds are against that and further tracking data as Orbiter flies on would make the chance of such a mistake less likely.

Robert H. Tolson, Space Mechanics Division and coinvestigator on the selenodesy experiment, said the mass, size, and shape of the Moon and its gravitational field are being calculated by comparing Lunar Orbiter's predicted path to its actual path.

This takes highly precise measurements and NASA Deep Space Network trackers in California, Australia and Spain have been figuring the spacecraft's speed to within half an inch per second.

Tolson added that for the first time ever, the three stations used their ranging systems to synchronize their clocks for Orbiter work, and are within ten-millionths of a second of perfect synchronization.

Tolson said Orbiter, which is swooping as low as 24 miles over the Moon, has an estimated six months aloft before its path will be low enough to crash it on the lunar surface. It might crash sooner, he said, if it collides with one of the Moon mountains, some of which are six miles high.

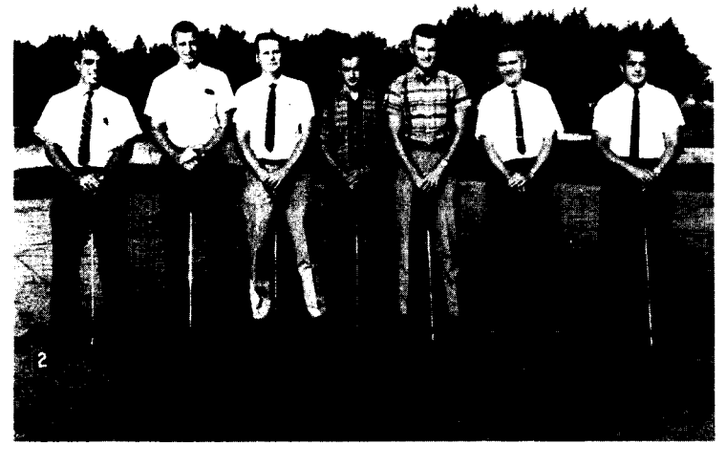
SPA GROUP MEETS TONIGHT

The Tidewater Chapter of the Systems and Procedures Association will hold its first meeting of the year tonight at Eli's Restaurant.

Guest speaker will be Merle Anderson, a member of the Center's Fiscal Division. He will speak on "Communications Between Systems and Programming."

The SPA is an international professional organization dedicated to expanding and enhancing the professional capabilities of management and systems personnel.

The meeting will be preceded by a social period at 6 p.m., followed by dinner and the business meeting. For further information contact Michael Giorgio, telephone 727-3255 or 838-4778.



Pictured here are the winners of the NASA Blind Bogie Golf Tournament held recently at the Langley Golf Course. Winners are (from left): Dave McDougal and Bill Lassiter, tied for low gross; J. L. Hudson Jr., low net; blind bogie winners were R. M. Baucom, Benson Dexter, Jim Jones and Gene Hall. Absent when the picture was taken was Walt Olstad, blind bogie winner. Golf is one of the many activities available to staff members who are interested in using a hobby as an enjoyable and challenging means of staying physically fit. Copies of the booklet "Adult Physical Fitness," prepared by the President's Council on Physical Fitness, are available (free) from the Activities Association, telephone 4508.

NASA BOWLING LEAGUES

After two weeks of play, Odd Balls lead Group A in the NASA Tenpin League with 7 wins and 1 loss. Phantoms and Clean Ups are tied for second with 6 wins and 2 losses each. High scores were rolled by Dale Rodman with a 243 game and Tom Bonner with a 582 set.

A-OK's lead Group C with a perfect record of 8 wins. RPM's, Hot Shot Tunnel, and Sparkys are in a three-way tie for second with 6 wins and 2 losses each. Top bowlers were Jerry Keating with a 265 game, Don Maiden with a 652 set, Betty Pease with a 225 game and Marie Henley with a 619 set.

GROUP A					
Odd Balls	7	1	Outlaws	4	4
Phantoms	6	2	Alley Cats	3	5
Clean Ups	6	2	Unitary	2	6
Short Circuits	5.5	2.5	Hornets	1.5	6.5
Misfits	4	4	Flyers	1	7
GROUP C					
A-OK's	8	0	Sad Sams	3	5
RPM's	6	2	Wa-Hoppins	3	5
Hotshot Tunnel	6	2	Bowling Belles	3	5
Sparkys	6	2	Hits & Misses	2	6
Gliders	5	3	Dillys	2	6
Mets	5	3	Class Kats	2	6
Ten-Benders	4	4	Gutter Jumpers	0	8

WANTED: Fifth driver from Glen Gardens-Bethel Pk. area to W.A. on 8 shift. Bradshaw, 4817.

Langley Researcher

VOLUME 5, NUMBER 20 LANGLEY RESEARCH CENTER OCTOBER 7, 1966

EMPLOYEES DONATE $64,478 TO UNITED FUND CAMPAIGN

As of press time on Wednesday, Center employees had contributed or pledged a total of $64,478.86 to the United Fund effort. This represented an average contribution of $17.65 from 3665 employees or approximately 85 percent of the staff.

Robert W. Boswinkle, Chairman of the Center's drive, stated that many employees have not been solicited but it is hoped that the final percentage of participation will surpass the 93 percent mark which was set by staff members last year. He pointed out that solicitors are still hard at work to meet this challenge.

He urged division chairmen to send in their final reports to the financial chairmen as soon as possible. Division standings during the United Fund effort will be published in a later issue of Langley Researcher.

AWARDS CEREMONY OCTOBER 13

Langley Center's annual awards ceremony is scheduled for October 13 at 2 p.m. The function will be held outdoors adjacent to the Activities Building. In the event of inclement weather the ceremony will be conducted in the NASA Hangar, Building 1244.

Walter D. Sohier, General Counsel, NASA Headquarters, will be guest speaker.

The annual awards ceremony is one of Langley's highlights of the year. The program will include the presentation of 30- and 25-year service emblems and certificates, invention and contribution awards, and other honors recognizing individuals and groups for their particular achievements in helping to realize NASA's mission. Dr. Floyd L. Thompson, Director, and members of his staff will make the award presentations.

Music will be furnished by the Continental U.S. Army Band, Fort Monroe. The presentation and retirement of the colors will be performed by the U.S. Marine Color Guard, Marine Barracks, Naval Weapons Station, Yorktown.

Refreshments will be served immediately following the ceremony, compliments of the Activities Association.

The following staff members will receive 30-year service emblems: Paul Beckage, Analysis and Computation; John V. Becker, Chief of Aero-Physics Division; Marvin L. Brown, Instrument Research; David Buchanan, Procurement; Sherwood L. Butler, Chief of Procurement; Silas Carney, Plant Maintenance; William Chard, Photographic; Ennis Clay, Procurement; William Gracey, Flight Mechanics and Technology; Sheridan G. Gray, Mechanical Services; Charles E. Heath, Research Models and Facilities; James Jordan, Mechanical Services.

Dr. Samuel Katzoff, Office of Director; William R. Motley, Instrument Research; John Munick, Procurement; Laurance A. Myers, Plant Maintenance; Walter A. Porter,

(Continued on page 3)

STAFF MEMBERS TO RECEIVE AWARDS TODAY IN WASHINGTON

Herbert A. Wilson, Jr.

Dr. George F. Pezdirtz

Two Langley Center staff members and two Langley technical teams will be among a group of 31 persons and five teams honored at the Annual Awards Ceremonies today when NASA presents awards for outstanding contributions to the Nation's space program.

The awards will be presented by NASA Administrator James E. Webb, Deputy Administrator Dr. Robert C. Seamans Jr., and Willis H. Shapley, Associate Deputy Administrator. The ceremony will be held this afternoon in the Department of Health, Education and Welfare Auditorium, Washington, D.C.

Herbert A. Wilson Jr., Chief of Applied Materials and Physics Division, will receive an Outstanding Leadership Award and the Exceptional Scientific Achievement Medal will be presented to Dr. George F. Pezdirtz, Head of the Chemistry and Physics Branch, AMPD.

The NASA Group Achievement Awards will be presented in recognition of accomplishments by Project Fire, and the Pegasus Program. The citations read as follows:

Wilson - "For significant contributions in providing skillful and effective performance as Project Manager during the concept, development and implementation stages of the first flight of Project Fire, which culminated in successful flight tests and attainment of all planned scientific and technical objectives which have major impact on design of the nation's future re-entry vehicles."

Dr. Pezdirtz - "For technical leadership in the conception, organization, and execution of research programs in polymer chemistry which have led to the development of materials significantly more resistant to the space environment."

Project Fire - "For outstanding success in the concept and implementation of Project Fire which produced de-

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

ANNOUNCEMENTS

ORANGE BLOSSOMS. . .Wedding bells rang on October 8 when Olin Jarrett, Aero-Physics Division, took his final vows with Jane Allen Walker, Hampton, at the Ivy Memorial Baptist Church, Newport News. Aubrey M. Cary, Aero-Physics, served as a groomsman.

DIRECTOR NEEDED. . .The Hampton Roads Barbershop Chorus, of which a number of Langley men are members, has an opening for an experienced chorus director to conduct weekly rehearsals and frequent performances at community functions. The group also welcomes to its membership any gentlemen who love to sing. For details contact Jim Youngblood, AMPD, or John McFall, AMPD.

NEW ARRIVAL. . .Word has been received at the Center that Sandra Brubaker, Technical Illustrators, became the mother of a five pound, thirteen ounce son, Tod Nelson Jr., on October 1.

REPRESENTATIVES TO VISIT. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on October 11 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on October 19 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

CONE AUTHORS SECTION IN BOOK. . .The U.S. Department of the Interior is releasing this month a new book on "Birds in Your Life," a compilation by international authorities of articles on all phases of avian biology and ecology, with emphasis on the importance of our national birdlife resources and their proper management. The book is a product of two years of work by the editorial staff of the Patuxent National Wildlife Research Center of the Bureau of Sport Fisheries and Wildlife. Don Cone, Instrument Research Division, is author of the section on "Birdflight and the Science of Aeronautics," covering the history of the role of birdflight in technical and inspirational aspects of aviation, with emphasis on the latter aspect. Samuel P. Langley, for whom LRC was named, was an ardent student of birdflight and made several technical contributions in aerodynamics as a result of his studies in this area. A copy of the new book will be available at the Center's Library this month. Cone has been invited to attend a private reception in Washington being given by Secretary of the Interior Stewart Udall honoring the contributors to the book.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 10:

Monday - Cream of tomato soup, roast fresh ham, braised beef tips over rice, fried flounder, chili con carne.

Tuesday - Beef-barley soup, pot roast of beef, veal cutlet, baked lasagna, spiced luncheon meat.

Wednesday - Turkey rice soup, roast turkey with dressing, beef pot pie, pork chow mein, fish cakes.

Thursday - Vegetable-beef soup, grilled steak, shrimp gumbo, chicken cutlet, Austrian ravioli.

Friday - Clam chowder, roast beef, salmon loaf, western omelette.

The menu for the week of October 17 is as follows:

Monday - Cream of potato soup, Swiss steak, smoked pork sausage, ham and noodle casserole, grilled cheese sandwich.

Tuesday - Puree of bean soup, Spanish pot roast, meat loaf, knockwurst and beans, cheese omelette.

Wednesday - Split green pea soup, chicken and dumplings, broiled ham slice, liver and onions, chili-mac.

Thursday - Vegetable-beef soup, grilled steak, barbecued pork chunks over rice, fried chicken, baked hash.

Friday - Clam chowder, roast beef, stuffed flounder, broiled halibut steak, Spanish omelette.

FOUND: Man's rain coat in Bldg. 1244. Fenton, 4826.
FOR SALE: 2-piece antique oak bedroom suite, matching six-footer headboard bed and large dresser with resilvered mirror, original bed springs - $75. Ward, 596-8757 after 5.
FOR SALE: Remington portable typewriter with wooden carrying case - $23. Clevenson, CH 5-1859.

SAFE BOATING COURSE. . .A free eight-lesson course in safe boat handling will be given for the public by the U.S. Coast Guard Auxiliary Flotilla 61 at 523 Bridge St., Hampton. The lessons will be given each Monday and Thursday starting October 10 at 7 p.m. Students will be accepted through October 13. The course is for old boatmen as well as new boat owners and non-owners; no age limits. A certificate will be awarded upon satisfactory completion of the course. For information call 722-8401. 823-8860, 838-0222, or 722-4708 after 5 p.m.

PAY CHECKS TO BE MAILED

On Monday, November 14, all employees will receive their pay checks by mail. This means pay day will be three days earlier from then on.

Next week Center employees will be given full information and a form to be completed to indicate where they want their pay checks to be mailed. They may have their checks mailed to a bank, to their home or post office box, or in care of another individual. No checks or bonds may be mailed to this Center.

U.S. Savings Bonds also will be mailed separately to the address now appearing on the face of the bond.

The Payroll Office requests that the forms distributed next week be returned by October 18. Langley Researcher is giving you this advance notice to allow you more time to consider where you will want your pay check mailed.

SEMINAR PLANNED OCT. 10-21

A Seminar on the use of SAMIS (Structural Analysis and Matrix Interpretive System) computer program will be held in Room 214, Building 1229, from 1 to 4 p.m., Oct. 10-21. Joseph Walz, Structural Methods Section, will be in charge of the Seminar. He will be assisted by Howard M. Edelman, Dynamic Loads; Williana W. Smith, Analysis and Computation; Richard E. Snyder, Flight Vehicles and Systems, and Dr. Robert E. Fulton, Structures Research.

The program has the capability to carry out stress and vibration analyses of any complicated three-dimensional structure which can be approximated by up to a thousand beam and plate elements. The seminar will include an introduction to finite element methods of structural analysis as well as an explanation of the instructions on the use of the SAMIS program.

Staff members interested in participating in the seminar should register with the Training Office, 2611. For technical questions on the content, contact Walz or Dr. Fulton, 4887.

STAFF MEMBERS HONORED

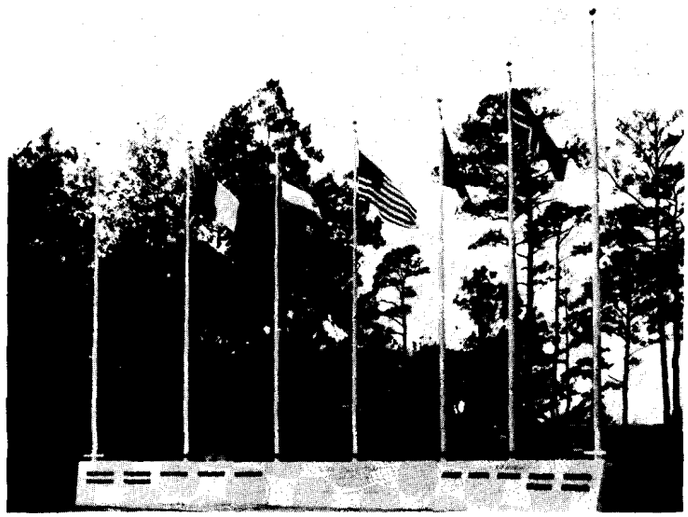
(Continued from page 1)

finitive data on re-entry heating at lunar return speeds. The experiment, carried out in two consecutive successful flights at record re-entry speeds near 37,000 feet per second, established scientific findings of importance to the prediction of entry heating, provided critical results essential to the validation of theory and ground tests, and established the heating environment for vehicles entering the earth's atmosphere at hyperbolic speeds."

Project Pegasus - "For program leadership, development and management of the Pegasus Program. The successful concept, design, solution of technical problems, launching of three Pegasus spacecraft and the acquisition of significant data on penetrating meteoroids, have provided this nation a comprehensive experimental basis for design of meteoroid protection systems in near-earth space environment." (This award was presented jointly to Langley, Marshall Space Flight Center, and NASA Headquarters.)

COURSE OFFERED EMPLOYEES

The Training Office is offering a non-credit course in Mathematics I, Advanced Engineering Mathematics I, with Dr. J. P. Raney as instructor. Employees interested in enrolling should call the Training Office, 2611.



International Court at Wallops Island flies the flags of nations which have personnel assigned to the NASA center for training in NASA's cooperative programs of space research. Alongside the United States flag when this picture was made were the national emblems of Argentina, Brazil, Italy and Norway. Nine countries have sent personnel to Wallops for training programs ranging in length from a month to two years, and seven countries have launched experiments from the island off the eastern shore of Va.

TRAVEL INSURANCE NOTICE

The Home Life Insurance Company has advised that the Travel Accident Plan rates will be increased five cents per thousand in all categories effective November 1. Also, plan two will have an exclusion against astronauts, pilots, and crew members while flying or orbiting as a part of their regular duties.

All policy holders are reminded that premiums are due on or before November 1. Although there is a 31-day grace period between NASA and Home Life, there is not a 31-day grace period between the insured employee and NASA.

ANNUAL AWARDS CEREMONY

(Continued from page 1)

Procurement; Leonard C. Richardson, Scout Project Office; Francis M. Rogallo, Full-Scale Research; Bernard Slonina, Mechanical Services; David M. Smith, Mechanical Services; Bessie V. Stokley, Administrative Services; Guy Sturgill, Electrical Systems, and William H. White, Mechanical Services.

CREDIT UNION DEDICATION

Dedication ceremonies for Langley's new Credit Union Building, corner of Ames and Durand Roads, will be held at 10 a.m. on Tuesday, October 11. Dr. Floyd L. Thompson, Director of the Langley Center; General Gabriel P. Disosway, TAC, and the Honorable Mrs. Ann C. Kilgore, Mayor of Hampton, are expected to participate in the ribbon-cutting ceremony. All members, as well as non-members, are urged to attend. The building will be open for inspection until 6 p.m. and the winner of a $50 bond will be announced at 5:30 p.m.

FIRE PREVENTION WEEK OCT. 9

President Johnson has designated the week of October 9 as Fire Prevention Week. In his proclamation President Johnson made the following statements:

"Destructive fires - many of which could be avoided by eliminating known fire hazards -- result in the tragic waste of life, property, and irreplaceable natural resources.

"Inevitably such fires bring sorrow and financial difficulties to many families.

"The toll of life and property occasioned by fire has been sharply reduced in those communities where fire prevention programs have been conducted.

"Further progress is essential. Further progress can be made if every individual assumes the responsibility for removing the hazards and reforming the habits which cause fires.

"Now, therefore, I, Lyndon B. Johnson, President of the United States of America, do hereby designate the week beginning October 9, 1966, as Fire Prevention Week.

"I urge State and local governments, the Chamber of Commerce of the United States, the American Red Cross, the National Fire Protection Association, and business, labor, farm and youth organizations, as well as schools, civic groups, and public information agencies to observe Fire Prevention Week, to provide useful fire safety information to the public, and to enlist the active participation of all citizens in year-round fire prevention programs.

"I bid all citizens to support earnestly the fire prevention and control efforts of their community fire departments.

"I also direct the appropriate Federal agencies to assist in this effort to reduce the needless waste of life and property caused by preventable fires."

LUNAR RECEIVING LABORATORY

NASA has awarded Warrior Constructors, Inc., and National Electronics Corp., both of Houston, and Notkin & Co., Inc., of Kansas City, Mo., as joint venturers, a contract to complete construction and equip a Lunar Receiving Laboratory at the Manned Spacecraft Center.

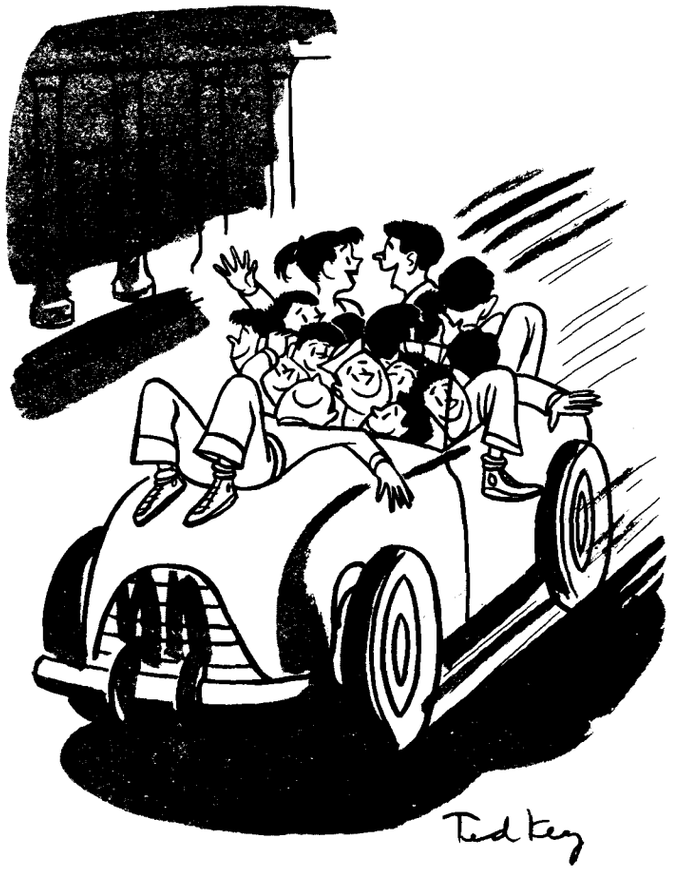
The cost-plus-incentive-award fee contract is for approximately $4.3 million.

The Lunar Receiving Laboratory will provide a central complex where samples of lunar surface material collected by Project Apollo astronauts will be received, quarantined, examined and later processed for distribution to the scientific community for thorough study and analysis. It also will be equipped to quarantine the spacecraft and crew after the flight to the Moon. The structure will have 84,000 square feet of floor space.

The work, to be completed by the end of 1967, will include pouring floors; installation of interior partitioning, utilities, electrical systems, heating and air conditioning systems; installation and checkout of laboratory equipment consisting of vacuum systems, cabinets for scientific equipment to conduct physical, chemical and biological examination of materials from the lunar surface and low-level radiation counting equipment.

FOR SALE: 2 tickets to VPI home coming game Oct. 29. Piland, 826-0754.

FOR SALE: Frigidaire refrigerator - $25. Richardson, 723-5509.



"Who's driving?"

ADULT EDUCATION COURSES

The Adult Education Department at Hampton Institute is offering a technical preparatory training course in Fluid Power. The class will meet on Tuesday and Thursday nights from 7 to 10 o'clock for a total of 60 hours. A registration fee of $35 is reguired and is payable at the time of registration.

Other classes scheduled to start October 11 are as follows: Architectural Drawing, Automobile Spray Painting, Bookkeeping, Ceramics, Driver Education, Dry Cleaning, Electricity, Estimating, Income Taxation, Industrial Arts, Masonry, Office Machines, Painting and Decorating, Planning the Home, Principles of Accounting, Basic Radio I, Real Estate Sales, Refrigeration, Shorthand, Typing I, Upholstery, and Welding.

Students may register at the Office of the Registrar at Hampton Institute or by mail.

FOR RENT: 2-bedroom cottage near Langley and Fort Monroe - $60 per month. Routten, 851-3387, 163 Beach Rd., Fox Hill.

FOR SALE: 1958 Plymouth - $100, Harvey, 2 Donald St.

FOR SALE: Westinghouse washing machine - $15. R. H. Fournier, 898-5848.

FOR SALE: 35 mm and 8 mm cameras, accessories, and dark room equipment - giving up hobby. Mulac, 596-0666.

WANTED: Male Beagle puppy. Sleigher, PA 3-4826.

WANTED: Fifth driver from Fox Hill - Old Buckroe Rd. to W.A. on 8 shift. Kelly, 4450.

WANTED: Ride from Tartan Lane (near Kecoughtan High) to W.A. on 8 shift. Helene Smith, 3320.

CREDIT UNION MOVING TO NEW BUILDING; DEDICATION OCT. 11

Details of the dedication of the Credit Union's new building at 10 a.m. on October 11, appear on Page 1 of this issue. This article is concerned with physical facts related to the facility and the equipment it houses as well as the extra services that members may expect when it opens for business at 9 a.m. on Monday, October 17.

One item of interest is cost. The happy juxtaposition of a new building and adequately sophisticated accounting system is merely a fortunate coincidence. Both ends were pursued independently. The need for adequate office space has long been obvious. The need for a modern accounting setup has been just as real but not quite so apparent. The three current bookkeeping machines have been totally depreciated. It was a choice between adding another machine plus operator and replacing the present three over the next two years - without any improvement in service - or making a change. Skipping over various less tangible but substantial benefits, mere cost of operations dictated a change.

Other assurance that a cold, hard look was taken at the necessity for each expenditure is found in the fact that building, parking lot, and sidewalks at approximately $90,000 is just half the figure the Federal Bureau of Credit Unions has established as a rule-of-thumb for credit unions of our size for a building alone. Finally, the additional furniture and improved communications network is not the result of "splurging." Each and every item was justified on the basis of member comfort/convenience or employee efficiency. Generally speaking, all would have been installed earlier had space considerations allowed it.

The building is 40 feet by 100 feet for a total of 4,000 square feet. Every effort has been made to insure flexibility. Office personnel can now be diverted, as needed, to handle unusual work loads and so speed the conduct of member's business without any backlogging or other inconvenience. This has been impossible in the past due to lack of desk space, if nothing else. This same flexibility permits, on a trial basis, the extension of business hours from 2 to 3:30 p.m. Other advantages inherent in the design of the building include a private conference room for use of the credit committee and board; a night depository; greater privacy with individual booths for loan officers; a drinking fountain; a bulletin board with space both for special announcements and member's "For Sale" notices; a 44-car parking lot; comfortable chairs for those awaiting service; and finally, a facility with the proper image: one in which a member can justifiably take pride.

On the equipment side, Burrough's new E 4000 Accounting System is the big news. Since late 1962, an equipment committee has kept a close eye on developments in this area. In late 1965, this committee was asked to survey the field and make its recommendation. Three major companies, of those queried, submitted proposals. Based on a review of the findings, the board selected and ordered a second-generation Burroughs E 2190. Judged best at the time, six months later Burrough's third-generation E 4000 swept the board. With no penalty for the earlier order and only a 30-day delay in delivery, a change to the E 4000 gives us the benefit of a 30% increase in capacity at only a 10% increase in price. For a moderate cost as these things go - under $40,000 - additional growth is no problem for the foreseeable future, transactions are posted promptly and in many cases automatically, control of delinquent accounts is tightened, statistical data of benefit to management becomes available as a by-product, and members can enjoy such things as a cumulative column showing "Interest Paid this Year to Date" along with an entry crediting current year's dividends prior to January 5 of the following year.

Another purchase, this time of Recordak equipment, does double duty. One, it allows microfilming of all records -- many of which must be kept forever. The saving in storage space is fantastic. And two, it copies the ledger card which, suitably reproduced and enlarged, becomes the member's semi-annual statement. No more will the period be an arbitrary three months; the whole face of the ledger card will be shown. With the card capable of reflecting some 40 entries, this can run into years. And, remember, no extra cost is involved.

Finally, we come to the matter of communication: both external and internal. Here, again, the external improvement is obvious. There will be two NASA telephone extensions (one listed, the other on rotary), two Air Force extensions, and one Hampton line. Business-wise this means NASA, three circuits vs. present two; AF, two vs. present one; and Hampton, one vs. none with the additional advantage of a listing in the Telephone Directory for member's convenience in calling from off-base homes.

The internal benefits are equally impressive. First, a central answering point for incoming calls is connected independently with various stations via an inter-communication network. This allows (1) the call to be immediately resolved or (2) referred quickly to the proper agency. A case in point, for referral, is that of "telephone loans." Here, one of six individuals will be available - or can be called upon - to take and immediately service telephone applications, This is a big plus. NASA members are especially urged to try it. A call, a few questions, a mutually agreeable appointment (then or later) to pick up check, and that is all there is to it. One can even arrange to join at the time of application. Try NASA 3606 or AF 4092!

Then, there is another internal system which allows the tellers to call for share balances, etc., without tying up outside lines. Instead of one, two accounting sources will furnish the desired information. The advantage from the member's point of view is apparent. Finally, with both staff and membership in mind, the board arranged for continuous music by Muzak selected and adjusted for optimum listening pleasure. It passes the time, increases efficiency, and soothes minor irritations. Can't ask more than that for $30 a month!

But why not come see for youself. . .at the prevue? Dedication, 10 a.m. on October 11 with ribbon-cutting by Dr. Floyd L. Thompson and other distinguished guests plus inspection tours conducted until 6 p.m. You will be surprised and, most assuredly, pleased with what the Credit Union now has to offer!

FOR SALE: Kitchen dinette set with 6 chairs. Zoeffel, 595-1751.

FOR SALE: 2 tickets to VPI-Vanderbilt football game Oct. 15 in Richmond, Warhol, 826-3972.

FOR SALE: 4 tickets to VPI-VMI Thanksgiving Day game in Roanoke. Elliott, 722-4910.

HEALTH BENEFITS AMENDED

The Federal Salary and Fringe Benefits Act of 1966, amends the Federal Employees Health Benefits Act to (1) extend health benefits coverage for children to age 22, (2) increase the Government health benefits contribution, and (3) permit employees who are on approved leave without pay for the purpose of serving an employee organization to continue or acquire health benefits coverage.

The major amendments are as follows:

MAXIMUM AGE FOR CHILDREN'S BENEFITS COVERAGE RAISED TO 22.

New definition of family member. The amendment raises the maximum age limit for children from age 21 to age 22. The definition of family member for purposes of health benefits coverage now includes "any unmarried child (1) under the age of 22 years (including (a) an adopted child, and (b) a stepchild, foster child, or recognized natural child who lives with the employee or annuitant in a regular parent-child relationship), or (2) regardless of age who is incapable of self-support because of mental or physical incapacity that existed prior to his reaching the age of 22 years." (Note that the child must be unmarried but need not be a student.)

Effective date of coverage. Children between ages 21 and 22 are automatically covered under an employee's self and family enrollment as of the first day of the first pay period which began on or after July 18, 1966, the date of enactment of Public Law 89-504. Claims for covered medical expenses incurred by such children on or after this effective date will be honored by carriers. Expenses incurred before the effective date while a child was not a "family member," will not be honored.

Child incapable of self-support. A child who is incapable of self-support but was not previously eligible for coverage because his mental or physical incapacity did not exist prior to attaining age 21, may be eligible under the amendment if the incapacity existed prior to attaining age 22. In such a case, the usual medical certificate must be submitted as evidence of the child's incapacity.

Notification to carriers. An employee who is enrolled in either of the Government-wide plans or in any of the employee organization plans need not notify his plan of a child who qualifies as a family member under Public Law 89-504 unless the plan asks the employee to do so. These plans ordinarily determine a child's eligibility as a family member at the time a claim for the child arises.

Converted contracts for children between 21 and 22. An employee who has a child between 21 and 22 for whom he has purchased a non-group contract should immediately get in touch with his plan to arrange for the cancellation of the non-group contract and for refund of any excess premium paid for the conversion. When the child reaches 22 and his group coverage as a family member terminates, he will have a new 31-day temporary extension of coverage during which he may again convert to a non group contract.

Change from self only to self and family. An event which adds to the number of eligible family members is considered a change in family status for health benefits purposes. The regulations permit an employee who has such a change in family status to change his enrollment from self only to self and family within 60 days after the change in family status. Therefore, an employee enrolled for self only who has a child who becomes eligible for coverage because of this amendment, may now change to a self and family enrollment.

Scouts Jimmy Biron (left) and Gary Evans, members of Langley Troop 54, inspect a model of a NASA space station during Kids' Day. The annual event was held at Langley Air Force Base on September 24.

INCREASE IN GOVERNMENT CONTRIBUTIONS. Amount of increase. The basic biweekly Government contribution is increased for most enrollees to $1.62 for a self only enrollment and to $3.94 for a self and family enrollment. As in the past, an additional 4% of these amounts is added for administrative and contingency reserves. The new total biweekly Government contribution, therefore, is $1.68 for a self only enrollment and $4.10 for a self and family enrollment. However, if an employee is enrolled in a plan for which the biweekly subscription charge is less than twice these respective amounts, the Government contribution may not exceed 50% of the subscription charge. (Because of this limitation, the Government contribution to some low-option enrollments will not be increased, or increased to an amount which is less then $1.68 or $4.10.)

Effective date. The increase in the Government contribution was effective on the first day of the first pay period which began on or after July 18, 1966.

Changes in cost information on brochures. Brochures of all plans will be revised effective January 1, 1967, and will be distributed for use in the November 14-30, 1966 open season.

FOR SALE: Lilac Siamese kittens - $25. Margason, 898-5392.

FOR SALE: 1965 23-inch Westinghouse console TV set. Lawson, 851-1500 after 5 p.m.

FOR SALE: Buffet tenor saxophone and Fender guitar and amplifier. Bavuso, 826-1303.

FOR SALE: Scott amplifier 299 stereo - $75, 2 screen doors and 2 screens. Riggin, 722-6087.

FOR SALE: Village winter clothes - sizes 14 and 16. Sabo, 723-5855 after 5 p.m.

FOR SALE: Cleveland King superior cornet - $75. Diacont, LY 6-3292.

FOR SALE: Harmon Kardon FM stereo multiplex tuner - $50. Butler, 838-1734.

SCIENTISTS-ASTRONAUTS NEEDED FOR FUTURE SPACE MISSIONS

NASA and the National Academy of Sciences joined in offering the nation's young scientists and engineers a new opportunity to explore space firsthand.

Responding to a request from NASA Deputy Administrator Robert C. Seamans Jr. that it recruit and nominate a second group of scientists to NASA for final selection and training as astronauts, the Academy announced that it is seeking experienced scientists of exceptional ability "to conduct scientific experiments in manned orbiting satellites and to observe and investigate the lunar surface and circumterrestrial space."

The Academy is inviting applications from U.S. citizens and persons who will be citizens on or before March 15, 1967, who are no taller than six feet, were born after August 1, 1930, and have a doctorate in the natural sciences, medicine, or engineering. Applicants will be required to meet physical qualifications for pilot crew members, but exceptions to any of the above requirements will be allowed in outstanding cases.

Selection procedures will be similar to those used in choosing the first group of scientists as astronauts in 1965. Applications from candidates who meet preliminary educational and physical requirements will be ranked by an Academy selection panel on the basis of scientific qualifications. From this list, NASA will make its final selection, following thorough physical examinations of the candidates and a limited program to determine their ability to function under simulated conditions of space flight.

Of the five scientists in the first class, three recently received their wings at the Air Force flight school and have joined the two already qualified pilots in training assignments at the Manned Spacecraft Center.

Deadline for applications is midnight, January 8, 1967. Applicants will be informed of their status by March 15, 1967, and those who continue to the final selection by NASA will be notified before June 30. Successful applicants will be asked to report to the Manned Spacecraft Center on July 15.

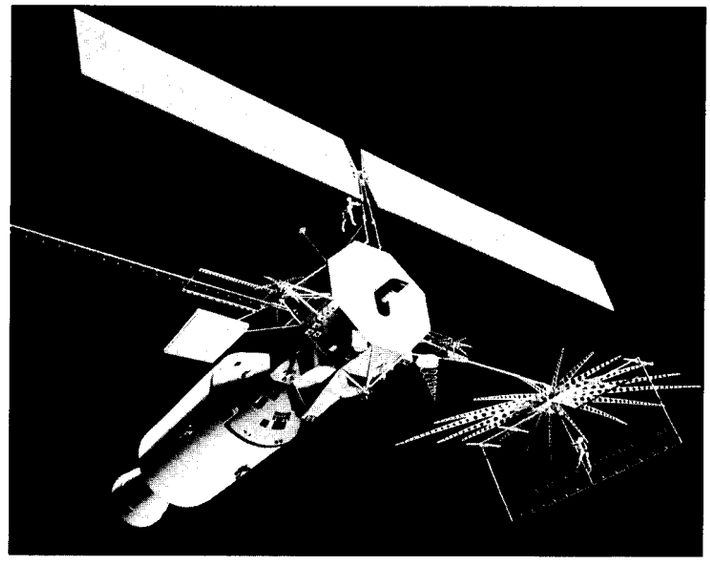
Applicants who are accepted for the program will spend one year in astronaut training. Where appropriate, they will spend one additional year in flight training to qualify as pilots. Normally, flight training would begin immediately after appointment. Education in specialized fields related to the space missions will be provided as needed to supplement the astronaut's earlier scientific preparation.

As scientists, the astronauts will participate in planning the scientific programs of observation and experimentation that are under consideration. Consistent with the requirements of the space missions, they will have opportunities to engage in research at NASA or university laboratories.

For further information, prospective applicants are asked to write to Scientist as Astronaut, National Academy of Sciences - National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

WANTED: Home for male kitten. Reynolds, 245-8137.

FOR SALE: 3-bedroom rancher - pay equity and assume monthly payments of $89. Siviter, 31 Westmoreland Dr., 723-1989.



A Lockheed Missiles & Space Co. artist depicts a possible Apollo Applications Program (AAP) earth orbital mission showing the Apollo spacecraft hardware, including command and service modules along the lunar ascent and descent modules, being used to conduct experiments. Lockheed was one of two aerospace firms chosen by NASA to make final payload integration studies of the lunar module for AAP. The purpose of AAP is to help man explore the Earth and moon by using the technology and equipment developed for the Apollo manned lunar landing. At the top of the picture an astronaut works, dwarfed by immense solar panels. In the lower right hand corner, another astronaut works on a large radar antenna which could be but one of many experiments taking a broad range of measurements to "explore" the Earth from orbit.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center last week and staff members donated a total of 157 pints of blood.

Charles L. Iams completed his quota for a five-gallon pin. Reaching the four-gallon mark were L. S. Burgess and Taylor Fraser. Three-gallon pins were awarded to Robert L. Rhodes, Thomas Wray, E. Eugene Hall, Forrest H. Rexrode, Alvin J. Lunsford, Harry Norton and Bradford B. Jones.

Ben Tinglehoff, Fred Eichenbrenner and Frank R. Batten received two-gallon pins. Ray D. Lowe, John S. Pittman, Thomas W. Howard and James M. Shipp were presented one-gallon pins.

Assisting Dr. E. C. Downing and Dr. A. J. Halperin during the visit were eight students from the Riverside Hospital School of Nursing. They were: Phyllis Summerlin, Barbara Kelly, Cathy Alexander, Thirza Stinson, Donna Schroer, Jaca Baucom, Virginia Mountcastle, and Susan Porter.

Additional donors are needed to meet the increasing demand for blood, Staff members interested in joining this worthy program may register by calling East Dispensary, telephone 2243.

The next visit will be on December 7. Remember Pearl Harbor Day - give a pint of blood.

FOR SALE: Seal Point Siamese kittens - house broken - $15. Garrison, 826-7081.

WANTED: Home for kittens, Shideler, 826-5955.

CALENDAR OF COMING EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		SEPTEMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	NOVEMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30			1
2	3	4	5	6	7	8 QUSS Party
9 Structures Dynamics Party	10	11 Bridge Night Model Club	12 COLUMBUS DAY	13 SMS Party	14 8-foot High-Temperature Party	15 Dynamic Stability Party
16	17	18 Bridge Night	19	20	21 Golf Tournament for NASA at Langley Field	22 EMIB Party
23 30	24 31 HALLOWEEN	25 Bridge Night	26	27 NASA Family Movie Night	28 Apprentice Graduation	29 Halloween Dance

1966 OCTOBER 1966

GOLF TOURNAMENT - The Activities Association is sponsoring another NASA Golf Tournament at the Langley Golf Course. The Blind Bogie Tournament with handicaps established by the Callaway System will be held October 21. Play will start at 8 a.m. and continue throughout the day. Men and women are eligible to enter. Play will be limited to foursomes. For tee time contact Frank Lawrence, telephone 4489. Upon completion of play, turn in score cards to the Pro Shop. Green fees for non-members will be $1.50 and the tournament fee will be $1 for all players.

MOVIE NIGHT - The Activities Association will sponsor a NASA Family Movie Night on October 27. All staff members and their family and friends are invited to attend. Titles of the films will be announced later.

GOLF LEAGUE - Plans are being made to form a NASA golf team for league play. The league will consist of six teams, including NASA, Shipyard, Daily Press, Newport News Forms Co., VEPCO, and C & P Telephone Co. Play will be on week-ends and a maximum of 24 players may participate at a time. For the present, the Newport News Municipal Course will be used but other courses will be scheduled for future dates. The green fee for the Newport News course is $2. Fifty cents will be charged for a trophy and fifty cents for the blind bogie - making a total of $3. For further information contact Bob Turner, 3360 or 4587.

ELECTION - Preparations are being made for the election this fall for representatives to the General Assembly of the Activities Association. Redistricting has already started and is being setup on a geographical basis so the people you elect will be working closer to you and will be able to give better representation for the coming years. It appears that the representatives elected in the past are many times located across the field and are seldom in contact with the people they represent. A new layout of districts will put these representatives closer to you and will enable you to know them better. The importance of having a close relationship with your representatives will make you more aware of the activities, social and athletic, that have been planned for your pleasure. Don't be left out! Insist on good representation and maintain close communication with your Activities Association.

FOR SALE: 15-foot runabout, 25 hp Johnson motor, windshield, lights, steering wheel, complete with ski outfit - $300. McCracken, 898-5253.

COSTUME BALL OCTOBER 29

The Activities Association will open its fall social season with a Halloween Costume Ball on Saturday, October 29 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m. to the music of The Mellotones.

Admission will be by costume only and prizes will be awarded for the most original creations.

Admission will be three dollars per couple, including setups. Tickets may be purchased at the Activities Building or at the door.

Reservations for five couples or more may be made by calling Bruce Amole, 4583. No reservations will be held after 10 p.m.

NASA BOWLING LEAGUE

Odd Balls lead Group A in the NASA Tenpin League with 13 wins and 3 losses. Clean Ups are in second with 11 wins and 5 losses. Top bowlers were George Bewley with a 212 game and Hank Fedziuk with a 562 set.

A-OK's and Hotshot Tunnel are tied for first place in Group C with 12 wins and 4 losses each. Sparkeys are in third with 11 wins and 5 losses. High scores were rolled by Charlie Goad with a 274 game and 698 set, Jane Oehman with a 218 game, and Edith Moen with a 586 set.

Group A

Odd Balls	13	3	Flyers	7	9
Clean Ups	11	5	Alley Cats	7	9
Misfits	9	7	Phantoms	7	9
Hornets	7.5	8.5	Short Circuits	6.5	9.5
Unitary	7	9	Outlaws	5	11

GROUP C

A-OK's	12	4	Sad Sams	7	9
Hotshot Tunnel	12	4	RPM's	7	9
Sparkeys	11	5	Dillys	7	9
Wa-Hoppins	10	6	Mets	7	9
Ten-Benders	9	7	Class Kats	6	10
Gliders	9	7	Hits and Misses	6	10
Bowling Belles	8	8	Gutter Jumpers	1	15

TWO RETIRE FROM CENTER

Edith M. Bright, Aero-Physics Division, and Henry G. Williams, Plant Maintenance Division, retired from the Center recently.

Mrs. Bright is a native of Hampton, She graduated from Hampton High School and attended Newport News Business College. Before joining NASA she worked a number of years at the Newport News Shipbuilding and Dry Dock Company. She entered on duty at the Center January 3, 1956 as a Mathematics Aide and retired on September 22.

Williams was born December 14, 1902 in Eldon, Missouri. He graduated from Eldon High School and attended Missouri University. He was self-employed for about 17 years in the dairy and cattle business. He joined the Center staff on August 16, 1943 as Chief Refrigeration Mechanic and retired on September 23.

FOR SALE: Air Trail and Flying Aces model airplane news, other model and aviation magazines dating from 1937. Yeager, 877-9063.

FOR SALE: 20-volume set of American People's Encyclopedia - 10 volumes of Popular Science, 4 volumes on Medicine and Health, 2 dictionaries, book case - pay balance. Anderson, PA 3-8877.

Langley Researcher

VOLUME 5, NUMBER 21 LANGLEY RESEARCH CENTER OCTOBER 21, 1966

EIGHTY-SEVEN APPRENTICES TO GRADUATE OCTOBER 28

John D. Young, Assistant to the Director, Bureau of the Budget, Washington, D.C., will be the principal speaker at the 24th annual graduation ceremony of the NASA Apprentice School at 1:30 p.m. on Friday, October 28 in the Activities Building.

Dr. Floyd L. Thompson, Director of the Langley Center, will introduce Young and preside at the ceremony.

The Reverend Jesse King, Pastor of the Liberty Baptist Church, Hampton, will give the invocation.

Mark C. Harvey, who will receive a journeyman completion certificate as an experimental electronics mechanic, was elected by the graduates to represent them as the class speaker.

Musical selections will be provided by the Tactical Air Command Band under the direction of CWO Julius Sanger.

The Apprentice School was established at Langley in December 1941 and the first class was graduated in February 1943. This year's 87 graduates will bring to 729 the number of journeymen to receive completion certificates in the school's 25-year history. Approximately 82 percent of the graduates are still employed by NASA.

Pictures and the trades of the graduates are shown on Pages 3, 4, and 5. Not shown with the group are Robert N. Barnes, experimental facilities mechanic, who is on military leave, and Frankie B. McLaughlin, experimental facilities mechanic, who has resigned.

LANGLEY EMPLOYEES HONORED AT ANNUAL AWARDS CEREMONY

The annual ceremony for presentation of awards to staff members of the Langley Center was held October 13 on the grounds adjacent to the Activities Building.

A total of 180 employees were honored, including 162 who were presented NASA service emblems and certificates, eight who received Special Service Awards, and ten who received cash awards totalling $6,400 for patents granted by the United States Government in connection with their inventions on the job.

Dr. Floyd L. Thompson, Director, presented a Special Service Award for Exceptional Service to Charles R. Manning Jr., Structures Research, "for outstanding achievements and excellent organizational and leadership abilities demonstrated in the development and application of specialized techniques for alleviation of stress corrosion cracking in Apollo oxidizer tanks in a timely and effective manner."

Dr. Thompson presented Special Service Awards for Achievement to Don D. Davis and William K. Hagginbothom, Applied Materials and Physics Division; Edwin C. Kilgore and Harry L. Smith, Flight Vehicles and Systems Division;

(Continued on page 6)

LAUNCH DATE FOR SECOND LUNAR ORBITER ANNOUNCED

During a press conference held at the Langley Research Center on October 6, Lunar Orbiter Project officials announced the second Lunar Orbiter will be launched from Cape Kennedy between November 6 and November 11.

During the Lunar Orbiter program, five photographic laboratory spacecraft will be launched to orbit the Moon.

Officials told newsmen the Moon is far from cold and barren and they discussed possible sites for Project Apollo lunar landings.

The Moon's "mares" or "seas" seem to be the smoothest and most promising sites for future Project Apollo manned landings, said Dr. Lawrence Rowan of the U.S. Geological Survey. He is chief of the 30-man photo-interpretation team that has been working at Langley since August on the lunar pictures taken by the camera-carrying satellite.

Dr. Rowan agreed that Site 9.2, the one that includes Surveyor I's landing spot, was generally better looking than the eight other photographed tracts across the middle of the Moon's surface. However, he added, careful study of such other areas as Site 5 might uncover equally suitable sites for the Apollo landing.

The Langley-managed spacecraft was launched August

(Continued on page 7)

During a press conference held at the Langley Research Center on October 6, Lunar Orbiter Project officials announced that the second Lunar Orbiter will be launched from Cape Kennedy between November 6 and November 11, Shown during the conference are (from left): Oran W. Nicks, Director, Lunar and Planetary Programs, Office of Space Science and Applications, NASA Headquarters; Dr. Floyd L. Thompson, Director of Langley Center; Clifford H. Nelson, Lunar Orbiter Project Manager; I. G. Recant, Data Analysis Manager; Dr. Lawrence Rowan, U.S. Geological Survey, and Daniel S. Wentz II, Associate Public Affairs Officer, Langley Center.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color, or national origin.

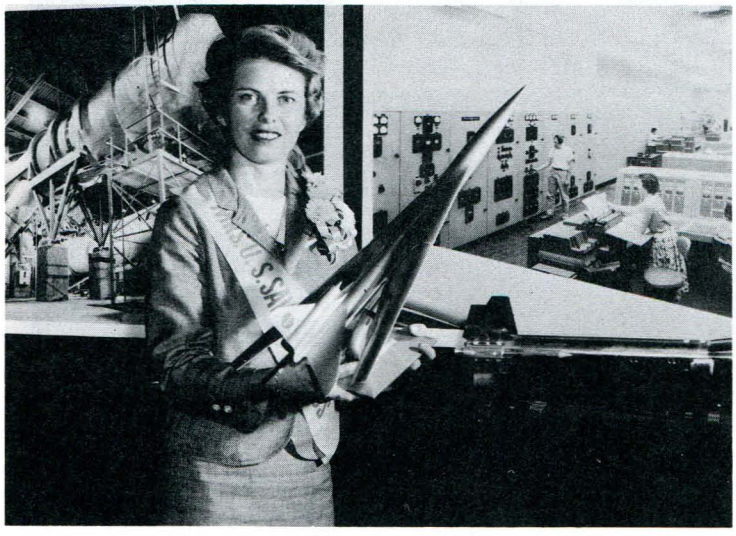
ANNOUNCEMENTS

NEWLYWEDS. . .Wedding bells rang on Saturday, October 8 when Sharyn J. Mullins, Administrative Services Division, took her final vows with Charles Hilstrom, Williamsburg, at the Grace Baptist Church, Williamsburg. . . Joyce Rasnick, Aero-Physics Division, became the bride of Gordon Helsel, Poquoson, on September 3.

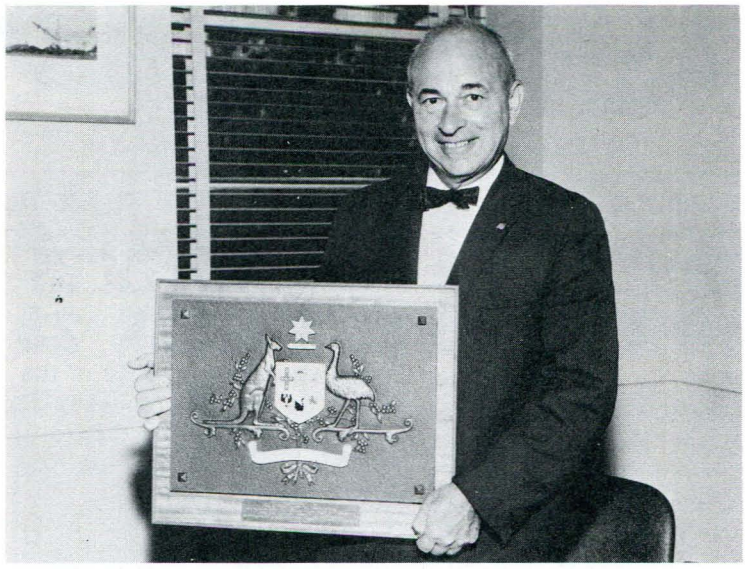
IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, November 1 at 7 p.m. at the Central Labor Union Hall, Newport News.

"SOUTH PACIFIC". . .Marcia Otero, wife of Robert Otero, Instrument Construction Shop, will star as Nellie Forbush with Ted Speas as Emile deBecque in the Peninsula Civic Opera Company's production of "South Pacific" tonight and tomorrow night at 8:30 at Denbigh High School. For tickets call 244-7336.

NOTE OF THANKS. . .Leo J. Satterfield, retired employee, wishes to thank the staff members who donated blood during the last Bloodmobile visit to replace the blood given to him during his recent illness.



Mrs. U. S. Savings Bonds - Mrs. Joan Berry of Lusk, Wyoming - is shown during a visit to a high-speed wind tunnel at Langley Research Center. She is holding a model of one of several Langley concepts resulting from research conducted as part of the current national program to develop a supersonic commercial air transport.



Ray W. Hooker, Special Assistant for Industry Affairs, holds a plaque presented to him by the Australian government in appreciation for his service the past two years as NASA's Senior Scientific Representative in Australia. The plaque, enscribed with the official seal of Australia, was given by the Department of Supply, the cooperating Australian space agency which constructs, staffs and operates the NASA space facilities in Australia. Hooker, who joined the Langley staff in 1930, was succeeded in his Australian assignment by Willson H. Hunter, Lewis Research Center.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 24:

Monday - Tomato-barley soup, braised short ribs, baked ham, Polish sausage, fish cakes.

Tuesday - French onion soup, fried oysters, Salisbury steak, stuffed cabbage, franks and beans.

Wednesday - Chicken noodle soup, chopped steak, fried chicken, spaghetti with meat sauce, chili con carne.

Thursday - Cream of tomato soup, grilled steak, shrimp stuffed with crabmeat, sauteed chicken livers, tamale pie.

Friday - Clam chowder, beef stroganoff, fried scallops, broiled perch, Spanish omelette.

The menu for the week of October 31 is as follows:

Monday - Cream of potato soup, Spanish pot roast, broiled ham slice, clam croquettes, baked hash.

Tuesday - Puree of bean soup, simmered corn beef, breaded veal steak, beef stew, western omelette.

Wednesday - Vegetable-beef soup, roast beef, barbecued pork chunks, liver and onions, chili-mac.

Thursday - Split green pea soup, grilled steak, baked lasagna, fried chicken, Irish omelette.

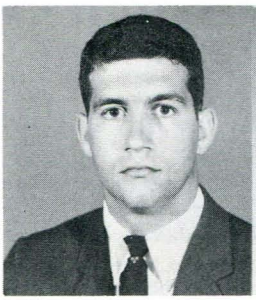
Friday - Clam chowder, hot roast beef sandwich, stuffed flounder, broiled perch, spiced luncheon meat.

STANDARD TIME STARTS OCT. 30

Effective at 2 a.m. on Sunday, October 30, Daylight Saving Time will end in this area. Accordingly, at 2 a.m. on October 30, all clocks will be moved back one hour to conform to Eastern Standard Time.

In accordance with the new Daylight Saving Time bill signed earlier this year by President Johnson, the Tidewater area has observed Daylight Saving Time since April 24.

EIGHTY-SEVEN LANGLEY APPRENTICES GRADUATE NEXT FRIDAY



William E. Anspach
Coatsville, Pennsylvania
Aerospace Mat. Processor
V.P.I. - student

Earl H. Arrowood
Morganton, N.C.
Exptl. Facilities Mechanic
Hotshot Tunnel

Ramon P. Barr
Pottsville, Pennsylvania
Exptl. Facilities Mechanic
Hotshot Tunnel

Gary R. Beasley
Waynesville, N. C.
Experimental Machinist
Heavy Machine Shop

Horace E. C. Bellamy
Toronto, Ontario, Canada
Exptl. Facilities Mechanic
Hypersonic Aeroelasticity

Harry L. Bloxom
Hampton, Virginia
Exptl. Facilities Mechanic
Structures Research Lab

David R. Brooks
Newport News, Virginia
Explt. Facilities Mechanic
Military Service

Lewis G. Burney
Lumberton, N. C.
Exptl. Facilities Mechanic
Magnetoplasmadynamics

Mercer D. Burt
Newport News, Virginia
Exptl. Facilities Mechanic
Magnetoplasmadynamics

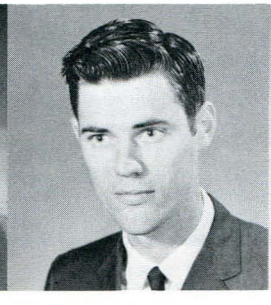
John B. Callis
Jacksonville, Florida
Exptl. Electronics Mechanic
Electronic Shop

Tucker A. Clark, Jr.
Lynchburg, Virginia
Exptl. Facilities Mechanic
Materials Radiation Lab

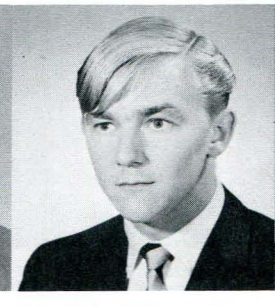
C. Gerald Clendenin
Newport News, Virginia
Exptl. Electronics Mechan
Electronic Shop

Charles E. Cockrell
Northumberland County, Va.
Engineering Draftsman
Res. Projects and Models

G. Clark Collie, Jr.
Newport News, Virginia
Electrician
General Electrical Service



Earl P. Conkling
Richmond, Virginia
Exptl. Facilities Mechanic
High-Temp. Fluid Mechanics



John C. Covington
Scottsburg, Virginia
Exptl. Electronics Mechanic
Electronic Shop

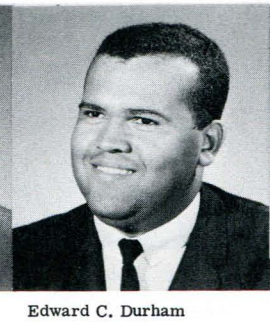
John H. Crosby, III
Mathews, Virginia
Exptl. Facilities Mechanic
Fatigue Lab

Harvey D. Dameron
High Point, N. C.
Exptl. Facilities Mechanic
Impact and Projectile Range

David C. Davis
Elizabeth City, N. C.
Exptl. Electronics Mechanic
Electronic Shop

Robert S. Davis
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

William T. Davis
Wachapreague, Virginia
Experimental Machinist
Heavy Machine Shop

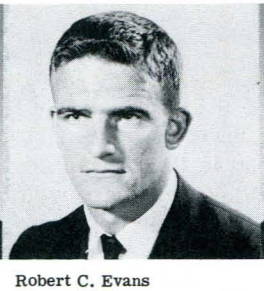


Edward C. Durham
Norge, Virginia
Exptl. Facilities Mechanic
Materials Radiation Lab

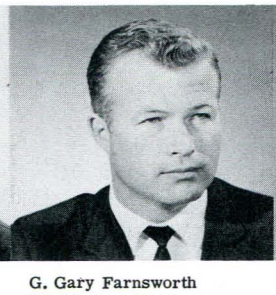
David C. Duxbury
Newport News, Virginia
Exptl. Facilities Mechanic
11-inch Hypersonic Tunnel

Robert M. Ely
New York City, New York
Exptl. Facilities Mechanic
Polymer Lab

Charles G. Evans
Waynesville, N. C.
Electrician
General Electrical Service

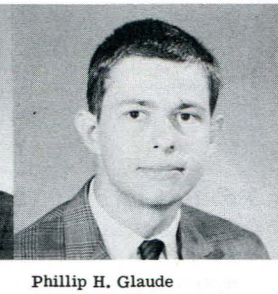


Robert C. Evans
Hampton, Virginia
Dynamic Modelmaker
Model and Pliant Structures

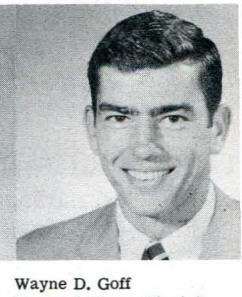


G. Gary Farnsworth
Washington, D. C.
Exptl. Facilities Mechanic
7- by 10-foot Tunnel

John Fryer, Jr.
Lisburn, Ireland
Exptl. Facilities Mechanic
Magnetoplasmadynamics



Phillip H. Glaude
Biddeford, Maine
Aerospace Mat. Processor
Mat. Proc. and Dev. section



Wayne D. Goff
Newport News, Virginia
Exptl. Electronics Mechanic
Electronic Shop

George A. Greene
Marion, N. C.
Electrician
General Electrical Service

Louis H. Griffin
Washington, N. C.
Experimental Machinist
Heavy Machine Shop

Thomas H. Hall, Jr.
Gloucester County, Virginia
Exptl. Facilities Mechanic
Hypersonic Continuous Flow

Mark C. Harvey
Newport News, Virginia
Exptl. Electronics Mechanic
Electronic Shop

Robert F. Hill
Kinston, North Carolina
Exptl. Electronics Mechanic
Electronic Shop

Billy G. Holliday
Crystal Springs, Mississippi
Electrician
General Electrical Service

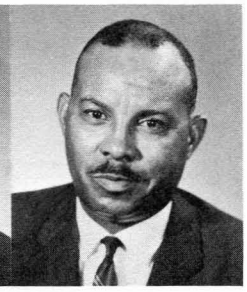
Morris L. Holliday
Newport News, Virginia
Exptl. Electronics Mechanic
Electronic Shop

William R. Hood
Newport News, Virginia
Experimental Metal Worker
Fabrication Shop

Charles D. Hubbard
Newport News, Virginia
Exptl. Facilities Mechanic
Structures Research Lab

John E. Hubbard
Charleston, West Virginia
Exptl. Facilities Mechanic
Hypersonic Continuous Flow

William H. Irby, Jr.
Newport News, Virginia
Experimental Metal Worker
Fabrication Shop



Carlton D. King
Newport News, Virginia
Exptl. Facilities Mechanic
Space Vacuum Lab

Mack G. Lawrence
Radford, Virginia
Experimental Machinist
Inst. Construction Shop

Roman K. Lupton
Lowland, North Carolina
Exptl. Facilities Mechanic
16-foot Transonic Tunnel

Richard G. Lyeth
Newport News, Virginia
Electrician
General Electrical Service

Edgar W. Mangum, Jr.
Newport News, Virginia
Exptl. Electronics Mechanic
Electronic Shop

David R. Mason, Jr.
Hampton, Virginia
Exptl. Facilities Mechanic
Arc Tunnel

Gerry L. Maynor
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

Alvah S. Moore, Jr.
Poquoson, Virginia
Electrician
General Electrical Service

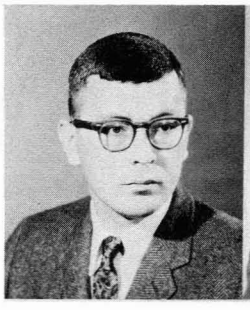
Judson D. Moore
Seaford, Virginia
Exptl. Facilities Mechanic
Helium Tunnel

Lloyd W. Nelson
Newport News, Virginia
Exptl. Facilities Mechanic
Arc Tunnel

Ted W. Noland
Waynesville, N. C.
Exptl. Facilities Mechanic
8-foot High-Temperature

Kemp L. Parrish
Baltimore, Maryland
Exptl. Facilities Mechanic
Inpact and Projectile Range

James E. Pierce
Colerain, North Carolina
Exptl. Facilities Mechanic
Pilot Expansion Tube



Aubrey G. Price
Washington, N. C.
Exptl. Facilities Mechanic
11-inch Hypersonic Tunnel

Howard E. Price
Salem, West Virginia
Exptl. Facilities Mechanic
8-foot Transonic Tunnel

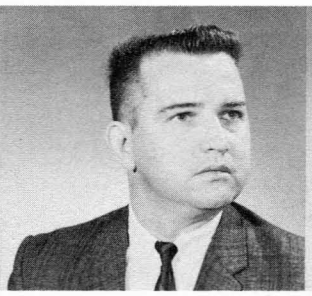
Garland F. Prillaman
Henry County, Virginia
Exptl. Electronics Mechanic
Electronic Shop

Manfred P. Pross
Stuttgart, Germany
Exptl. Electronics Mechanic
Electronic Shop

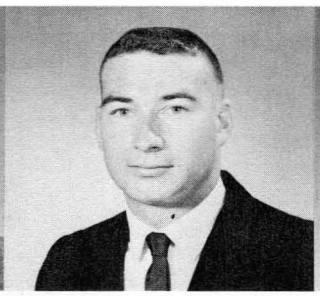
James L. Puffenberger
Newport News, Virginia
Engineering Draftsman
Res. Projects and Models

Luther L. Richardson
Washington County, Tenn.
Experimental Machinist
Heavy Machine Shop

Robert F. Schwartz
Hampton, Virginia
Exptl. Facilities Mechanic
Military Service



Patrick H. Seabolt
Nicholas County, West Va.
Electrician
General Electrical Service



William S. Small
Mathews, Virginia
Electrician
General Electrical Service

James D. Smith
Wilmington, N. C.
Exptl. Facilities Mechanic
8-foot Transonic Tunnel

James R. Smith, Jr.
Amelia, Virginia
Experimental Machinist
Inst. Construction Shop

Thomas L. Smith
Newport News, Virginia
Exptl. Facilities Mechanic
Helium Tunnel

Robert A. Smock
DeRidder, Louisiana
Exptl. Facilities Mechanic
7- by 10-foot Tunnel

Carl R. Snodgrass
Charleston, West Virginia
Experimental Machinist
Heavy Machine Shop

Raymond T. Sparrer
Seaford, Virginia
Electrician
General Electrical Service

Harold V. Stanley
Summers County, West Va.
Experimental Machinist
Heavy Machine Shop

Ralph R. Stoddard
Mount Pleasant, Michigan
Engineering Draftsman
Res. Projects and Models

S. Eugene Sutton
Newport News, Virginia
Exptl. Electronics Mechanic
Electronic Shop

Robert J. Swaim
Norwalk, Connecticut
Exptl. Electronics Mechanic
Electronic Shop

W. Roy Tate
Norfolk, Virginia
Experimental Machinist
Inst. Construction Shop

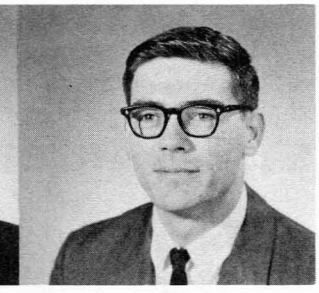
John D. Thompson
Washington, D. C.
Experimental Machinist
Inst. Construction Shop

Harry B. Topping, Jr.
Hampton, Virginia
Exptl. Facilities Mechanic
Dynamics Stability

James R. Tyeryar
Frederick, Maryland
Exptl. Facilities Mechanic
Polymer Lab

Gene A. Wagner
Salisbury, North Carolina
Exptl. Facilities Mechanic
20-inch Hypersonic Tunnel

Willis H. Ward, Jr.
Mathews, Virginia
Exptl. Facilities Mechanic
Arc Tunnel



Burnie S. Williams
Newport News, Virginia
Exptl. Facilities Mechanic
Hotshot Tunnel

Darrell A. Wood
Louisville, Kentucky
Exptl. Facilities Mechanic
Electric Arc Facility

Davis B. Wright, Jr.
Newport News, Virginia
Engineering Draftsman
Res. Projects and Models

Jerry W. Wright
Alleghany County, Virginia
Electrician
General Electrical Service

Edgar J. Yarrington
Hampton, Virginia
Exptl. Facilities Mechanic
9- by 6-foot Thermal Struc.

Edwin W. Zellers
Newport News, Virginia
Electrician
General Electrical Service

wo Langley staff members and two Langley technical ams were honored at the Annual Awards Ceremonies eld October 7 in Washington, D.C. Top left photo - Dr. eorge F. Pezdirtz (left), Head of the Chemistry and Phy- ics Branch, Applied Materials and Physics Division, re- eives the NASA Medal for Exceptional Scientific Achieve- ent, from Dr. Robert C. Seamans Jr., NASA Deputy Ad- inistrator. Top right photo Herbert A. Wilson Jr. (left), hief of Applied Materials and Physics Division, received the NASA Exceptional Service Medal from Willis H.Shapley, Associate Deputy Administrator. Lower left photo - Dr. Floyd L. Thompson, Langley Director, receives the Grou Achievement Award on behalf of the Project Fire staff from Shapley. Lower right photo - Receiving the Group Achievement Award for the Pegasus Program from Shapley are (from left): William H. Kinard, Langley Research Center; William Johnson, Marshall Space Flight Center, and Milton B. Ames, NASA Headquarters.

TAFF MEMBERS HONORED

ontinued from page 1)

harles B. King and Clyde Thiele, Mechanical Services ivision, and R. Donald Smith, Lunar Orbiter Project Of- ce. The awards were presented "for special service in e conception and establishment of new plans and pro- edures which have led to a highly significant improve- ent in the success record of solid propellant rocket otors flown by the Langley Research Center."

T. Melvin Butler, Assistant Director for Administration, resided at the ceremony. The Reverend Elmer E. Bos- erman, Trinity Lutheran Church, Newport News, offered e invocation. Special music was provided by the Con- nental U.S. Army Band, Fort Monroe, directed by CWO ale F. Johannsen.

Guest speaker was Walter D. Sohier, General Counsel, ASA Headquarters.

Dr. Thompson presented 30-year service emblems to 4 staff members. Division chiefs awarded emblems to 38 employees who have completed 25 years of Govern- ent service.

The largest individual inventions award was presented to Robert W. Herr, Dynamic Loads Division, for his invention entitled "A Support Technique for Vertically Oriented Launch Vehicles." He received $1500.

William H. Kinard, Applied Materials and Physics Division, received $1200 for his invention "Meteorite Detection Apparatus."

Harry W. Carlson, Roy V. Harris, Francis E. McLean, and Augustine W. Robins, Full-Scale Research Division, and Wilbur D. Middleton, who has resigned, shared $1200 for their joint invention on "Supersonic Aircraft."

Ray W. Lovelady, Flight Instrumentation Division, and John C. McFall, Applied Materials and Physics Division, shared $1500 for "Underwater Location System."

An award for $1000 was presented to Robert L. Swain, Applied Materials and Physics; Carl M. Styles, PMR Field Projects Office, and Joseph G. Thibodaux, Manned Spacecraft Center, for "Spherical Solid-Propellant Rockets Motors."

FOR SALE: 3-bedroom house in Southampton area. Capone, 722-0429.

LAUNCH DATE ANNOUNCED

(Continued from page 1)

10, pictured two million square miles of the lunar surface, and finished its electronic readout of more than 200 negatives on September 13.

Interpretation of the reconstructed pictures will be completed in about a month, announced I. G. Recant, Data Analysis Manager. Clifford H. Nelson, Project Manager, announced the launch dates for the second Lunar Orbiter. He stated that the November shot will concentrate on dark "mares." These are believed, from their likeness to Earth surface features, to be smooth deposits from volcanic eruptions.

Dr. Rowan stated that no parts of the 15,000 square miles pictured in Lunar Orbiter I's primary screening mission could be rejected yet as Apollo landing sites. He pointed out, however, if he had to make the "go - no go" decision on an Apollo target, he would want further information in the form of photographs and geological maps.

Dr. Harold Masursky, U.S. Geological Survey, indicated the pictures reveal some patterns that will lead the way to good landing fields. For instance, he said, material kicked up by crater-gouging meteroids flies to make rays of secondary craters, the rays are rough but the "mare" areas between them are relatively smooth. He denied the moon is cold, dead and lifeless. It is "nearly as dynamic as the Earth," he said.

OPEN SEASON FOR HEALTH BENEFITS NOVEMBER 14-30

An open season in the Federal Employees Health Benefits program has been scheduled for the period November 14-30.

During the open season eligible employees may make any one of the following changes: from not enrolled to enrolled, from one plan to another plan, from one option to another option in the same or a different plan, from self only to self and family, and from self and family to self only (this change may be made at any time).

Changes made during the open season will be effective beginning with the first full pay period in January 1967.

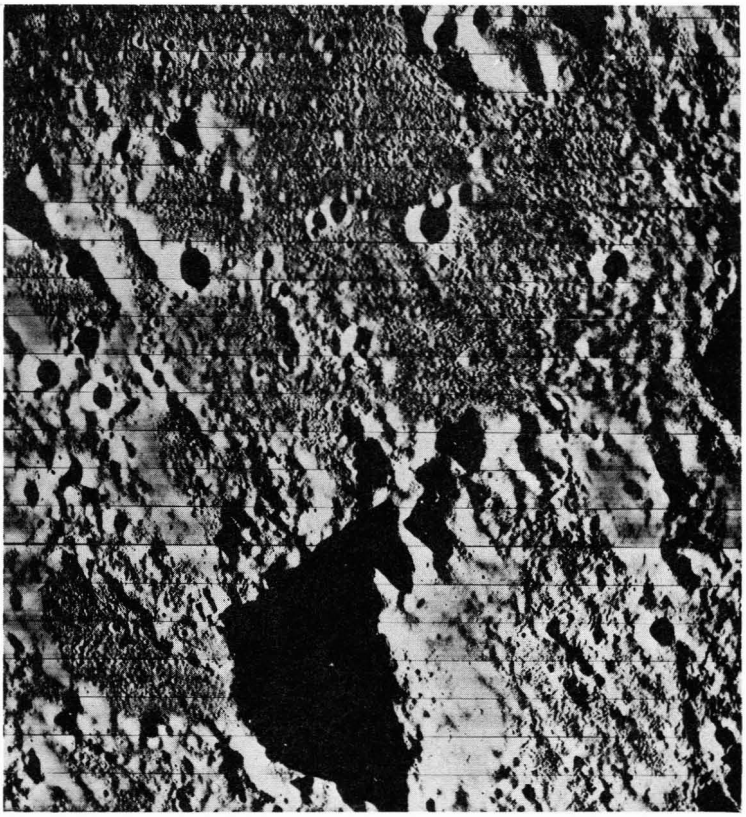
Brochures describing the Service Benefit Plan and the Indemnity Benefit Plan will be distributed to employees before the open season.

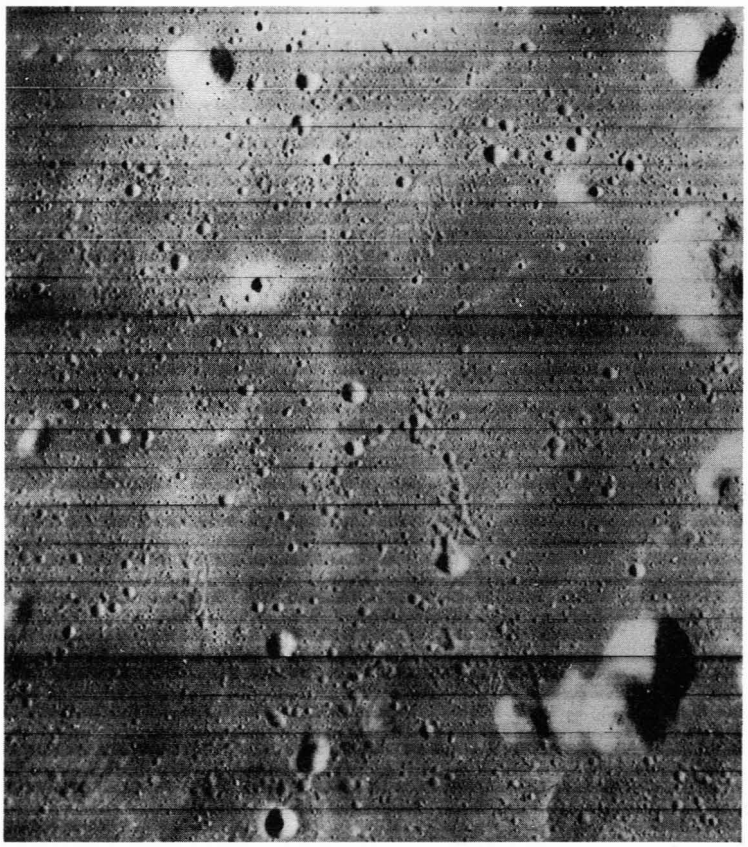
Premium rates for the Indemnity Benefit Plan will not be changed. However, the premium rates for the Service Benefit Plan will be increased on the first day of the first pay period that begins on or after January 1, 1967. The increased rates are shown on pages 19 and 20 of the Service Benefit Plan's brochure.

Annuitants will be able to participate in this open season in order to give those enrolled in Medicare an opportunity to coordinate better their protection under the program with their Medicare coverage.

Employees wishing to make an open season change may obtain a Health Benefits Registration Form (Standard Form No. 2809) from the Employee Services Branch, telephone 2605. The form must be filled out to show the change desired and returned to Employee Services Branch, Mail Stop 305, no later than November 30.

FOR SALE: 3-bedroom house with den, eat-in kitchen, stove and refrigerator. Harris, 826-2081.





Shown above are two views of the Moon's surface taken by NASA's Lunar Orbiter I Spacecraft. Top photo shows Site B-4, West of Dionysius, located approximately longitude 16 degrees, 48 feet east and latitude 2 degrees, 51 feet north. Area of coverage approximately 38.4 by 32.5 miles. The lower photo is of the Copernicus Ray area located approximately 20 degrees, 0 feet West and 0 degrees, 15 feet South. Area of coverage approximately 23.2 by 19.6 miles.

COSTUME BALL OCTOBER 29

This month marks the 20th anniversary of the Activities Association. In celebration of the occasion the Association will sponsor an Anniversary and Halloween Costume Ball on Saturday, October 29 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m. to the music of The Mellotones.

Admission will be by costume only and prizes will be awarded for the most original creations.

Admission will be three dollars per couple, including setups. Tickets may be purchased at the Activities Building or at the door.

Reservations for five couples or more may be made by calling Bruce Amole, 4583. No reservations will be held after 10 p.m.

CALENDAR OF COMING EVENTS

GOLF TOURNAMENT. . .The Blind Bogie Tournament, sponsored by the Activities Association at the Langley Golf Course, is being held today. Play starts at 8 a.m. and continues throughout the day. Upon completion of play score cards should be turned in at the Pro Shop.

MOVIE NIGHT. . .The Family Movie Night will be held at 7:30 p.m. on October 27 at the Activities Building. Three movies will be shown including "Returning From the Moon," "America in Space," and "Lunar Orbiter." The movies will run for about an hour.

TURKEY SHOOT. . .The Activities Association's Annual Thanksgiving Turkey Shoot will be held on Saturday, November 5 at the Activities Building. Matches will be conducted under the direction of safety and range officers. Contestants will furnish their own firearms and the Association will supply shotgun shells. All ammunition will be handled by the person in charge of ammunition. A fee of fifty cents will be charged for each match.

PAYDAY GAME NIGHT. . .The regular scheduled Payday Game Nights have resumed at the Activities Building. The affair starts at 8 p.m.

BADMINTON. . .Anyone, male or female, who is interested in becoming a member of a group to play indoor Badminton in the Activities Building on a regular basis, is asked to call Dick Layman, 3511.

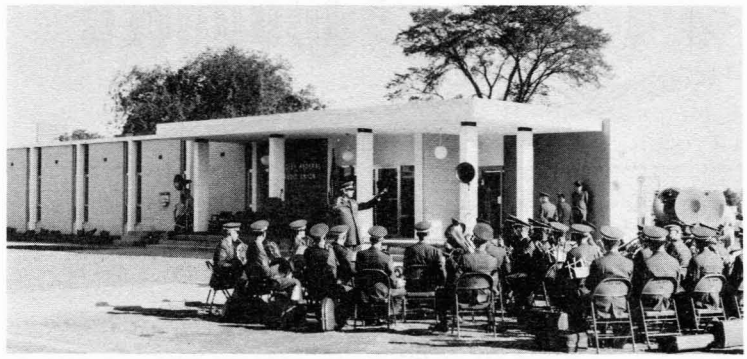
GIRLS BASKETBALL. . .A Girls Basketball League is being organized and anyone interested is asked to contact Sharon Haythorne, 4861.

GOLF LEAGUE. . .Results are in from the first match of the newly formed golf league at NASA with NASA winning 28-8 over the Shipyard. Jim Jones came in with low gross and Dale Rodman was low net runner-up. Blind bogie winners were Bob Turner, Tom Hall, Ray Goodman, Walt Bressette, and Harold Pritchard. A meeting of the group will be held November 17. For further information call Bob Turner, 4587.

SAFETY NEWS. . .Due to the demand for copies of a recent issue of the Safety News concerning poisonous plants, this issue has been reprinted and copies are available from the Safety Office, telephone 4750.

FOR SALE: 1965 Rambler American, r/h, a/t, new tires - take over payments. Horvath, 245-5813.

FOR RENT: Large room with twin beds - gentlemen preferred. Dupere, 723-2247.



Top photo - The Langley Federal Credit Union's new building, located in West Area on the corner of Ames and Durand Roads, was dedicated in ceremonies held October 11. Special music was furnished by the Tactical Air Command Band. Lower photo - Participating in the ribbon-cutting ceremony were (from left): Dr. Floyd L. Thompson, Director of the Langley Research Center; the Honorable Mrs. Ann C. Kilgore, Mayor of Hampton, and Brig. Gen. Lewis B. Grossmith, Langley Air Force Base. The Credit Union is open on week-days from 9 a.m. until 3:30 p.m. The NASA telephone number is 3606 and the number for the direct Hampton line is 722-6622. The Mail Stop is 220.

NASA TOUCH FOOTBALL LEAGUE

Boozers lead the NASA Touch Football League with a perfect record of 6 wins. Boozers and second place Misfits, who have lost only one game, will play tomorrow at 9:30 a.m. at Kecoughtan High School.

STANDINGS

Boozers	6	0	Bombers	3	3
Misfits	5	1	Sixty-Niners	1	5
KNADS	3	3	Packers	0	6

COURSE OFFERED EMPLOYEES

The University of Virginia's non-credit course in Math I, Advanced Engineering Mathematics, will begin next week with Dr. J. P. Raney as instructor. This course will not be offered again in the near future.

All employees wishing to take this course are urged to enroll immediately. If interested, call Training Office, telephone 2611.

Langley Researcher

VOLUME 5, NUMBER 22 LANGLEY RESEARCH CENTER NOVEMBER 4, 1966

GEMINI SPACE FLIGHT PROGRAM ENDS WITH LAUNCH NEXT WEEK

NASA will conclude its Gemini manned space flight program with the four-day Gemini 12 mission, to be launched from Cape Kennedy no earlier than November 9.

Gemini 12, the 10th manned flight in the program, will include rendezvous and docking with the Agena during the third spacecraft revolution, docking practice, extravehicular activity, plus 13 experiments.

A tethered station-keeping exercise is planned for the Gemini 12 flight to gain further knowledge of methods to save spacecraft maneuvering fuel while keeping two orbiting space vehicles close together.

Evaluation of the astronaut maneuvering unit (AMU) during extravehicular activities (EVA) has been deleted from the flight plan. Program officials feel the series of repetitive EVA work tasks now scheduled for this mission will contribute more to the understanding of man's capabilities outside the spacecraft then a test of the AMU.

The Gemini 12 crew is James A. Lovell Jr., command pilot, and Edwin E. "Buzz" Aldrin Jr., pilot. Backup crew members are L. Gordon Cooper Jr. and Eugene A. Cernan.

Plans call for the Gemini 12 to be launched at 3:23 p.m. EST, with the Agena target vehicle scheduled to lift off some 98 minutes earlier at 1:45 p.m. EST.

After the third revolution rendezvous at 185 miles altitude, the Agena primary propulsion system (PPS) will be fired to place the docked vehicles into a 460-by-185-mile orbit. A second PPS maneuver in the 18th revolution, after Aldrin's first extravehicular activity, will return the craft to a 185-mile circular orbit.

The first EVA is planned for a two-hour and 15-minute

(Continued on page 4)

SCOUT ON WAY TO RECORD

The 49th Scout was launched on Friday, October 28. The success of this launch made a total of 22 consecutive successful launches. The only United States research space vehicle to achieve 22 successful launches in a row previously was Delta.

Scout plans another launch this month, and if successful, this will establish a new record for consecutive successes. The Scout vehicle is responsible for 26 of the present orbiting satellites - three of these are from Italy, France, and the United Kingdom. This vehicle, designated Scout 150C, launched an Air Force radiation payload into orbit. It was the ninth Scout launch in 1966 and two more are scheduled this year.

Early next year a Scout will be launched by the Italian Space Commission from the Indian Ocean. The Scout Project Office has 28 more Scout vehicles in inventory and under manufacture. This latest version of the Scout, known as Scout B, has the capability of launching a 320-pound payload into a 300-nautical-mile easterly circular orbit.

STAFF MEMBERS DONATE $69,434 TO UNITED FUND

The Center's Thirteenth Annual United Fund Drive officially ended October 31 and staff members set a number of new records. The total amount pledged by Langley Research Center employees and the average pledge both reached record amounts. The total amount of pledges was $69,434 which was 6 percent greater than last year's amount and the average pledge was $17.20 compared with last year's $16.31. The percentage participation was 95.1 which fulfilled the challenge at the beginning of the campaign to raise the percentage from last year's 93.

Groups having the highest average pledges included: Office of Director, $70.09; Dynamic Loads, $35.24; Flight Reentry Programs, $32.90; Lunar Orbiter Project Office, $30.21; Space Mechanics, $28.63; Structures Research, $27.50, and Full-Scale Research, $27.13.

As in the past, the Langley drive was also extended to service contractors and plant representatives who deal extensively with NASA. Inclusion of the conbributions from these groups brought the grand total of contributions to $71,794.96.

Notable among the service contractors was the $826 contributed by employees of the Ling-Temco-Vought aerospace group for an average contribution of $14. NASA cafeteria employees had 100 percent participation.

Notable among the plant representatives was the $508 contributed by the Boeing Company employees.

Assisting campaign chairman Robert W. Boswinkle Jr. in the drive were James Hamilton, in charge of general solicitation; Powell M. Lovell Jr., in charge of advance solicitation, and William L. Williams, in charge of promotion.

Robert W. Boswinkle Jr., Chairman of the Center's United Fund Campaign, models the "Good Guy's Hat" which was given to him by the Peninsula United Fund in recognition of employees' contributions to the fund drive. The hat was used as a symbol in this year's PUF drive.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

NEW ARRIVALS. . .Weighing in at seven pounds, eleven ounces on October 23 was Richard W. Jr., new son of Richard W. Barnwell, Dynamic Loads Division. . .Announcing the birth of a five pound, eight ounce son on October 5 is Jay K. Sawyer, Electrical Systems Division. The new heir was named Lee Bland.

REPRESENTATIVES TO VISIT. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on November 8 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on November 16 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2605, for an appointment.

COST REDUCTION REPORT

The Langley Center recently transmitted its cost reduction report for the quarter July 1 through September 30, 1966, to NASA Headquarters for approval and review, with savings of $3,570,577 noted. In reviewing the individual cost reduction reports which make up the Center's consolidated report, T. Melvin Butler, Cost Reduction Program Representative, indicated that he was pleased with their quality and the timeliness of their submission. However, he added that he was certain there are many other cost reduction actions which have taken place but have not been reported. Butler suggested that the division cost reduction monitors motivate constant cost attentiveness throughout their respective organizations and take prompt and appropriate action on cost reduction ideas which are generated.

A goal of $8,000,000 has been allocated to Langley as its share of the total NASA cost reduction effort for fiscal year 1967. This goal has been reallocated by the Center's cost reduction committee to the divisions and project offices.

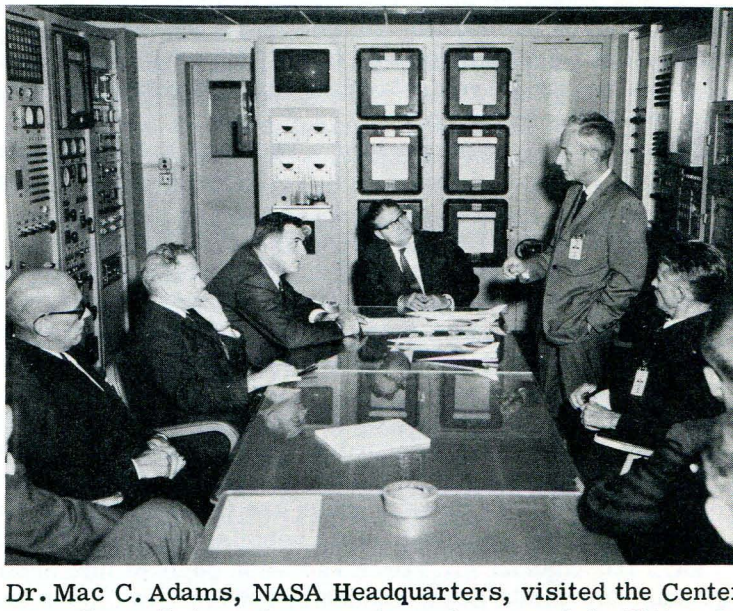
NASA TOUCH FOOTBALL LEAGUE

The Boozers clinched the NASA Touch Football League Championship with two games remaining. Misfits suffered losses to both the Boozers and KNADS. The scores were: Boozers 21 - Misfits 0; KNADS 18 - Packers 6; Bombers 26 - Sixty-Niners 19; Boozers 42 - Sixty-Niners 20; KNADS 32 - Misfits 13, and Bombers 20 Packers 12.

WANTED: Driving combination or ride from Huntington Court Apts. to W.A. on 8 shift. Turner, 245-7875.

UNITED FUND STANDINGS

Office of Director	100	$ 3,084.00
Research Reports	98	1,172.00
Flight Reentry Programs	100	493.50
Lunar Orbiter Project	98.3	1,782.50
MORL Studies	100	205.00
Scout Project	100	669.00
AMPD	93.4	4,941.00
ACD	95.2	2,696.50
Flight Instrumentation	86.2	3,417.10
Instrument Research	94.8	3,320.90
Space Mechanics	94.9	2,662.40
Dynamic Loads	99.3	4,933.90
Structures Research	95.3	3,905.31
Aero-Physics	93	3,987.50
FMTD	90.8	2,896.00
Full-Scale Research	94	4,639.50
Off., Eng. and Tech. Services	100	1,166.00
Electrical Systems	96.2	2,412.25
FVSD	93.9	2,811.00
Mechanical Services	93.8	7,636.40
Plant Maintenance	100	1,049.00
RMFD	98.3	2,898.25
Off., Asst. Director for Adm.	100	814.75
Administrative Services	100	962.50
Fiscal Division	99	1,601.50
Personnel Division	100	775.00
Photographic Division	96.3	673.00
Procurement Division	99.4	1,633.70
Co-op Students and Anonymous		195.00
TOTAL - LRC Employees	95.1	$69,434.46
Plant Representatives		941.00
Service Contractors		1,419.50
GRAND TOTAL		$71,794.96



Dr. Mac C. Adams, NASA Headquarters, visited the Center recently and toured a number of research facilities. In the above photograph John V. Becker, Chief of Aero-Physics Division, talks about hypersonic cruise aircraft. Shown in the photograph are (from left): Robert W. Boswinkle, Charles J. Donlan, Associate Director; Dr. Adams, Dr. John E. Duberg, Assistant Director; Becker, and Dr. Floyd L. Thompson, Director.

VACUUM SOCIETY TO HEAR BRYANT

Dr. Paul J. Bryant

Dr. Paul J. Bryant will address the Mid-Atlantic States Section of the American Vacuum Society at a dinner-meeting on November 16 in the Peninsula Room of the Holiday Inn. Dr. Bryant will discuss "Partial Pressure Analysis of Vacuum Systems."

Dr. Bryant is the principal physicist of the Mathematics and Physics Division, Midwest Research Institute, Kansas City, Missouri. He received his B.S. degree in Physics from Rockhurst College and his M.S. and Ph.D. degrees in Physics from St. Louis University before joining the MRI staff in 1958. His principle efforts have been the study of phenomena which occur under the vacuum and temperature environments of space. His current work centers around clean surfaces and includes cold welding of metals, dry film lubrication, and physical absorption of gases at low temperatures.

Dr. Bryant is the author of numerous publications and papers. He is a member of the American Physical Society, Sigma Xi Research Society and a Director of the American Vacuum Society. He is also chairman of that organization's membership and education committees.

A social hour will start at 6 p.m., followed by dinner at 7 and the meeting at 8. Reservations for the dinner-meeting may be made with P. R. Yeager, 4766.

MERCER RECEIVES AWARD

Gordon Mercer, Research Staff Office, attended the annual meeting of the Arthritis Foundation on October 25 in Washington, D. C. At a luncheon honoring volunteers, Mercer was presented the Foundation's Distinguished Service Award.

Mercer organized the Peninsula Branch of the Virginia-West Virginia Chapter of the Arthritis Foundation and was recently reelected for the fourth year as Chairman of the Board. He has served as a board member of the Virginia-West Virginia Chapter for three years and was recently elected vice-president of the Board. He also serves as chairman of the fund-raising committee. Mercer has served on the National Board of Governors of the Arthritis Foundation for the past two years.

GEMINI LAUNCH SCHEDULED

(Continued from page 1)

period, beginning about 20 hours and 30 minutes into the flight. Aldrin will stand in the open hatch and conduct a series of day and night photographic experiments.

The second extravehicular activity, about one hour and 45 minutes in duration, will begin about 43 hours into the mission. Aldrin will hook the Agena tether to the spacecraft docking bar and will carry out basic work tasks in the Agena target docking adapter (TDA) area and in the spacecraft equipment adapter section.

Retrofire will occur about 94 hours into the flight. Gemini 12 will splash down in the West Atlantic some 94 hours and 30 minutes after liftoff.

Zeno Klinker (left), comedy writer for Charlie McCarthy and Edgar Bergen for the past 24 years, will be guest speaker at the meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on November 19 at the Activities Building.

AIAA TO HEAR ZENO KLINKER

Zeno Klinker, one of Hollywood's top comedy writers, will be the featured attraction at the meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on Saturday, November 19 at the Activities Building.

"Higher'n A Kite," a motion picture showing the funny side of man's conquest of air and space, will be shown with a hilarious running commentary by Klinker.

Klinker, who still flies his own plane, started flying in his middle teens and later became an aerial motion picture cameraman during the early barnstorming and stunting days of aviation. This led to his starting his world-famous collection of rare and amusing historical aviation movies from all over the world, which includes every funny happening from the Wrights to rockets.

He is now in his 24th year with Edgar Bergen, still writing the jokes for Charlie McCarthy, Mortimer Snerd and for the other dummy who was named after Klinker - Effie Klinker.

A social hour will be held at 6:30 p.m., followed by dinner at 7:30 and the movie at 8:30. Only reservations for members will be accepted prior to November 11. Because of the large response expected for this program, members are advised to make reservations early. For reservations call Tom Foughner, 722-1587; Bob Keynton, 826-5549; George Jones, 898-5760, or Ron Greenwood 853-4851 in Norfolk.

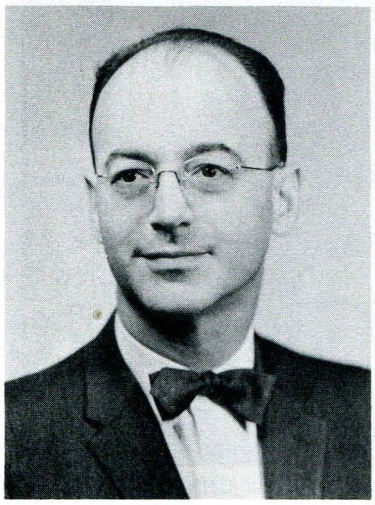
VARC OFFICIALS TO VISIT CENTER

Dr. William H. McFarlane, Director of Virginia Associated Research Center, and other VARC representatives, will meet with NASA personnel interested in resident courses at VARC for the next term on November 9 at 10 a.m. in the East Projection Room, Building 587.

VARC officials feel that it would be desirable for qualified employees to register at this time and to indicate their specific course interest. A deadline of December 15 has been set for VARC registration.

All interested staff members are invited to attend the meeting.

IEEE GROUP MEETS NOVEMBER 17



Ernst M. Cohn

Ernst M. Cohn, Head of Electrochemical Systems, Solar and Chemical Power Systems, Office of Advanced Research and Technology, NASA Headquarters, will be guest speaker at a meeting of the Hampton Roads Section of the Institute of Electrical and Electronic Engineers on November 17 at the Holiday Inn, Hampton.

Cohn will speak on "Fuel Cell Systems."

Cohn received his B.S. and M.S. degrees in Chemistry from the University of Pittsburgh. Before joining the NASA staff in 1962, he worked a number of years for the Bureau of Mines, Interior Department, and the Army Research Office. He served in the U.S. Army from 1944 to 1946. During his military service he was head of the translation team for the Nurnberg Trials.

His specific fields of research interest include spark ignition of gases, coal, flame photometry, magnetochemistry, catalysis, interstitial alloys, electrochemistry, energy storage and conversion.

The meeting will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. It is requested that reservations be made with Frank Senft, 3461, by noon on November 15.

EMPLOYEE-MANAGEMENT COOPERATION

In the interest of the effective and efficient operation of the Center and of equitable treatment for employees, Langley Research Center recognizes the right of civilian employees to form, join, and assist any employee organizations, or to refrain from any such activity, and to exercise these rights freely and without fear of penalty or reprisal.

This right extends to participation in the management of the employee organization and to acting as an employee organization representative except where such activity would result in a conflict of interest with the official duties of the employee. All Center officials and supervisors are required by Executive Order 10988 to maintain strict neutrality towards the question of whether employees should or should not join employee organizations.

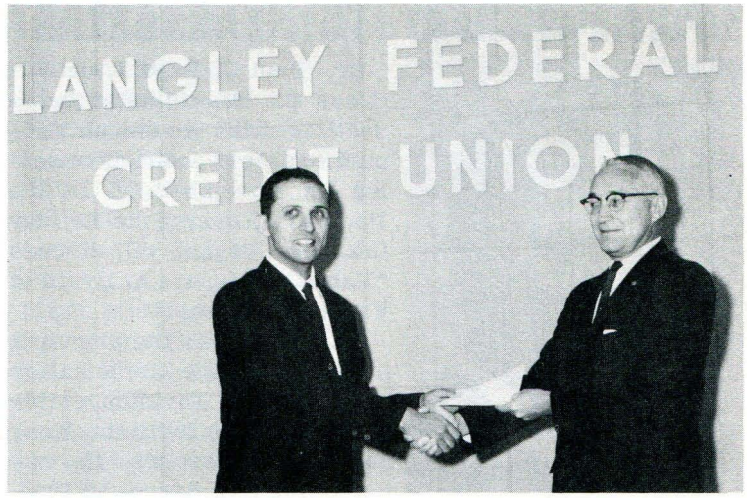
While the Executive Order established the rights of employees to form or join employee organizations for the purpose of dealing with management collectively, it also specifically prohibits the use of official duty time for solicitation of membership, dues, and the conduct of internal employee organization business. Such activities must be conducted only during non-duty hours such as lunch period.

FOR SALE: 6-room, 2-story house in Indian River Park. Watkins, PA 2-7304 or 130 Pocahontas Place.

WANTED: Fifth driver from Beechwood or Windsor Great Pk. to E.A. on 8 shift. White, 2681.

WANTED: Home for kittens. Conway, 826-7730.

FOR SALE: 17-1/4-foot boat hull, can be completed for cabin cruiser. Kelly, 596-1829.



Robert Miserentino (left), Structures Research Division, was the lucky winner of the door prize at the dedication of the Credit Union's new building. Robert L. Girouard, President, presents the $50 U.S. Savings Bond.

DO-IT-YOURSELF LIBRARY SEARCH

The Langley Research Center is participating in an operational test of an automated library search system that could well be the prototype of future information retrieval devices.

Under contract to NASA, NASA/RECON (Remote Console) has been developed by the Bunker-Ramo Corporation of Canoga Park, California, to simplify document searches requested by scientists and engineers. RECON consists of a central computer in New York containing document citations (title, author, source, subjects, etc.) for hundreds of thousands of documents, and capable of searching the complete file and displaying the citations of relevant documents while your wait, frequently within seconds. The user at Langley sits at a small desk-top typewriter-console and interrogates the computer by typing the subject terms, author's name, or other information that identifies the documents sought.

The computer's data, which appear on the console's cathode ray tube screen, consists of a series of displays that help the searcher select the subject terms for his search, present cross-references for his consideration, and tell him the number of documents isolated by his search. Finally, at the searcher's request, the device displays each selected citation in turn. To order a document the user pushes a special key on his keyboard which prints his request, his name, and his mail stop on a printer in the Langley library.

During RECON's operation here Bunker-Ramo engineers and NASA librarians will evaluate the system by conducting a survey of its usefulness among those who use the device. In addition, the user statistics which the device automatically accumulates will be analyzed. RECON has been installed in building 1268, 1247-A, 1244 (Library), 1232, 1230, 1229, and 1148. An additional installation is pending for building 587. The system will be connected every working day until 3:30 p.m. No special permission is required to use it. Further information is available in the library.

WANTED: Boy's 20-inch bicycle. Ezell, 723-1168.

WANTED: Driving combination from Fairfield area to W.A. on 8 shift. Hamilton, 4879.

A number of staff members received individual or grou
awards at the Annual Awards Ceremony held recently a
the Center. Upper left - Dr. Floyd L. Thompson, Director
presents a Special Service Award for Exceptional Servic
to Charles R. Manning Jr. Upper right - Receiving a join
Special Service Award for Achievement were (from left)
William K. Hagginbothom, Charles B. King, Clyde Thiele

and contributions award. Center photo - William H. Kinar received a $1200 award for his invention. Center right Robert L. Swain shared a $1000 award with Carl M. Style and Joseph G. Thibodaux. Lower left - John C. McFall ar Ray W. Lovelady shared a $ 500 inventions award. Lowe right - Sharing a $1200 inventions award were Augustir W. Robins, Francis E. McLean, Roy V. Harris Jr., ar Harry W. Carlson. Twenty-four staff members also re

KOCK RESIGNS AS ERC DIRECTOR; ELMS NAMED TO NEW POSITION

Dr. Winston E. Kock, first Director of NASA's Electronics Research Center at Cambridge, Mass., has resigned to return to private industry.

James C. Elms, Deputy Associate Administrator for Manned Space Flight, has been named Director by Administrator James E. Webb.

Dr. Kock has been the ERC Director since the Center was formally established September 1, 1964 to pioneer work in space and aeronautical electronics. Previously he was Vice-President of Research for the Bendix Corporation, Detroit. He returns to Bendix as Vice-President and Chief Scientist and will serve as a member of the Administration Committee.

Elms joined NASA September 1, 1965 as the Deputy Associate Administrator for Manned Space Flight. Previous to this appointment, he was Vice-President and General Manager of the Space and Information Systems Division, Raytheon Company, Sudbury, Mass. Before his association with Raytheon he was the Deputy Director of the Manned Spacecraft Center from February 1963 to March 1964, charged with responsibility for general management of the Center.

He has served in key management roles at North American Aviation in the development of fire control and radar bombing systems and at the Denver Division of the Martin Company on the Titan I missile. Later, he was Executive Vice-President of the Crosley Division of Avco, and after his position with Avco, he was the Director of Space and Electronics for the Ford Motor Company's Aeronutronic Division.

Elms was born May 16, 1916 in East Orange, New Jersey. He received his B.S. degree in Physics from the California Institute of Technology and his M.A. degree in Physics from the University of California at Los Angeles, where he was a member of the faculty as a research associate in the Institute of Geophysics.

He served in the Air Force during World War II. At the time of his discharge he was head of the Guided Missile Unit of the Armament Laboratory.

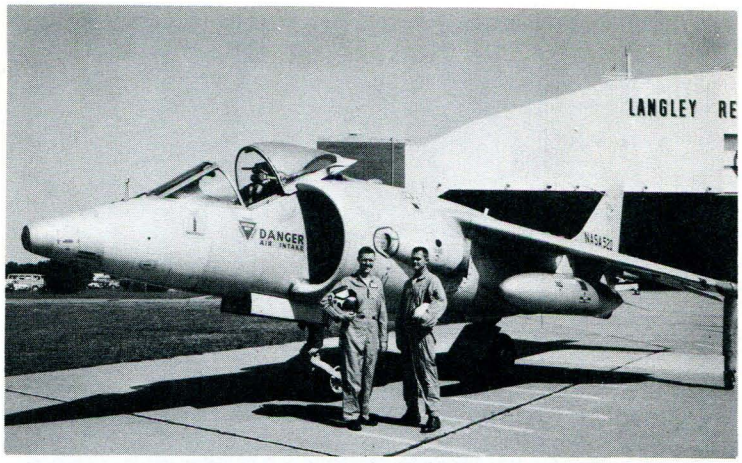
Dr. Kock is returning to private industry after guiding the Electronics Research Center through its formative years. Under his direction, the Center has grown from a cadre of 70 persons to a research and administrative staff of 550 including 76 scientists with doctorate degrees.

He has developed an electronics research program which to date has committed over $8 million in research contracts and grants to the nation's industries and universities. In addition, Dr. Kock has guided the design and construction plans for the $60 million permanent site of the Center in Kendall Square, Cambridge.

Groundbreaking for the first phase in construction of the permanent site is scheduled in the fall. This first phase will include a 26-story tower building, a 3-story microwave laboratory and a 3-story auditorium-cafeteria building.

WANTED: Girl's 26 or 28-inch bicycle. McGehee, 596-4527.

FOR SALE: 1963 Ford Fairlane 500, 2-door, automatic transmission. Gardner, 723-3978 after 7 p.m.



A general research project to accumulate technology through flights of a P-1127 airplane is being conducted by Langley Research Center. Shown with the jet aircraft are pilots Robert A. Champine (left) and Lee H. Person.

LANGLEY CONDUCTING FLIGHT TESTS ON P-1127 AIRPLANES

A general research project to accumulate technology through flights of a P-1127 airplane is being conducted by Langley Research Center.

The jet aircraft, manufactured by Hawker Siddeley of England, has vertical and short takeoff and landing characteristics. It is powered by a vectored-thrust turbofan engine.

Two aircraft have been delivered to Flight Mechanics and Technology Division, headed by Philip Donely. One will be used to provide replacement parts for the other which will be operated in a pioneering research program conducted by Langley scientists and research pilots.

The Langley V/STOL research program will include a study of the power management problems related to the vectored-thrust lift and propulsion system.

Langley P-1127 pilots will investigate flying characteristics and develop techniques and procedures for landing and takeoff under instrument conditions with minimum use of fuel. Cockpit displays, various approach patterns, and landing aids for terminal operation will be evaluated.

Operational experience related to jet V/STOL terminal area instrument flights obtained with the P-1127 will be invaluable in determining some of the design requirements for future aircraft capable of vertical and short takeoff and landing, and in orienting the overall NASA V/STOL program toward other research areas which need studying.

Pilots for the P-1127 V/STOL flight study are Robert A. Champine, head of the Pilots Section, and Lee H. Person Jr., a research pilot.

Champine, a native of St. Paul, Minnesota, was graduated from the University of Minnesota with the Bachelor of Science degree in Aeronautical Engineering in 1942. He served as a Navy pilot before joining the Langley staff in 1947.

Person, born in Baton Rouge, Louisiana, was a pilot in the Marine Corps. He received his Bachelor of Science degree in Mechanical Engineering from North Carolina State College in 1961. He started his research career at Langley in 1962.

FOR SALE: Gresch field drum - $30. Voros, 877-3050.

Thomas T. Bales

Johnny E. Jordan

W. Barry Lisagor

Robert E. Little

Charles R. Manning, Jr.

SEVEN RECEIVE CASH AWARDS

Seven staff members have received letters of commendation and cash awards from the Langley Incentive Awards Committee for sustained superior performance.

Receiving the awards were: Thomas T. Bales, Structures Research; Johnny E. Jordan, Instrument Research; W. Barry Lisagor, Structures Research; Robert E. Little, Head of Fabrication Shop Section, Mechanical Services; Charles R. Manning Jr., Structures Research; Marion B. Seyffert, Assistant Chief, Mechanical Services, and Lamar E. Williams, Instrument Research.

The citations read as follows:

Bales - "For high quality work and superior performance in the development of glass-bead shot peening technology for alleviation of stress corrosion cracking of Apollo oxidizer tanks."

Jordan - "For outstanding efforts in effectively applying electro-optical techniques in the solution of a variety of ground facility instrumentation problems."

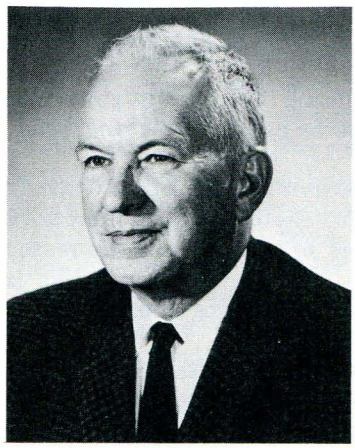
Lisagor - "For high quality work and excellent performance as a research engineer on a study of stress corrosion of titanium alloys in nitrogen tetroxide and the alleviation of stress corrosion cracking in Apollo oxidizer tanks."

Little - "For highly significant contributions in the development of the structural elements, fabrication technology, the selection of materials, and operating procedures required in the fabrication of a machine utilizing the glass bead peening process that alleviated stress corrosion cracking of oxidizer tanks for the Apollo propulsion system."

Manning - "For high quality and quantity work and excellent organizational and leadership abilities demonstrated as project engineer on a study of stress corrosion of titanium alloys in nitrogen tetroxide and the alleviation of stress corrosion cracking in Apollo oxidizer tanks."

Seyffert - "For outstanding performance in providing the sustained impetus and the conception of the various unique approaches and the integration and management of the technologies used in determining the structural and mechanical elements and the electrical and instrumentation systems necessary for the development and the subsequent operation of a machine to provide the glass bead peening process used in alleviating stress corrosion cracking of the nitrogen tetroxide tanks of the Apollo propulsion system."

Williams - "For outstanding performance during the evaluation and acceptance of a 150 kv accelerator."


Marion B. Seyffert

Lamar E. Williams

WHAT IS A CARELESS DRIVER?

A careless driver is many things. He is a combination of iron nerves and complete irresponsibility, a child's mind in control of a powerful machine. He is speed with a loud muffler, recklessness with worn tires, misguiding a steel missile capable of bringing destruction on the innocent, the guilty and the indifferent alike. Generally he looks at his driving from the point of view that "it can't happen to me," but in the end it usually does.

Truly he is a criminal but one that everyone can fight. A seat belt fastened before a trip to the store could well save another trip - to the hospital. Prudence with pedals could save thousands of lives each year. An extra minute taken to check can be 60 seconds between life and death. The average person can control careless driving by controlling himself. Yes, a careless driver can be many things but most important of all he can be beaten.

FOR SALE: 1962 Mercury Monterey custom coupe - $800. Richards, 723-5427 after 5.

WANTED: Ride or driving combination from Dutch Village Apts. to W.A. on 8 shift. Holt, 4851.

FOR SALE: 1966 Ford Galaxie 500 convertible. Williams, 723-5074 after 5 p.m.

FOR SALE: 1956 Plymouth - $150, Woolley, 118 Eggleston Ave., Hampton.

FOR SALE: 20-foot cabin cruiser, 50 hp Johnson motor, trailer, fully equipped with convertible top, life jackets, ski equipment - $900. Kinard, Williamsburg 229-2601.

FOR SALE: 1964 Ford Galaxie 500 convertible - $1495. Pross, 596-6417.

FOR SALE: 1964 Volkswagon - $1175. Raul, 723-1821.

COUNTDOWN

Tomorrow the Activities Association will sponsor its annual Turkey Shoot. Matches will be held from 9 a.m. until 5 p.m. at the Activities Building. No admission will be charged other than a nominal fee for each shot. Contestants must furnish their own fire arms but the Association will supply the ammunition. All ammunition will be handled by the person in charge of ammunition and all matches will be conducted under the supervision of the range safety officer. Sandwiches and other refreshment will be available for lunch.

Plans are underway for the Association's annual Children's Christmas Party. The event will be held December 4 in the Activities Building. Further information will be announced later.

Persons interested in organizing or taking part in a square dance club are requested to contact Marvin Leffel, 4766.

The Neptunes meet the Brooklyn Dodgers in a football game November 13 at the Norfolk Stadium. Staff members interested in attending the game in a group are requested to contact Bob Huffman, 3511, or J. A. Siefring, 3483. If enough people are interested, final arrangements will be made.

Response has been good for the Girl's Basketball League. The league already has two complete teams. Other teams or individuals interested in playing are requested to contact Sharon Haythorn, 4861.

Results are in from the NASA Blind Bogie Golf Tournament held October 21 at the Langley Golf Course. Bernard Garrett took first low net, Walter Olstad took second low net, and Bill Lassiter won low gross. Blind bogie winners were J. B. Whitten, J. W. Paulson, Jim Jones, I. Weinstein, R. Leatherman, P. M. Lovell, E. Lawrence, Bruce Dunn, Bob Turner, K. F. Test, D. Westervelt, and Tom Bonner.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
OCTOBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	DECEMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1	2	3	4	5 Turkey Shoot
6	7 Dept. Meeting	8 Bridge Club Model Club	9 IRD Section Party	10	11 Veterans Day VETERAN'S DAY	12
13	14	15 Bridge Club	16 Official Function	17 Payday Game Night	18 Maintenance Party	19 Official Function
20 Bridge Tournament	21	22 Bridge Club	23	24 Thanksgiving THANKSGIVING	25	26
27	28	29 Bridge Club	30 Official Function			

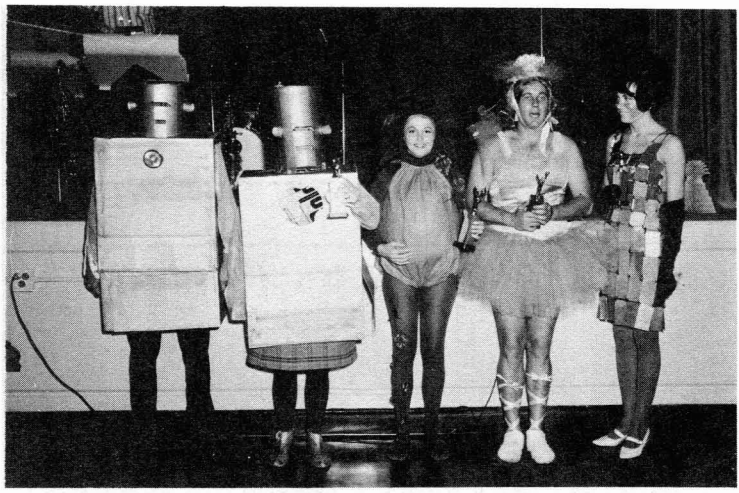
1966 NOVEMBER 1966

WANTED: Driving combination from Southampton to E.A. on 8 shift. Rau, 2254.

FOR SALE: Lady's bowling shoes, size 9-1/2, worn once, $5. Mueller, 898-5406.

WANTED: Alternate driver from Dutch Village Apts. to W.A. on 8 shift. Cooper, 4860.

WANTED: Alternate driver from Jefferson East to E.A. on 8 shift. Duncan, 2661.



Winners at the Activities Association's Halloween Costume Ball were (from left): Ralph Muraca, Nancy Muraca, Dorothy Snyder, Bob Lewis, and Pauline Leiss.

PROFESSORS TO VISIT CENTER

Dr. John E. Cell, Head of the Department of Mathematics, North Carolina State University, will visit the Center on November 15 to give advice and assistance to professional employees engaged in graduate or prospective graduate study. Those desiring an appointment may call the Training Office, telephone 2611.

Dr. E. E. Burniston will present a lecture entitled "On Asymptotic Methods in the Theory of Thin Elastic Plates" on November 15 at 10 a.m. in the East Projection Room, Building 587. He gave a brief presentation of this material as a part of the meeting of the Society of Engineering Science which was held at N. C. State University this week.

Dr. Burniston received his Ph.D. degree in Applied Mathematics from the University of London. He is in this country on an immigrant visa and joined the staff at N.C. State a year ago.

Interested staff members are invited to attend the lecture.

The Department of Biometry at the Medical College of Virginia is re-establishing its M.S. and Ph.D. programs in September 1967. Dr. Kenneth Mullen, Assistant Professor, will talk with interested staff members at 10 a.m. on November 17 in the East Projection Room, Building 587.

Dr. Mullen stated that he is primarily interested in attracting graduate students who have a strong background in mathematics and an interest in applying mathematical and statistical techniques to biological medical problems.

Dr. James B. Eades Jr., Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, and Dr. Fred R. DeJarnette, a member of his staff, will visit the Center on November 17 to give advice and assistance to professional employees engaged in graduate or prospective graduate studies with regard to programs of study, course content, research and dissertation problems, consultations with professional staff, and to conduct seminars as needed.

Interested staff members may call Training Office, 2611, for an appointment.

FOR SALE: 18-foot Hampton 1-Design sailboat - $775, also 18-foot rowboat - $100. Mrs. Gilman, 722-5847.

WANTED: Passengers from Stuart Gardens or Boulevard area to W.A. on 8 shift. Schmidt, 245-1714.

Langley Researcher

VOLUME 5, NUMBER 23 LANGLEY RESEARCH CENTER NOVEMBER 18, 1966

HUGH L. DRYDEN MEMORIAL FUND ESTABLISHED TO BUILD AUDITORIUM

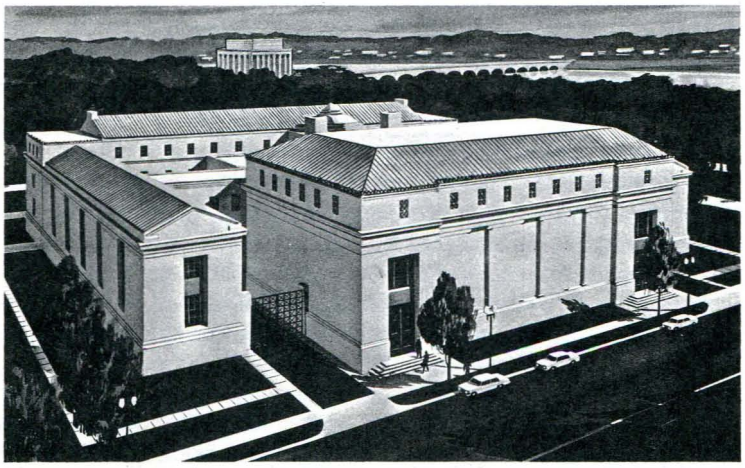
The National Academy of Sciences has initiated an effort to construct a 700-seat, $2 million auditorium as a memorial to Dr. Hugh L. Dryden, former Director of the National Advisory Committee for Aeronautics and, prior to his death last December, Deputy Administrator for the NASA.

The auditorium will be a part of the academy's main building on Constitution Avenue in Washington, D.C., and will be financed by the Hugh L. Dryden Memorial Fund. NASA officials are supporting this drive and have made arrangements for NASA employees to contribute on a voluntary basis.

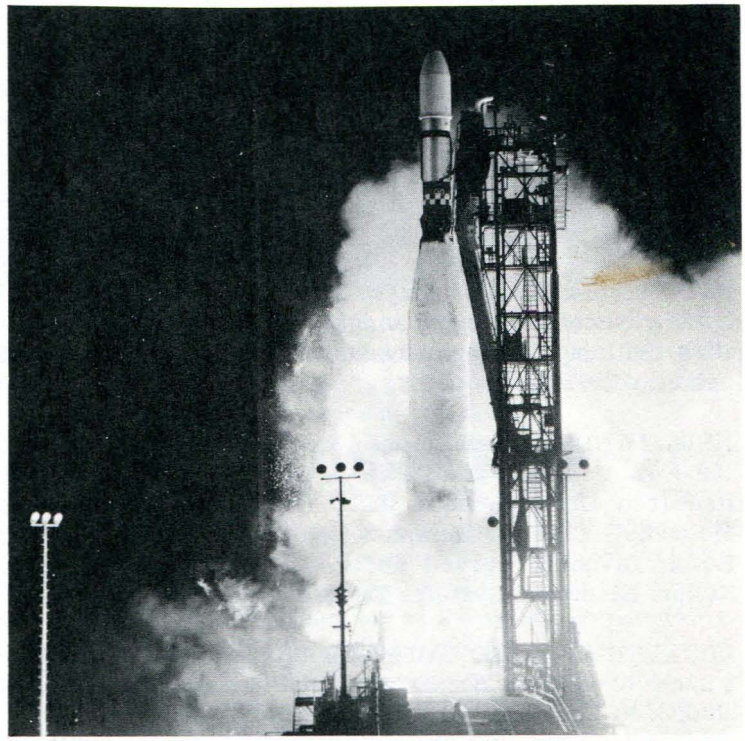
Recognized as an outstanding scientist who gave so much of his life to government and excellence in government, Dr. Dryden played a uniquely important role in the development of science-based technology in the United States. During a lifetime of national service, he employed his remarkable personal gifts as fundamental scientist, engineer, and public administrator. He served as Director of the National Advisory Committee for Aeronautics and was a principal architect of the legislation that created NASA.

James E. Webb, NASA Administrator, expressed his admiration of his associate with the following statement: "Dr. Hugh L. Dryden was a man of his time - of the air age, of the nuclear age, of the space age, with all the implications of modern science and technology for the accomplishments of his time. He was also a man for all times because his courage in undertaking the conquest of air and space, his scientific, engineering and administrative competence, and

(Continued on page 3)



Shown above is an artist's sketch of the proposed Hugh L. Dryden Memorial Auditorium, looking south toward Lincoln Memorial. The drive to construct the 700-seat, $2 million auditorium was initiated by the National Academy of Sciences.



An Atlas-Agena D vehicle launched the 850-pound Lunar Orbiter B from Cape Kennedy on November 2. Orbiter B is the second in a series of five photographic laboratory spacecraft to orbit the Moon. The project is managed by Langley Research Center.

SECOND LUNAR ORBITER LAUNCHED SUCCESSFULLY FROM CAPE KENNEDY

Lunar Orbiter B, the second in a series of five photographic laboratory spacecraft to orbit the Moon, was launched from Cape Kennedy on November 6.

The Lunar Orbiter spacecraft are flown to continue the efforts of Ranger and Surveyor to acquire knowledge of the Moon's surface to support the Apollo manned lunar landing program and to enlarge scientific understanding of the Moon.

The 850-pound Orbiter was launched by an Atlas-Agena D vehicle on a flight to the vicinity of the Moon. The basic task of Lunar Orbiter B is to expand the findings of Lunar Orbiter I by obtaining detailed photographic information on various areas on the Moon's surface to assess their suitability as landing sites for Apollo and Surveyor spacecraft.

Orbiter B has been assigned 13 primary target sites, located generally within the northern half of the Apollo zone of interest on the Moon's front face. Other areas of the Moon on both the front and hidden sides may also be photographed.

This spacecraft also will attempt to photograph the impact point of Ranger VIII although, unlike Lunar Orbiter I,

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

SKYWATCHERS. . .The Skywatchers Astronomy Club will hold a business meeting tonight at 7 o'clock in the Activities Building. All members and other interested persons are urged to attend.

NEWLYWEDS. . .Wedding bells rang on November 12 when Nancy K. McKenzie and David L. Gray, both of Instrument Research Division, took their final vows at Aldersgate Methodist Church, Hampton. Judy Pettigrew, Dynamic Loads Division, served as a bridesmaid and Ronald C. Kibler, Electrical Systems Division was a groomsman.

DECALS REQUIRED. . .All automobiles entering NASA Gate 5 must have NASA decals. Cars not having decals may be stopped and required to enter through another gate.

VU-GRAPH FORMS. . .Vu-graph and Slide Forms are now a Stockroom item and should be drawn from there instead of from the Technical Illustrating Section. The forms may be drawn in package lots and the numbers are: 7530-F19-1215, 7530-F19-1216, and 7530-F19-1217.

ILLEGAL PARKING. . .Personal automobiles have been observed parked in front of or near many of the Dempster Dumpster trash containers so as to interfere with the pickup of the containers for trash removal. It is important that the area immediately adjacent to these containers be kept clear so that the pickup vehicle can maneuver safely. In the interest of safety and operating efficiency, all staff members are urged to cooperate.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of November 21:

Monday - Chicken-noodle soup, chicken and dumplings, smoked pork sausage, stuffed pepper, western omelette.

Tuesday - Beef-barley soup, roast beef, grilled slice of ham, fried flounder, macaroni and wieners.

Wednesday - Thanksgiving dinner - 70¢ - chilled cranberry juice, waldorf salad, roast turkey, baked ham, dressing, cranberry sauce, giblet gravy, whipped potatoes, candied yams, buttered peas, hot rolls, butter, pumpkin or mince pie, coffee or tea. Note: The above items will be served as a dinner and the full price will be charged for all modified servings. Milk will be available at the usual prices. Chili con carne (25¢) will be available for persons who do not desire the dinner; however, in the West Cafeteria this item will be only at the Snack Bar.

Thursday - H O L I D A Y

Friday - Clam chowder, grilled steak, stuffed flounder, chicken chow mein, Spanish omelette.

The menu for the week of November 28 is as follows:

Monday - Cream of potato soup, pot roast of beef, grilled pork chops, ham and noodle casserole, fish cakes.

Tuesday - Cream of tomato soup, simmered corned beef, breaded veal steak, liver and onions, baked hash.

Wednesday - Chicken-rice soup, chopped steak, roast pork, fried chicken, grilled luncheon meat.

Thursday - Vegetable-beef soup, grilled steak, spaghetti and meat balls, sauteed chicken livers over rice, franks and beans.

Friday - Clam chowder, roast beef, fried oysters, broiled perch, Austrian ravioli.

A team of over 50 employees at the Langley Research Center have been working on the NASA-FAA Supersonic Transport Evaluation program since early September. Members of the team are front row (from left): Martin T. Moul, John T. Peterson, Alexander D. Hammond, Vito Tamburello, Virginia M. Finch, Rita L. Powell, Linda F. Nelson, Dorothy T. Howell, Josephine W. Grow, C. Sue Richardson, Betty T. Sheets and Nellie S. Medaris. Second row - Roy V. Harris, Odell A. Morris, William B. Kemp, George E. Cooper, Adrien E. Anderson, Timothy P. Sweeney, Vincent R. Mascitti, Milton Lamb, Philip M. Edge, Lowell E. Hasel, James W. Schmeer, Elmor J. Atkins and Jack F. Runckel. Third row - Cornelius Driver, Jimmy M. Cawthorn, Albert W. Hall, Roland N. Bell, Arvid L. Keith, Robert E. Shanks, Russell B. Sorrells, Wallace C. Sawyer, Robert J. Woodcock, Carl Jacobson, Robert L. Paullin, Donald D. Baals and Leonard E. Stitt. Fourth row - Robert L. Weirich, Charlie M. Jackson, Mark W. Kelly, K. R. Czarnecki, Barritt L. Shrout, Willard E. Foss, Maurice D. White, F. Edward McLean, Melvin M. Carmel, Robert J. Mack, M. Leroy Spearman, A. Warner Robins, Oscar M. Singleton, Edward J. Hopkins, Albert J. Murn, Davis S. Shaw and Wayne W. O'Connor. The evaluation program was completed this month.

NASA TOUCH FOOTBALL LEAGUE

During the last two weeks of play in the NASA Touch Football League, KNADS upset Boozers 13-0. Other scores were as follows: KNADS 38 - Sixty-Niners 7, Misfits 38 - Packers 27, Boozers 25 Bombers 7, Packers 32 - Sixty-Niners 0, Misfits 40 - Bombers 6.

Boozers	9	1	Bombers	5	5
Misfits	7	3	Packers	1	9
KNADS	7	3	Sixty-Niners	1	9

STAFF COMMENDED FOR FUND EFFORT

Dr. Floyd L. Thompson, Director, recently received the following letter of appreciation from William T. Roos, Chairman of the Peninsula United Fund Campaign:

"On behalf of all the citizens of our Peninsula, I would like to commend Robert W. Boswinkle, Jr. for the outstanding United Fund campaign that was conducted at the Langley Research Center this year. As I am sure you know, the Langley Research Center was the first organization of any size to exceed its assigned goal in the campaign. I am sure this would not have been possible without the personal support of you and the hard work and organizational ability of Mr. Boswinkle and his two vice-chairmen, James Hamilton and Powell M. Lovell, Jr. These men are certainly worthy of the highest commendation our community can give.

"Naturally, it goes without saying, that everybody connected with the Langley Research Center is to be congratulated for their understanding of the problem and their generosity in sharing their good fortune, as gainfully employed individuals, with others perhaps less fortunate than they. The results attained in your United Fund campaign should set an example for the rest of us in this community for many years to come."

SECOND ORBITER LAUNCHED

(Continued from page 1)

it will not have the Surveyor I landing site as a target.

The photographic flight plan is an ambitious one and assumes that all spacecraft systems, ground support systems, and the operations team will be able to operate at maximum efficiency. Covering the 13 primary sites requires photography on a great many of the orbits; thus there will be fewer priority readouts - the radioing back to Earth of pictures between picture-taking sessions - than on Lunar Orbiter I. In addition, the full photographic flight plan requires about 40 photographic maneuvers by Orbiter B where only 11 were required for the Lunar Orbiter I photographic flight plan.

In addition to its photographic task, Orbiter B will monitor micrometeoroids and radiation intensity in the vicinity of the Moon. After more than two months in orbit, Orbiter I had not experienced any micrometeoroid punctures in its detecting instruments. Its radiation counters clearly reflected the effects of a series of solar flares which took place after its photography was complete.

Both micrometeoroid and radiation measurements are used primarily for spacecraft performance analysis since the hermetically-sealed camera package potentially could suffer damage from a micrometeoroid hit or from space radiation.

Orbiter B like Orbiter I will add to and refine the definition of the Moon's gravitational field.

At launch time Orbiter B was scheduled to begin photography today and to take its final picture November 25. All photographs will be transmitted to NASA Deep Space Network stations after site photography is finished. They will be received in reverse order from which the pictures were taken. Orbiter B is scheduled to complete final picture transmission on December 13.

The Lunar Orbiter program is directed by NASA's Office of Space Science and Applications. The project is managed by Langley Research Center.

Visitors to the NASA exhibit at the recent Newport News Office of Economic Opportunity Job Opportunity Fair discuss employment opportunities with Lawrence Brown (center) of the Langley Research Center.

JOB OPPORTUNITY FAIR HELD

Langley Research Center was a participant in the First Annual Job Opportunity Fair sponsored by the Newport News Office of Economic Opportunity, November 11-13 at the Newport News Armory. The exhibit provided by Langley covered pictorially a number of the research programs currently underway at the Center and showed a number of staff personnel in their normal working environment.

The fair, supported by a number of industrial firms, government, and educational institutions, was an effort to present an up-to-date picture of job opportunities available in the Tidewater area. Representatives of each participating organization were on hand to answer questions regarding job openings, qualifications, training opportunities, etc. The educational institutions stressed the need for preparation through training to meet the qualification standards for better jobs.

An evaluation of the fair is currently being made with a view to determining its value as an annual event in the Tidewater area. Langley's participation was in keeping with its program of providing an equal opportunity for all qualified persons, without regard to race, creed, color, sex or national origin.

DRYDEN MEMORIAL FUND

(Continued from page 1)

his qualities of humanity and leadership mark him as one of the truly great men who have contributed over the years to these fields. He will be sorely missed in NASA, in the nation and, indeed, in many nations."

The period ending November 30 has been set aside to afford Langley staff members an opportunity to contribute to the Hugh L. Dryden Memorial Fund. Time and attendance clerks will furnish information kits to each employee and the envelope enclosed in the kit may be used in making contributions.

Dr. Floyd L. Thompson, Langley Director, is serving as chairman of the over-all NASA effort.

LOST: Box containing eight 35mm Kodak slides identified with name of Dr. Hill of Grumman Aircraft Co. Anyone knowing whereabouts of these slides contact Sterrett, 4401.

GEORGE O. MAGNUS DIES

George O. Magnus, retired employee, died November 2 in a local hospital after a short illness.

Magnus was born in Baltimore, Maryland. He attended Hampton High School and served his apprenticeship as a machinist and toolmaker at the Apprentice School of the Newport News Shipbuilding and Dry Dock Company from 1909 to 1912. He entered the U.S. Navy on August 2, 1917 and received his discharge as a machinist's mate on August 10, 1919. Following his discharge he returned to the Newport News Shipyard where he worked as a machinist for six years.

He joined the Center staff on May 22, 1925 as a machinist. He was appointed Assistant Shop Superintendent of the Instrument Service Shop on April 1, 1943 and promoted to superintendent of the shop on August 1, 1943. He retired on June 6, 1961 with 36 years of NASA service.

He is survived by his wife, Mrs. Cynthia Magnus, and a son, George J. Magnus, Planning Control Unit.

AIAA TO HEAR ZENO KLINKER

"Higher'n A Kite," the unbelievably absorbing motion picture, accompanied by a hilarious running commentary by Zeno Klinker, one of Hollywood's top comedy writers, will be presented at the meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on Saturday, November 19 at the Activities Building.

Zeno Klinker

"Higher'n A Kite" shows the funny side of man's conquest of air and space and includes every funny happening from the Wrights to rockets. The program is timely and informative but still funny. It has been acclaimed as the program that has everything - action, thrills, adventure, polar explorations, world travel, interesting celebrities, and surprises.

Klinker, who has been a comedy writer for Edgar Bergen for the past 24 years, has presented his hilarious show to almost every major aircraft and missile company in the U.S. and to hundreds of other groups, clubs, and organizations of all types.

The show will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the main attraction at 8:30.

WANTED: Ride from Tide Mill Farms to W.A. on 7:30 shift. Hahn, 3643.

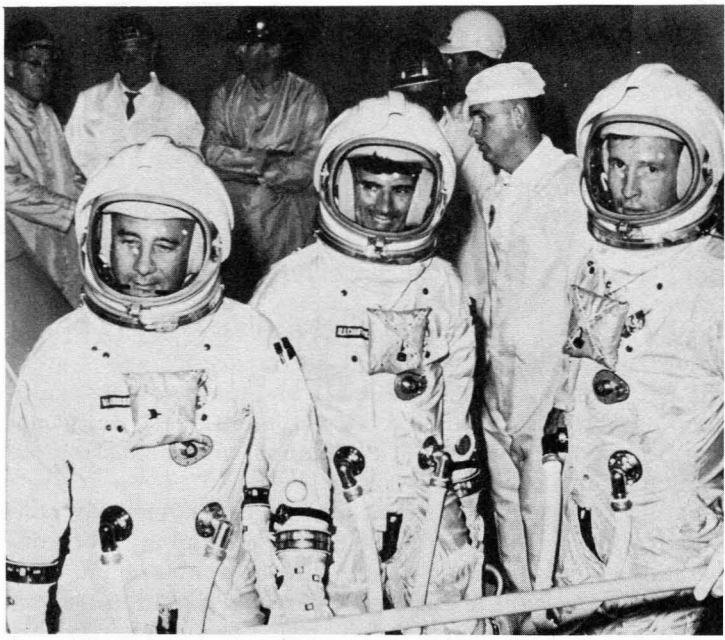
WANTED: Driving combination or ride from Edgewater area, Norfolk, to E.A. on 8 shift. Gail Day, 2524.

WANTED: Ride from Peninsula to Blacksburg on November 27. Leiss, 877-2939.

FOR SALE: Rollaway bed with inner spring mattress. Armstrong, 877-2082.

FOR SALE: 1961 Pontiac Bonneville, 4-door, air conditioned, etc. Eareckson, 722-1274.

FOR SALE: 3-bedroom house near Langley - $1200 down. Lockard, 723-4991 after 5 p.m.



Crew members for the first manned Apollo flight are (fror left): Virgil I. Grissom, Roger B. Chaffee, and Edward H White. The launch is planned for the first quarter of 1967

APOLLO LAUNCH DUE NEXT YEAR

NASA will launch the first manned Apollo spacecraft i the first quarter of 1967. The Earth orbital flight is plan ned to verify performance of the spacecraft systems an crew operations.

The three-man crew will be Virgil Grissom, comman pilot; Edward H. White, senior pilot, and Roger Chaffee pilot. Backup crew is James McDivitt, command pilot David Scott, senior pilot, and Russell Schweickart, pilot.

Although NASA manned space flight officials had planne to launch the flight late this year, it was decided to modif a unit in the spacecraft environmental control system (ECS before the flight. This will require replacement of the EC unit in the spacecraft and repeating some of the tests pre viously accomplished at the Kennedy Space Center.

The unit is a water boiler-type of heat exchanger in th command module which operates during peak heatin periods to supplement the ECS radiators, the primar cooling mechanism. It cools a water glycol solution whic is circulated throughout the spacecraft.

Evaporative cooling is accomplished by inducing a con trolled flow of water through metal pressure plates into water glycol evaporator. The unit is vented to space whic permits the space environment to evaporate water an dissipate steam.

Porous nickel pressure plates in the unit will be remove and replaced by stainless steel plates with very fine holes During recent spacecraft tests, water flow through th nickel plates was restricted, due to clogging of the porou material, and cooling efficiency was reduced. In other test of the unit, water flow was properly maintained throug the stainless steel drilled plates.

The rupture of a service module fuel tank during a pres sure test at North American Aviation, Space and Informa tion Systems Division, Downey, Cal., is under study t determine its possible impact on the Apollo spacecraft At this time, it is not know whether it will affect the space craft for the first manned flight.

Eleven employees recently received cash awards for applications that might result in the granting of patents. Top left - Edwin C. Kilgore (left), Chief of Flight Vehicles and Systems Division, presents an award to William L. Newcomb. Top center - James B. Whitten (left), Assistant Chief of Space Mechanics Division, presents awards to Kenneth R. Garren and Arthur W. Vogeley. Top right - James M. Russell III (left) receives a check from George B. Graves, Chief of Flight Instrumentation Division. Lower left - Herbert A. Wilson (right), Chief of Applied Materials and Physics Division, congratulates William H. Kinard and James H. Siviter. Lower right - Howard B. Edwards (left), Chief of Instrument Research Division, presented checks to Cary R. Spitzer, Reginald J. Exton, Dr. Stuart L. Seaton, who received two invention awards; William E. Fox, and Charles C. Laney, Jr.

ELEVEN RECEIVE CASH AWARDS

Eleven staff members recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

William H. Kinard and James H. Siviter, both of Applied Materials and Physics Division, and Charles C. Laney, Instrument Research, shared a $300 award for "Micrometeoroid Penetration Measuring Device."

Kenneth R. Garren and Arthur W. Vogeley, Space Mechanics Division, shared $100 for "Color Filter Optical Aid."

Dr. Stuart L. Seaton, Instrument Research, received a $100 award for "Method for Measuring the Characteristics of a Gas" and $50 for "Laser Calibrator."

James M. Russell, Flight Instrumentation, and William E. Fox, Instrument Research, shared $300 for "Event Recorder."

Cary R. Spitzer, Instrument Research, was awarded $300 for "Evaporant Holder and Method of Making Same."

A $500 award was given to Reginald J. Exton, Instrument Research, for "Spectrograph Alignment System."

EMPLOYEES ATTEND CONFERENCE

Sherwood L. Butler, Chief of Procurement Division; John L. Cleary and Wayne R. Glenny, Research and Development Contract Branch, attended the NASA Annual Procurement Officers Conference in New Orleans this month.

A paper on "Problems of Construction Contracts" was presented by Butler. Glenny spoke on "The Value Statement Concept in Structuring, Analyzing and Evaluating Multiple Incentive Contracts."

Attending the conference were representatives of NASA Headquarters and NASA centers.

LOST: Warwick High School class ring with initials JTJ and date 1963. Lost in Bldg. 1230. Johnson, 4454.

WANTED: Driving combination from Windsor Great Park to W.A. on 8 shift. Hayduk or Golub, 3524.

ACTIVITIES ASSOCIATION CELEBRATES TWENTIETH ANNIVERSARY

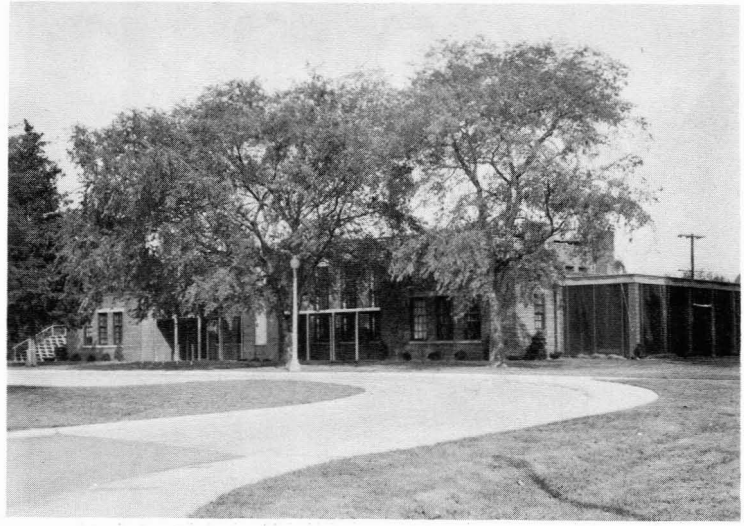
Another historical milestone was reached at Langley last month when the Langley Activities Association celebrated its 20th Anniversary.

The ground work for the Association was laid in the summer of 1944. Realizing the need for adequate recreational facilities in the crowded community, a small group of employees, with the backing of management, proceeded to look into the possibilities of forming an independent recreational center at Langley.

After several meetings and much discussion, the temporary council proposed that an election be held throughout the Center and that a Recreation Council be formed. The council consisted of 27 section and division representatives plus one member from each organized club. The council elected from its membership nine members to form an executive committee charged with the complete administration of the program. Pete Korycinski was elected chairman of the temporary group.

After many months of work and many setbacks, justifications for recreational facilities and specifications for the proposed building were finally agreed on and submitted to NASA Headquarters.

The site selected for the construction of the Activities Building was located on the old Collier estate in West Area. The building was erected to the left of the Collier Home (above). The old landmark was razed several years ago.



The Activities Building, located in West Area, was dedicated in formal ceremonies on October 29, 1946.

On March 16, 1945 an appropriation of $110,000 was made to the Center by the Federal Works Agency to be used to provide the recreational facilities. The grounds chosen for the building were on the old Collier estate.

In July 1945 a contract for the construction of the building was awarded to C. W. Lockwood Construction Company. The contract totaled $88,800 and completion date was in 140 days.

In December 1945 the first permanent general assembly and executive board were elected with Pete Korycinski again heading the group. Other officers were: Dave Goldenbaum, vice-president; Len Bartone, treasurer; Jack Bruce, building and grounds committee; Axel Mattson, social committee; Bill Lawton, arts and crafts; Margaret Ivey, children's committee, and Chet Furlong, activities committee.

Formal dedication ceremonies of the new building were held on Tuesday, October 29, 1946. Guest speaker was Dr. John F. Victory, first NACA employee and Executive Secretary, Washington Office.

Shown above are members of the Activities Association's first Executive Board and General Assembly. Members of the Executive Board were front row (from left): Axel Mattson, chairman of the social committee; Dave Goldenbaum, vice-president; Pete Korycinski, president; Indie Atkins, secretary; William Lawton, arts and crafts committee, and Len Barton, treasurer. Members of the General Assembly were second row (from left): Carl Cecil, Kitty Rappold, Les Oborney, Art Vogeley, Harry Hamilton, Marvin Forrest, Pat Kyle, and A. B. Stacey. Third row: Leroy Spearman, John Schaaf, Ed Kilgore, Nick Jevas, Jack See, Norwood Evans, and George Hogge.

Five staff members recently received cash awards for suggestions under the NASA Incentive Awards Program. Left photo - William B. Mayo (left), Chief of Mechanical Services Division, presents awards to Max B. Bryan for his suggestion concerning a device for presetting, quickly and accurately, model angles of attack; Ugo Tuccori for a fast acting water-cooled sting; Walter P. Kabana for a uniform container to ship and store small diameter tubing, and John R. Smith for safety interlocks for 24-inch vacuum valve in the 11-inch Tunnel. Right photo - Edwin C. Kilgore (left), Chief of Flight Vehicles and Systems Division, congratulates Thomas P. Wright Jr. for his suggestion. Wright suggested the reuse of gusset folders by attaching inexpensive gummed labels to the folder. This way the folder could be used many times. The gummed labels are now available from the Stock Section.

SILENT KILLER

Deaths due to carbon monoxide poisoning are all too prevalent in cold climates this time of the year - and they are unnecessary.

You can't smell or taste carbon monoxide. It won't even tickle your nose or make you sneeze. Little wonder it is called the "silent killer."

Every gasoline or diesel engine gives off carbon monoxide - lots of it. A leak in the exhaust system of your car or truck, of which you could be totally unaware, will emit the lethal carbon monoxide which will seep into the inside of your car.

Carbon monoxide kills by depriving a person of oxygen. The same thing happens in drowning or choking to death.

Always keep the inside of your car well ventilated when the engine is running. Open a wing or lower the window an inch to let the air circulate.

Know the symptoms and first aid treatment of "The Silent Killer":

Symptoms: A headache, yawning, ringing in the ears, weariness, and a fluttering or throbbing of the heart.

First Aid: 1. Get victim to fresh air, loosen right clothing. 2. Artificial respiration accompanied by oxygen, if available. 3. Keep victim warm with blankets. 4. Keep the victim lying flat. 5. Call lifesaving squad or doctor immediately.

HEWES TO ADDRESS ISA CHAPTER

Donald E. Hewes, Head of the Spacecraft Research Branch, Space Mechanics Division, will be guest speaker at the meeting of the Tidewater Section of the Instrument Society of America on November 30 at the Holiday Inn, Hampton. He will speak on "The Reduced Gravity Simulator at the Lunar Landing Facility."

Hewes has been Head of the Spacecraft Research Branch since its formation in December 1963. After receiving his B.S. degree in Aeronautical Engineering from Rensselaer Polytechnic Institute in 1945, he worked as a design engineer on the Ercoupe light plane produced by the Engineering Research Corporation from 1945 to 1946.

He joined the Center staff on January 6, 1947. Up until 1962 his primary work effort was directed toward studies of low speed stability and control of airplanes, reentry vehicles, and various recovery devices including the Rogallo parawing utilizing free-flight testing of radio-controlled dynamically scaled models. Since 1963 he has been associated with the design, construction, operation, and research programs of the reduced gravity simulation devices.

The meeting will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. Dinner reservations may be made by contacting A. G. Kantsios, telephone 3446.

WANTED: Ride on Mon., Wed., and Fri. afternoons at 4:30 from E.A. to Newport News. Edmondson, 2214.

WANTED: Ride or passengers from Macon Homes to W.A. on 7:30 shift. Whitehead, 4572.

WANTED: Two alternate drivers from Glen Garden Apts. to W.A. on 8 shift. Hudson, 4745.

WANTED: Driving combination from Bethel Pk. to W.A. on 7:30 shift. DeLong, 3490 or 826-7340.

FOR SALE: Air Trail, Flying Aces, Model Airplane News, and other model and aviation magazines dating from 1937. Yeager, 877-9063.

WANTED: Driving combination from Shore Park to W.A. on 8 shift. Rucker, 4521 or 877-3303.

WANTED: Driving combination from Riverdale Apts. to W.A. on 7:30 shift. Greenblatt, 3271.

FOR SALE: Boy's 20-inch bicycle. Scher, 596-1604.

NASA BOWLING LEAGUES

Golfers and Flight are tied for first place in Group B with 26 wins and 14 losses each. Top scores were rolled by Bill Cordle with a 234 game, Sam Sokol with a 648 set and Jackie Andrada with a 242 game and 696 set.

A-OK's lead in Group C with 27 wins and 13 losses. Hotshot Tunnel is in second with 26 wins and 14 losses. Top bowlers were Ed Manestar with a 262 game and 662 set, Megan Lynch with a 217 game and Edith Moen with a 575 set.

GROUP B			GROUP C		
Golfers	26	14	A-OK's	27	13
Flight	26	14	Hotshot Tunnel	26	14
ACD	24	16	RPM's	24	16
Payloads	24	16	Sparkys	24	16
Strike Outs	23	17	Sad Sams	23	17
Wood Nickers	21	19	Gliders	23	17
Getogethers	21	19	Bowling Belles	22	18
Greenhorns	19.5	20.5	Dillys	22	18
Cee Pees	18.5	21.5	Wa-Hoppins	20	20
Flight Engineers	18	22	Ten-Benders	19	21
Trackers	17	23	Mets	19	21
Galaxies	15	25	Hits and Misses	14	26
HMS	14	26	Class Kats	12	28
Pinwigglers	13	27	Gutter Jumpers	5	35

TURKEY SHOOT WINNERS NAMED

A total of 95 turkeys were won at the Activities Association's annual Thanksgiving Turkey Shoot. The turkeys are Grade A Rockinghams and weigh between 10 and 12 pounds. Winners may pick up the turkeys after 3:30 p.m. on Tuesday, November 22 at the Activities Building. Winners are requested to bring their stubs along for identification. The turkeys must be picked up on November 22 because the Activities Building is not equipped to store them.

Sharpshooters who won in the matches were as follows: Brian Christenbury, H. W. Jones, Joe Block, Chuck Walker, C. E. Russ, H. E. Mann, L. Clark, L. Wilkinson, E. S. Manestar, W. F. Jones, C. Christenbury, Harold Robertson, Mr. Spence, L. Forrest, F. Hines, C. Forrest, A. Murphy, H. Hughes, R. Brogden, Bill Beasley, K. Kilber, and H. C. Strader.

Winners in the drawing were as follows: Alvester Dent, R. D. Martin, Harry K. Brooks, John S. Davis, Mr. Devol, Jack Paulson, Joe Johnson, Mary J. Mesic, W. L. Terrill, C. Collie, R. E. Puster, Bill Deveikis, M. Eskew, W. W. Metz, Della Carter, Ruth Hart, L. Jones (2 turkeys), S. D. Ailor, Donald Riley, C. Priddy, Edgar Parr, B. Tennis, P. H. Shea, R. P. Bielat, Thomas Bristow, Helene Smith, George Theil, Y. V. Houston, M. E. Cook, S. Pollard, D. W. Davis, Jeanne Spinney, H. C. Myers, W. C. Holloway (3).

G. V. Hill, L. Smith, O. E. Shortt, F. K. Allen, P. L. Deal, Georgia Dunn, Katherine Carson, Robert S. Foote, N. R. Paucker, Jim Dawson, Erma Walker, Cora LaPrade, Rex Current, W. V. Feller, Joe Drischler, Frank Plotz, B. Sterrett, Stuart Rose, P. J. Johnston, Rhoda Kee, W. C. Thompson, W. R. Messick, W. Laughon, W. A. Fleet, J. S. Martin, R. M. Revere, Nancy O'Bryan, Mickey Rowe, Ralph Parks, E. E. Hall, L. Lineberry, E. Davis, Nora Meade, K. Wray, and Linda Swaim.

Ray Henley was winner for the drawing among volunteer workers.

WANTED: Boston Bull pup. Howe, 838-0254.

FOR SALE: 1959 Rambler. Hoyt, 868-9380 after 4 p.m.

Ann H. Suit, Administrative Services Division, holds the plaque which was presented to each NASA installation by the New York Board of Trade. The 1966 "Business Speaks" Award was presented "to the men and women of the NASA."

NEW YORK BOARD OF TRADE PRESENTS AWARD TO NASA

A plaque has been presented to Dr. Floyd L. Thompson, Director, in recognition of the Langley Research Center's contributions to the success of the programs of NASA.

The plaque is identical to those given to each NASA installation in the United States by the New York Board of Trade, which presented its 1966 "Business Speaks" Award "to the men and women of the NASA."

An inscription on the plaque cites NASA staff members for their "inspired vision and superb marshalling of scientific and technological resources to develop for the United States a space program of unparalleled excellence.

"Their dedication and demonstration of man's inherent and unlimited capacity to surmount the obstacle of space is an inspiration to each individual to strive for the lasting betterment of all men on earth."

The Langley plaque was received from James T. Gill, President of the New York Board of Trade.

Dr. Robert C. Seamans Jr., NASA Deputy Administrator, accepted the "Business Speaks" Award on behalf of all NASA employees at a ceremony in New York.

SPECTROSCOPY CLUB NOTICE

A brief meeting will be held in the Activities Building on Tuesday, November 22 at 4:45 p.m. to discuss the feasibility of forming a NASA spectroscopy club. The primary purpose would be to disseminate information between its members on an informal basis.

It is anticipated that several meetings would be held each year and that lecturers would be invited to some of the meetings.

For further information call R. J. Exton or W. L. Snow, 3234, or Lee Shilling, 2631.

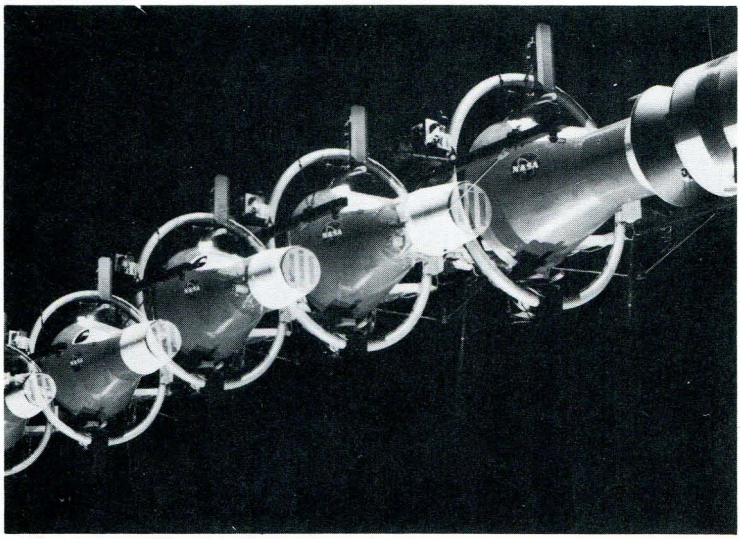
FOR SALE: Wire wheel covers with spinner for Ford, fits all 14-inch wheels. Thornton, 586-4117 after 5 p.m.

FOR SALE: Allstate motor scooter with accessories - $275. Gottschall, 868-9510.

FOR SALE: 1965 Chevrolet convertible, 1964 Volkswagon. Hamilton, 838-4553 or 723-4325.

Langley Researcher

VOLUME 5, NUMBER 24 LANGLEY RESEARCH CENTER DECEMBER 2, 1966



What may appear to be a fleet of spacecraft flying in formation is actually a multiple exposure action photograph of the Rendezvous and Docking Simulator at the Langley Research Center. The facility enables scientists to determine man's ability to complete a rendezvous in either Earth or lunar orbit. In an awards ceremony held last week at Manned Spacecraft Center, an NASA Superior Accomplishment Award was presented to Arthur W. Vogeley, head of the Guidance and Control Branch, Space Mechanics Division, for his accomplishments in the field of rendezvous and docking. Vogeley was specifically cited for "his concept and major contributions to the design and operation of a basic rendezvous and docking simulator which has contributed to the success of the Gemini-Agena program."

LANGLEY SCIENTIST CITED FOR GEMINI CONTRIBUTION

The Langley Research Center's contributions to the success of the Gemini program were recognized in ceremonies last week at the Manned Spacecraft Center.

In an awards ceremony following the completion of the 12-flight Gemini program, an NASA Superior Accomplishment Award was presented to Arthur W. Vogeley, head of the Guidance and Control Branch, Space Mechanics Division, for his accomplishments in the field of rendezvous and docking.

Vogeley was specifically cited "for his early vision in anticipating the problems of rendezvous and docking and for his concept and major contributions to the design and operation of a basic rendezvous and docking simulator which has contributed to the success of the Gemini-Agena program."

Dr. Floyd L. Thompson, Langley Director, attended the awards ceremony which followed a post-flight briefing on Gemini 12.

A Rendezvous and Docking Simulator conceived by Vogeley

(Continued on page 3)

LANGLEY'S LUNAR ORBITER HAS SUCCESSFUL MISSION

Lunar Orbiter II was launched from Cape Kennedy on November 6 and Langley Center officials have described the photographic moon mission as highly successful. All systems worked as planned and extremely high-quality photographs of the lunar surface have been sent back to Earth.

Lunar Orbiter II was the second in a series of five photographic laboratory spacecraft to orbit the Moon. The Orbiter spacecraft are flown to acquire knowledge of the Moon's surface to support the Apollo manned lunar landing program and to enlarge scientific understanding of the Moon.

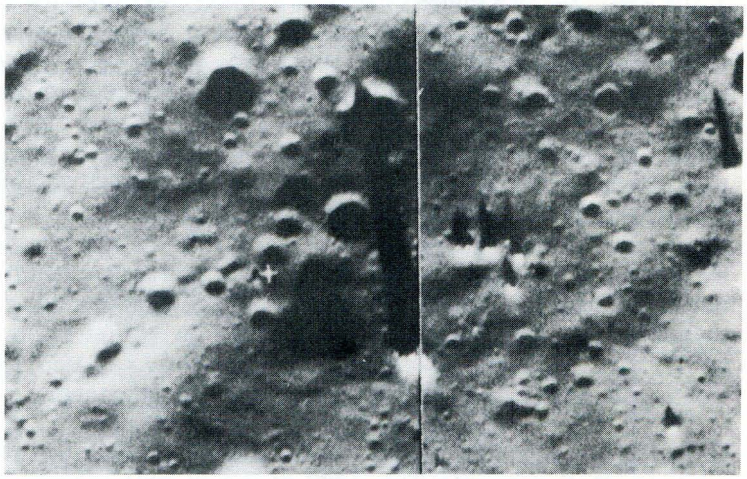
Interpretation of the Orbiter pictures will help NASA select the most promising site for Project Apollo manned landings on the Moon, scheduled to begin in 1968.

Orbiter II was assigned the task of photographing 13 primary target sites, located generally within the northern half of the Apollo zone of interest on the Moon's front face.

Lunar Orbiter II took its final picture on November 25 and is scheduled to complete final picture transmission on December 7.

The Lunar Orbiter program is directed by NASA's Office of Space Science and Applications. The project is managed by Langley Research Center.

Additional photographs are shown on Pages 4 and 5.



Lunar surface with large protuberance in cratered upland basin approximately at 15 degrees, 20 feet E and 4 degrees, 30 feet N. The photograph is made by the telephoto lens of Lunar Orbiter II's camera system. The photo is enlarged about five times from the original film. The area shown is about 750 by 550 feet. The striking shadow casting protuberances shown are naturally occurring features on the lunar surface. Largest protuberance, located in center, is about 50 feet wide at the base and about 40 to 75 feet high, based on length of shadow cast by the sun 11 degrees above the horizon. The photo is a part of prime site 4. (This photograph was released to the U.S. press Nov. 22).

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

CAMERA CLUB. . .The Langley Camera Club will hold its model night meeting on December 15 at the Langley Service Club. A contest will be held at a future date of all pictures taken of the models. Non-members are invited to attend. Over fifty professional photos will be on display for discussion.

REPRESENTATIVE TO VISIT. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on December 13 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, December 6 at 7 p.m. at the Central Labor Union Hall, Newport News.

BASKETBALL MEETING. . .An organizational meeting of the NASA Basketball League will be held at 8 p.m. on Dec. 5 at the Activities Building. All teams planning to enter the league are requested to have a representative present.

NEW HEIR. . .Announcing the birth of a five pound, fourteen ounce son, John Philip, on October 21 is John N. Shoosmith, Analysis and Computation Division.

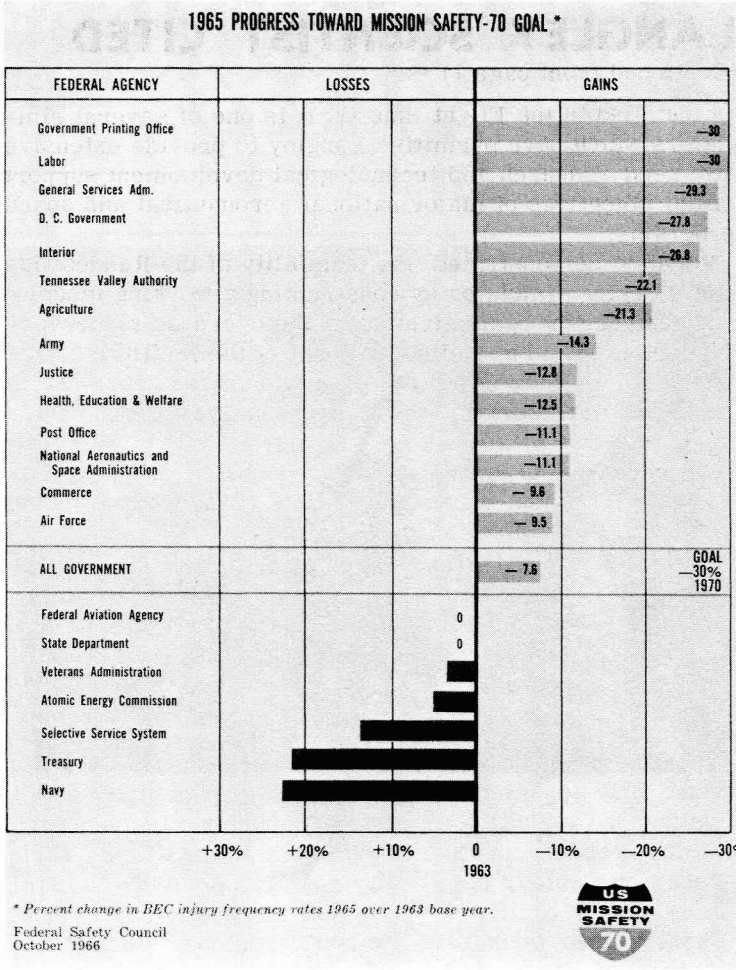
PROFESSOR TO VISIT. . .Dr. Yasutada Kashiwagi, Assistant Professor of Aerospace Engineering, Virginia Polytechnic Institute, will present a lecture on "What is Stability?" at 1 p.m. on December 9 in the East Area Project Room. All interested employees are invited to attend.

CALENDAR NOTICE. . .Officials of the Stock Section announced that requests for 1967 desk and wall calendars should be submitted by Monday, December 12. Sections are asked to take an inventory as to the number of calendars needed and report it to their division office. The division office will forward the order to the Stock Section.

FOR SALE: Boy's 26-inch English bicycle and electric train. Paulson, LY 6-4986.

LOST: Library copy of "Linear Systems Theory" by Zadeh and DeSoer. Schy, 4472.

FOR SALE: 36 x 54 mahogany dining table and 4 chairs - $40. Adair, 722-8538.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of December 5:

Monday - Puree of bean soup, baked ham, beef stew, fried fish, cheese omelette.

Tuesday - Tomato-barley soup, roast veal, Salisbury steak, chicken chow mein, chili con carne.

Wednesday - Vegetable-beef soup, grilled steak, broiled Canadian bacon, fried chicken, tamale pie.

Thursday - Chicken-noodle soup, Spanish pot roast, chicken pie, stuffed pepper, cheese ravioli.

Friday - Clam chowder, braised beef tips, broiled halibut steak, Polish sausage, fish cakes.

The menu for the week of December 12 is as follows:

Monday - Cream of tomato soup, roast ribs of beef, stuffed flounder, sauteed chicken livers, western omelette.

Tuesday - French onion soup, beef pot pie, breaded veal cutlet, liver and onions, franks and beans.

Wednesday - Vegetable-beef soup, grilled steak, barbecued pork chunks, chicken croquettes, baked hash.

Thursday - Cream of mushroom soup, half-pound chopped steak, ham loaf, fried chicken, Austrian ravioli.

Friday - Clam chowder, Swiss steak, boiled ham, fried fish, grilled cheese sandwich.

FOR SALE: 1951 Jeep station wagon with 4-wheel drive. Moore, 229-6086.

FOR SALE: Female Chihauhau pup - $45. Halsey, 595-0514.

FOR SALE: Set of left hand golf clubs - 8 irons, 4 woods, 2 putters, new bag and cart. Balmer, 838-2406.

FOR SALE: Chrome dinette set. Dancy, 838-2666.

LANGLEY SCIENTIST CITED

(Continued from page 1)

is installed in the Flight Hangar. It is one of several simulators which have permitted Langley to provide extensive advanced research and technological development support of the objectives of major national aeronautical and space programs.

Vogeley demonstrated the feasibility of the Rendezvous and Docking Simulator by constructing a working model - and designed the basic elements of the overhead maneuvering system which is an integral part of the facility.

The simulator was put into operation three years ago to study the problems of docking with the Gemini-Agena vehicle, using full-scale models suspended from the over head maneuvering system. Through use of a computer, research pilots and astronauts riding in the Gemini model were able to simulate space flight.

Techniques for maneuvering in partial darkness and full darkness were studied in the simulator and led to the location of navigational aids on the Agena to provide Gemini astronauts with vital range and position information.

Astronauts have made more than 1,000 flights in the Rendezvous and Docking Simulator and other space simulation facilities at Langley in research in support of Gemini and Apollo.

Following completion of the Gemini-Agena research program, the Rendezvous and Docking Simulator was modified to investigate operational problems of the Apollo lunar module which will take off, rendezvous and dock with the command module in lunar orbit after astronauts land on the moon and complete their exploration of the lunar surface.

In addition, the simulator has been used to study such future problems as the rendezvous and docking of supply vehicles with a manned orbital research laboratory - or in evaluating the effectiveness of "jet shoes," a Langley concept, in performing extravehicular activities in space. In this study, a scientist suspended from the simulator uses jet shoes to devise maneuvering techniques for approaching a spacecraft from various angles for specific extravehicular tasks.

The original Rendezvous and Docking Simulator concept was also designed to provide simulation capability to study visual problems related to vertical takeoff and landing and short takeoff and landing aircraft. It can be used to study approach and landing problems associated with the supersonic commercial air transport.

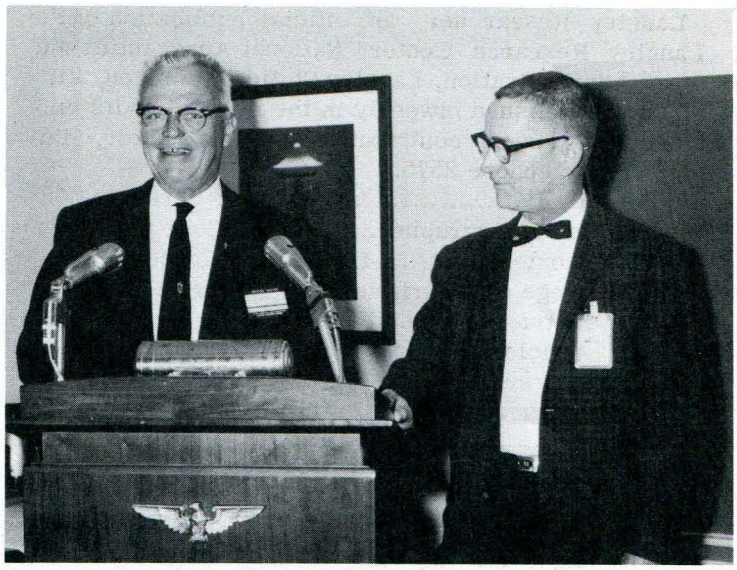
Vogeley, a native of New York City, received a B.S. degree in Aeronautical Engineering from Massachusetts Institute of Technology prior to joining the Langley staff in 1939. He is the author or co-author of a number of NASA technical documents and is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

FOR SALE: Bedstead - white bookcase style with formica top, changeable panels - $20. Zanks, 851-0746.

FOR SALE: Kitchen dinette set with 4 chairs, sofa and 4 bar stools. Ashe, 826-1014.

FOR SALE: 16-foot Glasspar boat with convertible top and cover, 40 hp electric Johnson motor, tilt trailer, extras - $975. Jordan, 868-9655.

FOR SALE: Cushman Silver Eagle scooter. Corbitt, 868-9463.



Dr. Allan H. Mogensen, lecturer from Lake Placid, New York, is welcomed to the Center by T. Melvin Butler, Assistant Director for Administration. As a part of Langley's Cost Reduction Program, management sponsored a conference by Dr. Mogensen on "Work Simplification." Key employees of the Center were invited to attend. During the lecture, Dr. Mogensen stressed the theme that management's most important function is improvement - of people, product, and process. He pointed out that employees are motivated more effectively by satisfaction than by fear, authority, persuasion, or reward.

JOINT MEETING DECEMBER 13

Major General Clifton Von Kann (Retired) will be guest speaker at a joint meeting of the American Helicopter Society and the Army Aviation Association of America on December 13 at the Fort Eustis Officers Open Mess.

General Von Kann, who is vice-president of the Operations Air Transport Association of America, will speak on "Prospects for Commercial V/STOL Operations."

The meeting will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. Members and non-members are invited to attend. Reservations should be made with John Garren or Dan DiCarlo, extensions 4505 or 4584, by noon on December 12.

RETIREMENT NOTICE

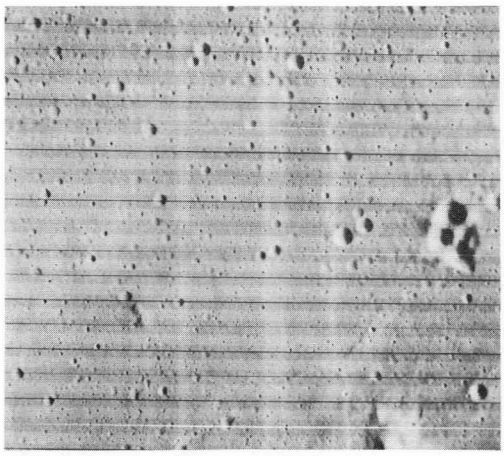
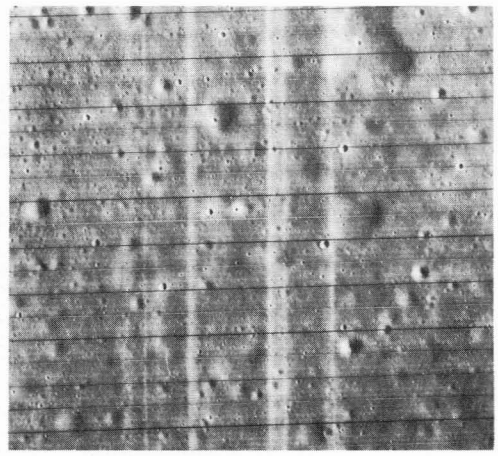
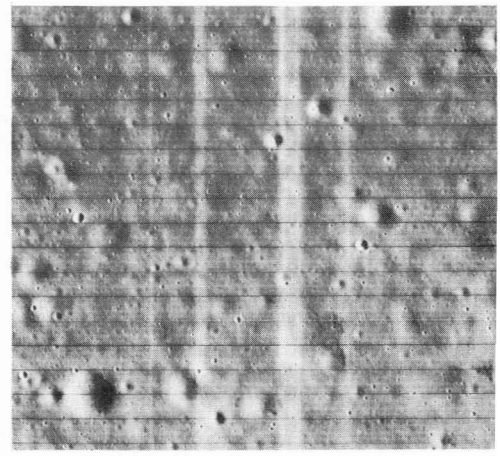
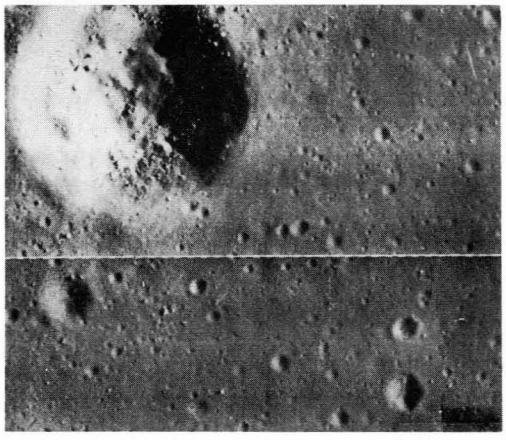
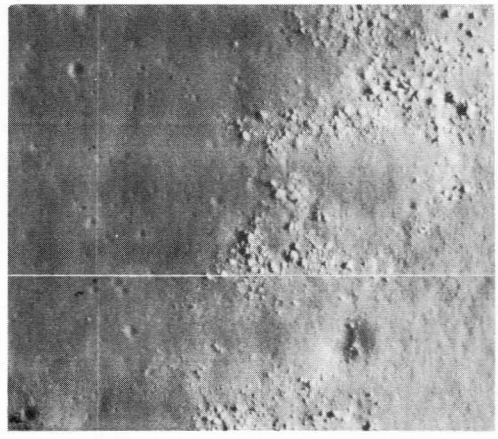
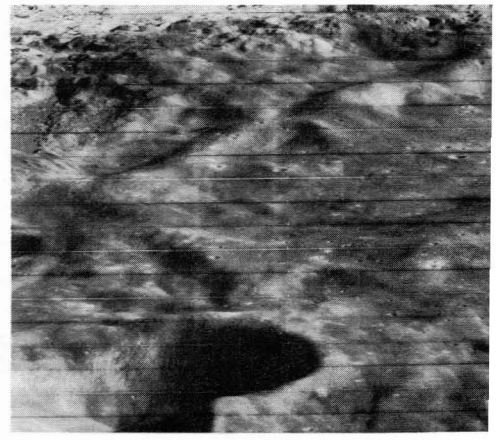
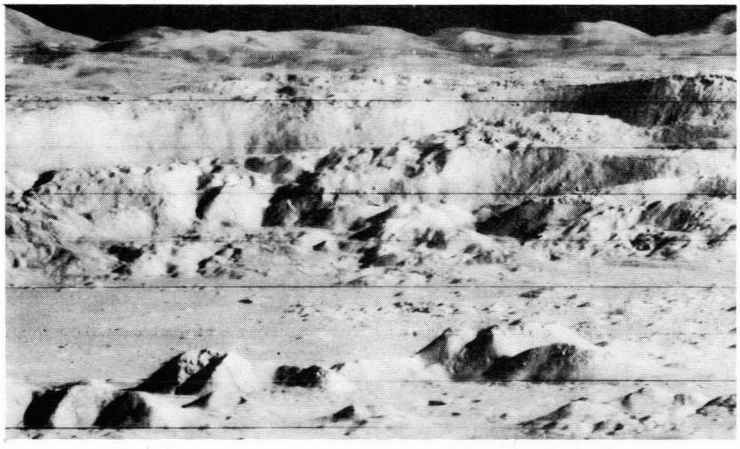
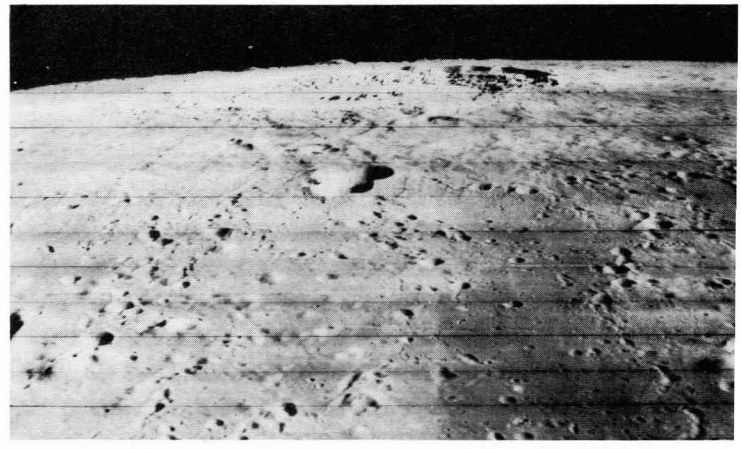
Staff members who are considering retiring this year are reminded that separation (or pay cease) must not be later than December 30 in order to receive the one percent cost-of-living adjustment of 1962.

In addition, employees are reminded of the possibility of an increase in annuity because of the rise in the Consumer Price Index, and that in order to receive the advantage of this increase the annuity must be effective on or before January 1, 1967.

To receive both the one percent and the 3-plus percent cost-of-living adjustments, an employee must be separated, or his pay must cease, no later than December 30.

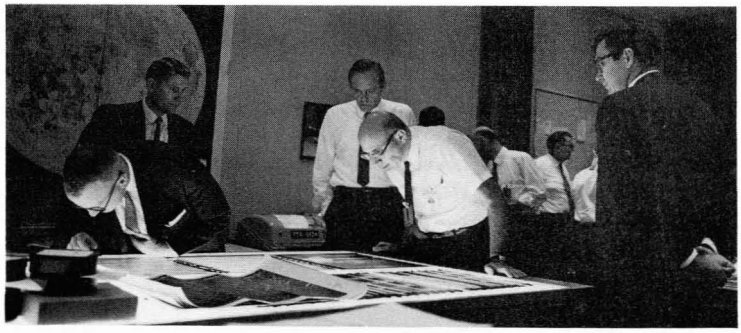
FOR SALE: Muntz auto stereo, including 5 tapes - $85. Ferrando, 877-9322.

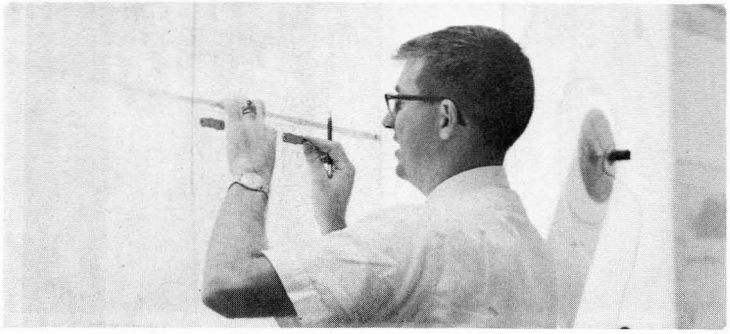
FOR SALE: Set of men's McGregor golf clubs including 2-9 irons, 1, 3, 4, 5 woods - $80. Pelton, 838-1535.

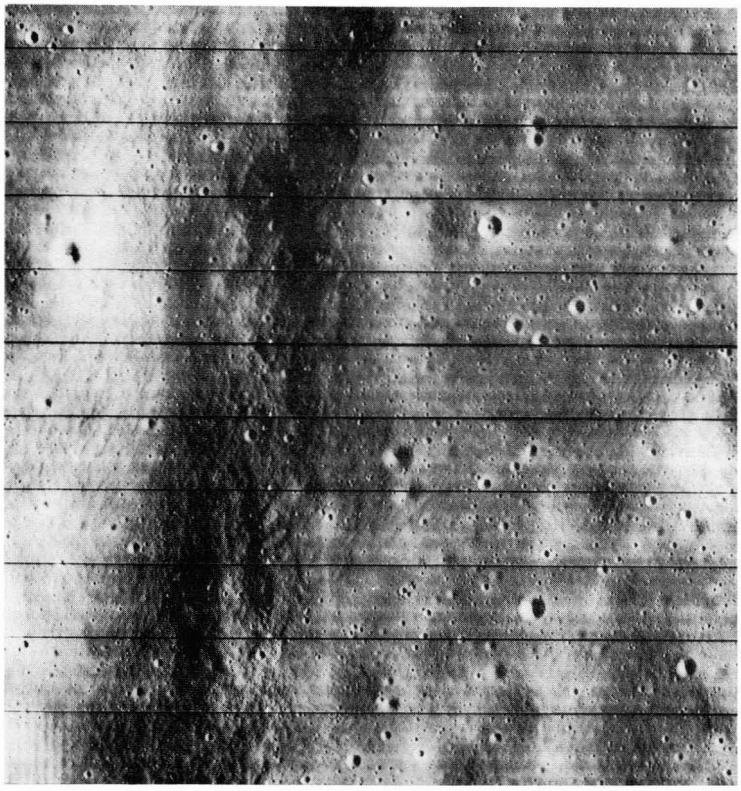









The top three photos were taken by Orbiter II of the first primary target site. Each photo shows a portion of a regional mare in the eastern Sea of Tranquility. Left photo was taken with the medium resolution camera and is the third of 16 frames taken at the site. The center and right photos were taken with the high resolution camera and are the fourth and fifth frames, respectively. (These three photos were released to the U.S. press Nov. 18). Center left photo - This is a photo of an area in the western part of Mare Tranquillitatis at prime site 2. The crater at the upper left is approximately 570 feet across at its widest point. Dimensions of the area shown are 1300 by 1300 feet. Center photo - A rock-strewn area in the southeastern part of Mare Tranquillitatis shows clearly in this portion of a photo made by the telephoto lens camera. Some of the larger rocks in the lower right hand corner are about 30 feet across. The photo is a portion of prime site 2. (These two photos were released to the U.S. press Nov. 20). Center

the crater is shown in fine detail. Copernicus, 60 miles i diameter and two miles deep, dominates the upper lef quadrant of the Moon as seen from Earth. Distance fron crater Fauth at base of photo to near rim of Copernicu is 33 miles. Crater Fauth is about 13 miles across an 4500 feet deep. Orbiter was 28.6 miles above the surfac and about 150 miles due south of the center of Copernicu when the picture was taken. Lower left photo - This is portion of the first closeup photo of the crater Copernicus Mountains rising from the flat floor of the crater ar 1,000 feet high with slopes up to 30 degrees. The 3,000 foot high mountain on the horizon is the Gay-Lussa Promontory in the Carpathian Mountains. Cliffs on the rir of the crater are 1,000 feet high. Lower right photo - Thi oblique view of the Moon shows the crater Copernicus jus below the horizon. The wide-angle lens photo was take with the spacecraft's camera tilted 17 degrees from hor izontal. (These three photographs were released to th







LUNAR ORBITER MISSION II - Upper left photo - Shown at the control center of the NASA Deep Space Network, Pasadena, Cal., during the flight of Lunar Orbiter II are Edmund A. Brummer, Communications and Tracking Manager; Axel T. Mattson, Special Representative of the Langley Director, and John B. Graham, Operations Integration. Upper right photo - Israel Taback, Spacecraft Manager, looks over lunar photos taken by Orbiter II. Center left - A. Thomas Young, Mission Definition, charts the course of Lunar Orbiter Project, and Taback. Lower left - This photo was taken by Orbiter II of the first primary target site in its mission to photograph possible manned landing sites on the Moon. It is the fifth of 16 frames of photography taken at the site. It was taken by Orbiter's medium resolution camera. It shows a regional mare in the Sea of Tranquality. Framed in black is the area covered by a high resolution photograph - the seventh of the 16 frames of Site One. Lower right - This photograph was taken by

X-15 WINDOW SHADE CUTS COST

An old fashion window shade and some modern ingenuity has resulted in some significant savings in the X-15 research program.

The window shade has been modified by engineers at Flight Research Center for installation in the cockpit of the X-15 rocket airplane. The shade is used during X-15 flights to keep the sunlight from reflecting on the pilot's instrument panel and making the flight instruments unreadable.

Prior to the use of the shade, the X-15 flights had to be scheduled for launch early in the morning to avoid the reflected sunlight problem. This early flight scheduling required technicians to begin readying the aircraft for flight early in the morning. The early work hours resulted in overtime costs for the technicians and other related personnel who had to come in early.

Originally the window shade was designed to allow later X-15 launches in order to meet specific flight objectives such as star tracking and horizon scanning experiments.

It was determined that continued use of the window shade on normal X-15 flights would allow later launches and eliminate the need for most of the overtime cost. NASA officials estimate that this new procedure could result in a yearly savings of approximately $50,000.

FOG'S AROUND THE CORNER

That season of the year is just about here when the heavier fogs roll in and make driving - especially night driving - a pain in the eyes as well as in the neck. Most drivers have had their share of driving in fog but a few reminders seem to be in order anyway:

1. Be guided by the distance you can see ahead. The time to slow down is when you reach the fog, not after you're in it.

2. Don't think you're out of the woods when you run out of fog. It's likely to be patchy fog and you'll find yourself speeding up only to run right smack into another patch. Be alert to sudden change.

3. Windshield wipers and defrosting equipment often do much to help your visibility so use them. Going into fog with a clean windshield always helps.

4. In any heavy fog - day or night - drive with your lights on low beam. A high beam just bounces light back into your eyes. Don't use your parking lights. The big thing is to make your presence known to other drivers.

5. If it's at all possible, keep in sight of a vehicle ahead of you. Allow yourself a decent interval, of course, but you'll find things a lot easier if you have something ahead to guide on.

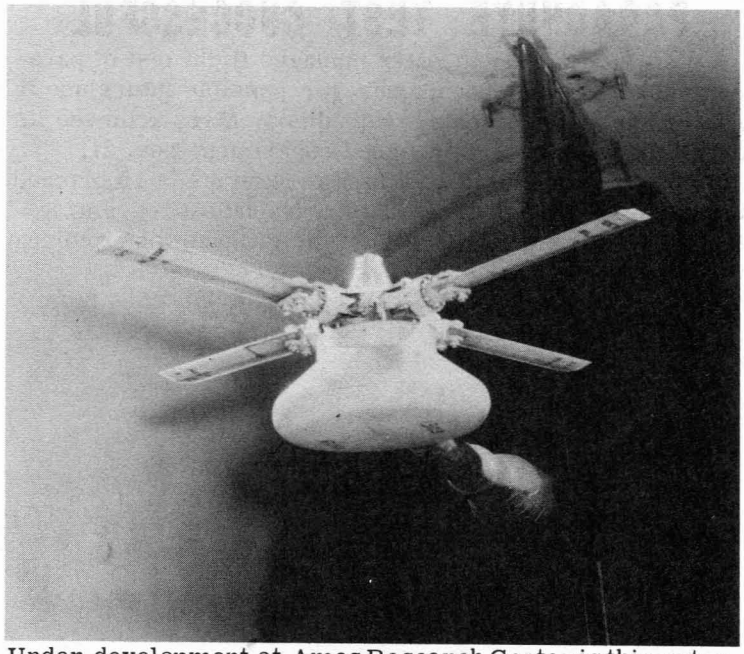
6. There are various schools of thought on the subject of driving in a dense fog. Some advocate following the line nearest your right front wheel while others say be guided by the edge of the road which could put you into a service area or onto a turnoff.

7. Remember that driving in fog leads to fatigue. If your eyes begin playing tricks on you, head for safety and rest.

FOR SALE: 17-inch portable TV. Ashe, 826-1014.

FOR SALE: Antique end table with marble top and antique woman's desk - $50 each. Buchanan, 877-3130.

FOR SALE: 3-bedroom, 1-1/2 bath house with basement - $13,500. E. F. Smith, 722-8018 after 5 p.m.



Under development at Ames Research Center is this potential means of entering the Earth's atmosphere from space. The proposed vehicle would partially deploy its rotor blades angled back for initial slowdown from high orbital speed, then deploy fully (as shown here) for descent to Earth much in the manner of a helicopter. The model had been wind-tunnel tested at 600 mph with tests scheduled to 2,300 mph.

CIVIL SERVICE EXAMS OPEN

The NASA Board of U.S. Civil Service Examiners, Langley Research Center, has announced the opening of examinations for Mathematics Aid, GS 3, $4269 per annum, and GS-4, $4776 per annum.

These positions are with the Langley Research Center.

In addition to passing the written test, applicants for the GS-3 position must have had one year of experience in work involving the reduction and compilation of quantitative data where such work required non-professional training or experience in the use of mathematical techniques in connection with particular engineering and scientific activities. The successful completion of one year of resident study at an accredited college that included 12 semester hours in such subjects as mathematics, chemistry, physics, astronomy or engineering may be substituted for the required one year of experience.

Except where education is offered in substitution, applicants for the GS-4 position must have 2 years experience. This experience must have been in work of progressive difficulty in the reduction and compilation of quantitative data where such work requires non-professional training or experience in the use of mathematical techniques in connection with particular engineering and scientific activities.

Applications are being accepted by the Executive Secretary, Board of U.S. Civil Service Examiners, NASA, Lang-Research Center, Langley Station, Hampton, Va. 23365.

FOR SALE: Sofa bed with maple arms and trim, $15. Long, LY 6-4586.

FOR SALE: 1962 Oldsmobile convertible. Sweeney, 596-5324 after 4:30 p.m.

PARACHUTE TEST SUCCESSFUL

A Langley Research Center managed flight test of parachute designs and techniques for possible future use in soft-landing instrumented capsules on Mars achieved its first successful rocket-launched experiment Nov. 21.

The experiment was the third in a series of 15 planned under NASA's Planetary Entry Parachute Program. Results will support NASA's Voyager program of exploring the planets with unmanned spacecraft.

After succeeding in the first flight test, launched from a monster balloon last August, the scientists were foiled in their first rocket-launched experiment Nov. 5 when a faulty signal failed to eject the payload from its protective sheath at the planned altitude.

Last week's launch took place when Holloman Air Force Base personnel sent up an Honest John-Nike two-stage rocket at New Mexico's White Sands Missile Range. At 120,000 feet altitude, where the Earth atmosphere becomes as thin as Mars's, a modified ring-sail parachute 30 feet across was deployed to return a 200-pound payload to the ground.

The payload, about five feet long and 13-1/2 inches in diameter, contained instruments to measure the shock of parachute opening and its oscillation characteristics as it fell. It was going about 900 miles an hour when the parachute opened.

Design of the parachute tested includes crescent-shaped gaps between rings of fabric to let air flow through and minimize swinging.

A camera mounted on the side of the payload to photograph the parachute opening sequence and the parachute itself, both were recovered from the test range. All telemetry recorders operated and preliminary results indicate that the test was a success.

Four more balloon-launched and eight more rocket-launched flight tests are planned in the program. Clarence L. Gillis, head of the Aerospace Mechanics Branch, Applied Materials and Physics Division, is project manager. Harold N. Murrow, Dynamic Loads Division, was project engineer for last week's rocket flight.

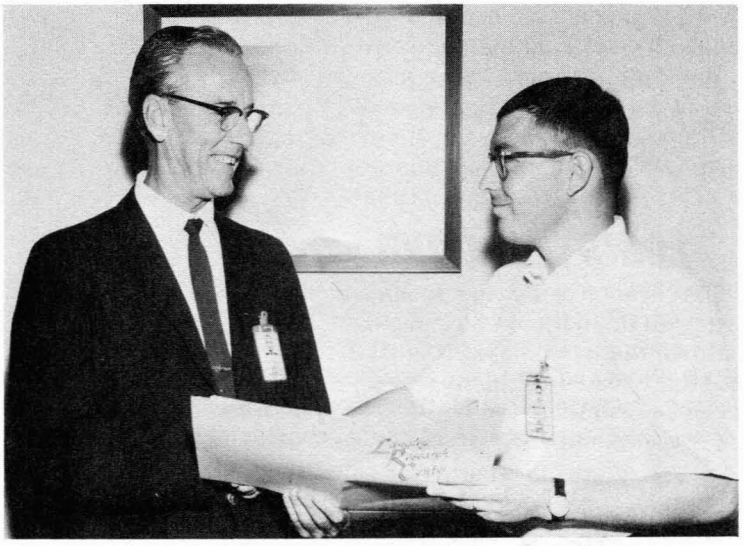
PROFESSORS TO VISIT CENTER

Dr. Robert W. Truitt, Head of the Department of Mechanical and Aeronautical Engineering, N. S. State University will visit the Center on December 9 to give advice and assistance to professional employees engaged in graduate or prospective graduate study. Dr. Truitt will also present a lecture on "Some Fundamental Properties of Real Gas Flows" at 10 a.m. in the East Area Projection Room, Building 587. Interested staff members are invited to attend.

Dr. Guy C. Omer, University of Florida, will present a lecture on "Cosmology" on December 13 at 10 a.m. in the 7 x 10 Projection Room. Interested staff members are invited to attend.

Dr. Richard T. Eppink, Department of Civil Engineering, University of Virginia, will visit the Center on December 12 for the purpose of taking with students in the Civil Engineering and Applied Mechanics graduate programs. Persons interested in talking with Dr. Eppink may call the Training Branch, telephone 2611, for an appointment.

FOR SALE: 1965 Honda Super 90 - $200. Hutcheson, 826-1071.



Two employees recently received cash awards for suggestions under the NASA Incentive Awards Program. Top photo - Donald E. Johnson (left) receives a check from George B. Graves Jr., Chief of Flight Instrumentation Division, for his suggestion concerning an improved environmental test procedure for subcarrier oscillators. Bottom photo - William B. Mayo, Chief of Mechanical Service division, congratulates A. Gary Price (right) for his suggestion concerning strain gage balances and vacuum pumps.

AIAA PLANS HOSPITALITY NIGHT

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will hold a Hospitality Evening on December 8 from 5 to 9 p.m. at the Holiday Inn. The purpose of the event will be to permit non-members to meet AIAA members and to find out more about the purpose of AIAA.

An AIAA movie, "Interface," will be shown during the evening. Free refreshments will be served and reservations will not be necessary.

FOR SALE: 1949 Willys Jepster. Tant, 826-2791.

FOR SALE: 1962 Pontiac convertible - $795. Holiday, 851-2360.

FOR SALE: Swing set, 7-1/4 feet high, 8-1/2 x 11-foot base - $6. Mulac, 596-0666.

COUNTDOWN

Ann Woodard and the Pussycat Puppets will be featured at the Activities Association's Annual Children's Christmas Party on December 11 at the Activities Building.

The Activities Association's Annual Children's Christmas Party will be held on Sunday, December 11 at the Activities Building.

Two shows are scheduled with the first one starting at 1:30 p.m. and the second one planned for 3:15 p.m.

Featured for the third year will be the Pussycat Puppet Theatre. They will present "The Mystery of the Swinging Plant."

Santa will arrive in time for the party and will have his list with him.

Tickets are twenty-five cents each and must be purchased in advance from District Representatives. Adults must also have tickets in order to be admitted to the building.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		NOVEMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	JANUARY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1	2	3 8-Foot Hot Structures Party
4	5	6 Bridge Club Model Club	7 Bloodmobile	8	9	10 Inspectors Section Party
11 Children's Christmas Party	12	13 Bridge Club	14 Dynamic Vehicles Section Party	15 Supervisors Party	16 Structures Party	17 Space Mechanics Branch
18	19	20 Fiscal Office Party	21 Structures Party	22 Equipment Maintenance	23	24
25 MERRY CHRISTMAS	26	27	28	29	30	31 New Year's Eve Dance

AMSTERDAM CO. AMSTERDAM N. Y. 1966 DECEMBER 1966

NASA BOWLING LEAGUE

Clean Ups lead Group A in the NASA Tenpin League with 32.5 wins and 15.5 losses. Top scores were rolled by Jack Paulson with a 247 game and Jim Henry with a 602 set.

Golfers lead Group B with 33 wins and 15 losses. Top bowlers for the week were John Royall with a 243 game, Gene Tate with a 683 set, and Ruth Pluta with a 204 game and 573 set.

RPM's and Hotshot Tunnel are tied for first in Group C with 30 wins and 18 losses each. Following in a close third are A-OK's and Gliders with 29 wins and 19 losses each. High scores were rolled by James Qualls with a 245 game and 645 set, Edna Wilson with a 246 game and Doris Hodge with a 634 game.

GROUP A

Clean Ups	32.5	15.2	Outlaws	25	23
Misfits	30	18	Unitary	21.5	26.5
Hornets	30	18	Phantoms	17	31
Flyers	26.5	21.5	Alley Cats	17	31
Odd Balls	25	23	Short Circuits	15.5	32.5

GROUP B			GROUP C		
Golfers	33	15	RPM's	30	18
ACD	29	19	Hotshot Tunnel	30	18
Wood Nickers	29	19	A-OK's	29	19
Payloads	29	19	Gliders	29	19
Flight	27	21	Sad Sams	28	20
Flight Engineers	25	23	Bowling Belles	27	21
Getogethers	25	23	Ten-Benders	26	22
Greenhorns	24.5	23.5	Mets	25	23
Strike Outs	24	24	Wa-Hoppins	25	23
Cee Pees	21.5	26.5	Dillys	24	24
Pinwigglers	18	30	Sparkys	24	24
Trackers	18	30	Class Kats	19	29
HMS	17	31	Hits & Misses	14	34
Galaxies	16	32	Gutter Jumpers	6	42

GENERAL SMART JOINS NASA

General Jacob E. Smart, United States Air Force (Retired), has been sworn in as a special assistant to James E. Webb, NASA Administrator.

The former four-star Deputy Commander-in-Chief of the U.S. European Command retired with 35 years of service July 31.

A Ridgeland, South Carolina native, Smart was graduated from the United States Military Academy at West Point in 1931. During World War II, he commanded the 97th Bombardment Group in Italy as a colonel and received his first star in 1950 as commanding officer of the 32nd Air Division.

Subsequent assignments included USAF Assistant Vice-Chief of Staff; Vice-Commander of the Tactical Air Force; and Commander in-Chief, Pacific Air Forces. He received his fourth star in 1963.

WANTED: Adding machine. Miller, 722-8993.

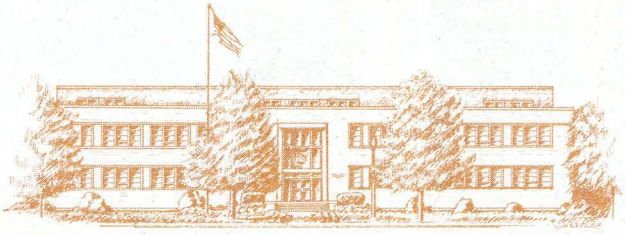
FOR SALE: Trailer hitch for 1963 Valiant - $5. Tennis. 722-8302.

FOR SALE; 2-story brick home in Marlbank Farm, 4 bedrooms, 2-car garage, 2-1/2-bath. Will trade for lot. Ferree, 898-5562.

FOR SALE: 35 mm slide projector with case - TDC Vivid Mainliner 300W with selectron semimatic - $23. Bertram, 898-5404.

LANGLEY RESEARCHER

VOLUME 5 NUMBER 25



HEADQUARTERS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY STATION, HAMPTON, VIRGINIA

The holiday season furnishes an appropriate time for us to look back - and to look ahead. We have made significant accomplishments in the aeronautical and space fields and look forward to greater progress in the coming year.

Langley can be proud of its demonstrated capability for assuming new aeronautical and space research responsibilities. These efforts are playing a major part in keeping the United States in a preeminent position in space and aeronautics.

Our activities generally are associated with basic technology that underlies major developments and do not bring us directly into the public eye. During the past year, however, one aspect of the quality and scope of Langley's activities was publicly demonstrated in a most satisfying manner by the successful flights of two Lunar Orbiter spacecraft. The Orbiter spacecraft were launched to acquire knowledge of the moon's surface to support the Apollo manned lunar landing program and to enlarge scientific understanding of the moon. The outstanding missions were the product of the teamwork which characterized the activities of the staff throughout the year.

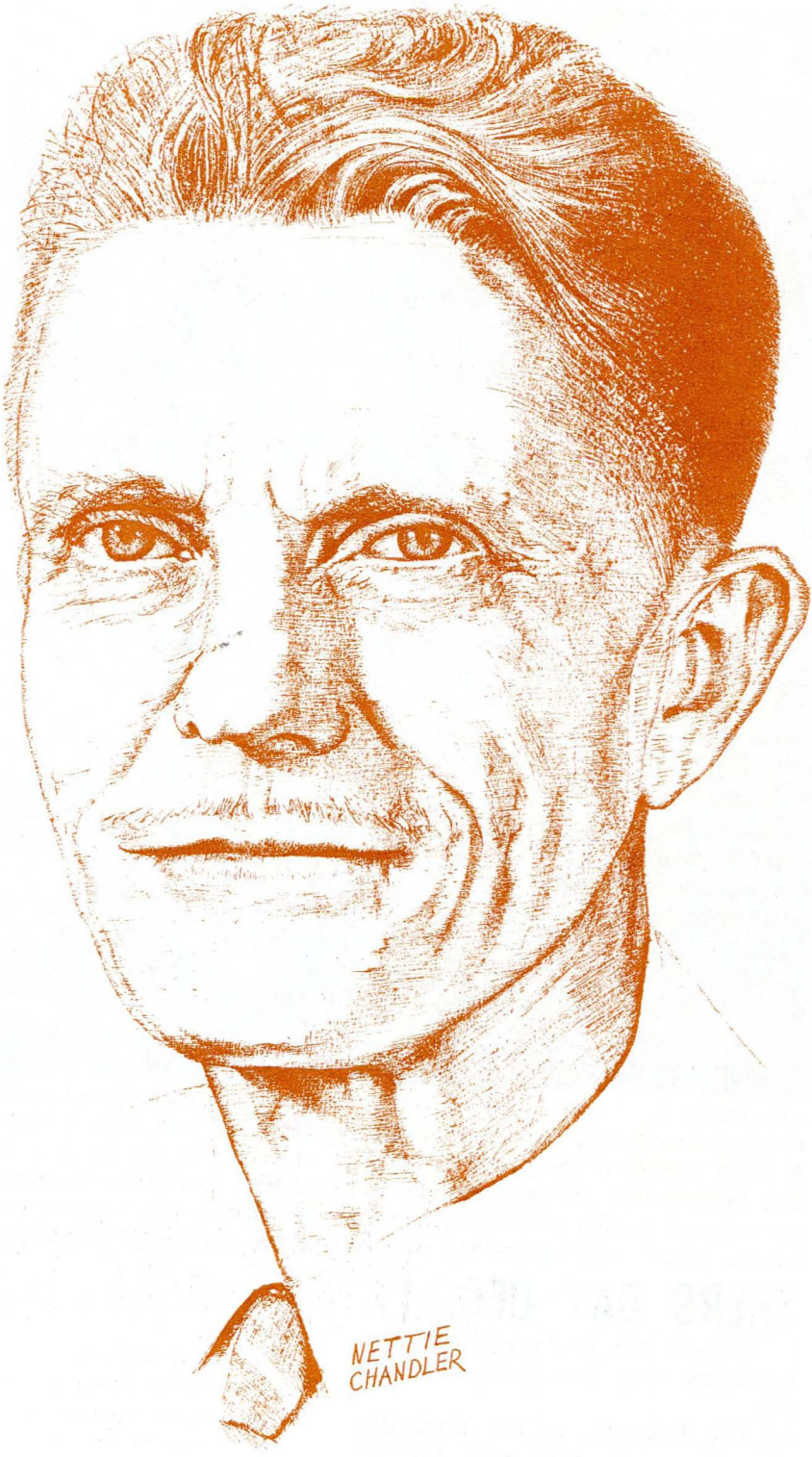
Our ability to work together effectively has been evident not only in research but in other areas, including our relationships with other agencies of the Federal Government and private organizations, and our participation with the local community in programs of mutual interest.

To each member of the team go my personal thanks for contributions made in the past. With your continued support and dedication to the achievement of our objectives, we will make far greater advancements in 1967.

A Merry Christmas and a Happy New Year

Floyd L. Thompson

Floyd L. Thompson
Director


NETTIE
CHANDLER

This oblique photograph made by Lunar Orbiter II covers an area about as big as Massachusetts, Connecticut and Rhode Island and shows a spectacular array of lunar domes. They are best seen to the south and west of the large crater in the upper right hand corner of the picture. The domes are from two to ten miles in diameter and from 1,000 to 1,500 feet high. Many are quite rough and show cracks and pits at or near their summits. These features are similar in form and scale to the volcanic domes of Northern California and Oregon. They are interpreted to be the result of upward movement of magma which has warped the overlying rock and in some cases spilled out on the surface as lava.

WRIGHT BROTHERS DAY DEC. 17

President Lyndon B. Johnson has declared December 17, 1966 as Wright Brothers Day. In his proclamation President Johnson stated:

"On December 17, 1903, two American brothers, Orville and Wilbur Wright, established a milestone in the history of man.

"On that day, in a plane they had invented and constructed, they made the world's first successful flight in a heavier-than-air, power-driven machine.

"That momentous flight over the sand dunes of Kitty Hawk, North Carolina, lasted a mere twelve seconds.

"But it marked the beginning of the age of aviation.

"It opened the way for a new industry which has expanded our domestic economy - for a new field of international trade and commerce - and for a world-wide network of communications which has helped to break down the barriers of intolerance and contributed to international understanding.

"It led this Nation to a preeminence in global transportation which is still unequaled, and which has contributed to strengthening both our defense and our economy.

"In commemoration of the achievements of Orville and Wilbur Wright, the Congress by a joint resolution approved December 17, 1963 (77 Stat. 402), has designated the seventeenth day of December of each year as Wright Brothers Day and has requested the President to issue annually a proclamation inviting the people of the United States to observe that day with appropriate ceremonies and activities.

"Now, therefore, I, Lyndon B. Johnson, President of the United States of America, do hereby call upon the people of this Nation, and their local and national government officials, to observe Wright Brothers Day, December 17, 1966, with appropriate ceremonies and activities."

The domes seen here for the first time in detail confirm the fact that the Moon has had a long and complicated history of volcanic activity. The unrelated and older impact crater Marius, in the upper right, is about 25 miles across and a mile deep. Marius is located at 50 degrees 40 minutes West longitude and 11 degrees 55 minutes North latitude on the visible side of the Moon. The photograph, identified as Lunar Orbiter II wide angle frame 213, was made November 25. Lunar Orbiter is managed for the National Aeronautics and Space Administration by the Langley Research Center. Prime spacecraft contractor is The Boeing Company, Seattle, Washington.

SCANNER SPACECRAFT LAUNCHED

An instrumented capsule has been launched by NASA on a suborbital trajectory 438 miles above the Atlantic Ocean in a research experiment to gather information on the Earth's horizon.

This was the second in a series of Project Scanner rocket launches in support of work in the design of navigation and stabilization instruments for spacecraft of the future. The experiment was similar to an August 1966 launch, but provided data under different seasonal conditions.

The 550-pound space probe was launched last Friday by a three-stage solid propellant Trailblazer vehicle from Wallops Station. The Scanner spacecraft carried a two channel radiometer to measure energy radiation from the horizon in two areas of the infrared spectrum. One region is within 14 to 16 microns associated with carbon dioxide in the upper atmosphere, and the other is between 20 and 40 microns associated with water vapor.

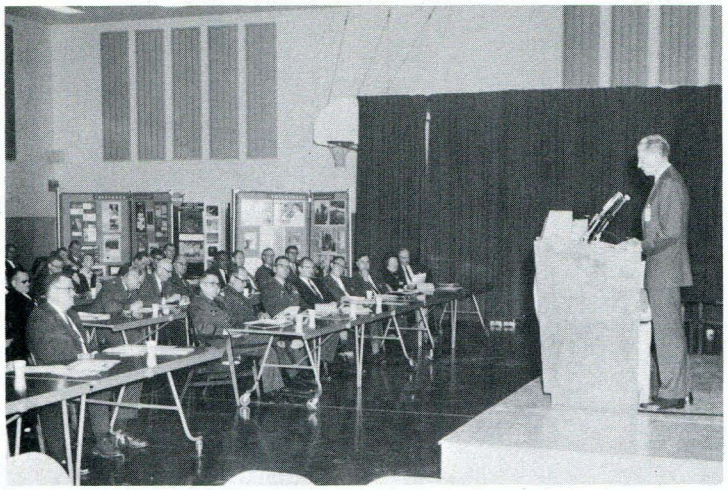
A Star Mapper telescope recorded data on the attitude of the spin stabilized spacecraft.

Project Scanner is a phase of the horizon definition research carried out by Langley Research Center under the direction of NASA's Office of Advanced Research and Technology. Howard J. Curfman, Applied Materials and Physics Division, is project manager.

Prime contractor for the spacecraft is Honeywell Systems and Research Division, Minneapolis, Minnesota.

Santa Barbara Research Center developed the radiometers; the Star Mapper was developed by Baird Atomic, Waltham, Massachusetts.

WANTED: Passengers or drivers leaving Dec. 23 for Gainesville, Fla. via Savannah, Ga. and returning Dec. 27. Karen Rackley, 3741.



Langley Research Center was host this month to a three-day Employee Development Opportunity Seminar sponsored by the Philadelphia Region, U.S. Civil Service Commission. Subject of the seminar was "The Federal Manager's Role in Equal Employment Opportunity." Approximately 50 representatives of federal agencies attended the program. Left photo - Dr. Floyd L. Thompson, Langley Director, welcomed the visitors and gave the keynote address. Right photo - Holding an informal discussion during intermission were (from left): Alfred Wadley, Indiantown Gap Military Reservation, Annville, Pa.; Benjamin Land, Kecoughtan Veterans Administration; Clinton Baltimore, U.S. Army Garrison, Carlisle Barracks, Pa,; Mareea Wilson, Kecoughtan Veterans Administration, and Colonel Stanley Gilbert, Civilan Personnel Office, Fort Monroe. About 15 Center employees participated in the seminar.

ANNUAL LEAVE NOTICE

As the 1966 leave year comes to a close, staff members are reminded that they have until midnight December 31, 1966, to use the annual leave they earned this year.

For those who started this year with more than 30 days of accumulated annual leave, all the annual leave they earned during 1966 must be used by December 31 or they will lose the unused portion. In other words, they may keep all the accumulated annual leave they had at the beginning of the year but cannot increase it.

Those who had less than 30 days of accumulated leave at the start of the year may end the leave year with 30 days leave, but no more. This means that they must use all of this year's earned leave in excess of 30 days. If the excess leave is not used, they will lose the unused portion.

Unused sick leave may be carried over from year to year with no restrictions and there is no limit on the amount of sick leave which may be accumulated.

APPRENTICE HONOR ROLL

Fifteen apprentices completed the mid-term semester with an average of 98 or above. Members of the honor roll are as follows:

Roger K. Amick and Warren R. Nichols, Instrument Construction Shop; Robert B. Askew, 7 x 10-Foot Tunnel; Everette L. Davis, Model and Pliant Structures; James R. Davis and James J. Kiss, Structures Lab; Burt R. Emerson, George C. Firth, and James R. Morris, Space Vacuum; William W. Fernald, Spacecraft Structures; Glenn A. Gates, Ground Support Systems; Stephen Irick, Dynamic Vehicle Section; John S. Mahler, Heavy Machine Shop; Homer F. Rush, 8-foot High Temperature Structures, and George Whitehurst, High Temperature Materials.

MATHEWS NAMED TO APOLLO JOB

Charles W. Mathews, Gemini Program Manager at the Manned Spacecraft Center, has been named Director of Saturn-Apollo Applications in NASA's Office of Manned Space Flight, Washington, D. C.

Mathews replaces Maj. Gen. David M. Jones who held the Acting Director Apollo Applications post in addition to his duties as Deputy Associate Administrator for Manned Space Flight (Programs). Gen. Jones will continue in the latter position.

Mathews will direct NASA's effort to utilize manned Apollo space vehicles to extend scientific and technical exploration of space in Earth orbit and at lunar distances.

Prior to the Gemini assignment in 1963, Mathews was Chief of the Spacecraft Technology Division and Deputy Assistant Director for Engineering and Development at the Houston center.

Mathews joined the Langley Research Center in 1943 following graduation from Rennselaer Polytechnic Institute, with a B.S. degree in Aeronautical Engineering.

At the Langley Center he was engaged in aeronautical research and participated in early studies on reentry orbital manned spacecraft. He served as chairman of the group which developed detailed specifications for the Mercury spacecraft.

He was awarded the NASA Distinguished Service Medal by President Johnson last month for his contributions to United States manned space flight as Manager of the Gemini Program.

FOR SALE: 1957 Chevrolet, $550. Powell, 851-1049 after 4.

FOR SALE: 1963 Rambler station wagon Cross Country 500. Velseor, 723-5527.

FOR SALE: 2 snow tires, fit 13-inch rim. Braxton, 596-2785.

FOR SALE: 1966 Dart GT - $2295. Bowen, 851-5895.

FOR SALE: 18-foot outboard runabout, convertible top with side and rear curtains, 35 hp electric start engine, tilt trailer, many extras - $845. Kelly, 851-1470.

FOR SALE: 1963 Rambler Classic 660, 4-door, 6-cylinder, $775. Monta, 877-9329.

FOR SALE: German Shepherd pups. Crawley, 722-8406.

FOR SALE: Zimmer house trailer, 47 x 8 feet, fully furnished. Scoggins, 722-8773 after 6 p.m.

MARINER IV STILL OPERATING

Mariner IV, launched two years ago on its historic Mars photo mission, has flown more than one billion miles in space and continues to operate properly, reporting its condition to Earth three times a week.

NASA said the spacecraft, now in its 748th day of flight, has been transmitting data to the Goldstone Deep Space Network Station in Calif. across a distance of over 206 million miles.

Mariner IV was launched from Cape Kennedy on November 28, 1964. It completed its primary mission August 2, 1965, after transmitting to Earth 22 pictures of the Martian surface. The photos were made when it flew within 6118 miles of the planet on July 14, 1965.

By using Goldstone's new high-precision 210-foot antenna, Mariner officials at the Jet Propulsion Laboratory have been able to monitor periodically many of Mariner's subsystems and its scientific instruments.

Recent data from the spacecraft, collected by the "210" and its supersensitive radio receiver, indicated that the occurrence of an intense solar flare last September caused a slight loss in the total power capability of Mariner's solar panels. The "class three" solar storm, which raged more than a week and reached its peak on September 3-4, was detected by NASA's Pioneer VI and VII spacecraft in orbit around the Sun and by Lunar Orbiter I, then revolving the Moon.

Because the Mariner IV design allowed for a 20 per cent panel degradation by such an occurrence, the power loss caused by the flare - probably less than half that allowed for - is not expected to jeopardize the continuing performance of the spacecraft. Mariner was about 166 million miles from the Sun when the flare occurred.

Other information derived from analysis of the telemetry data indicates that Mariner's attitude control system has a nitrogen gas supply capable of keeping it stabilized for more than a year and that temperatures and voltages of all systems including the scientific instruments are as expected.

Mariner IV currently is being tracked by the 210-foot antenna on a time-sharing basis with Pioneer VI which has been in solar orbit for nearly a year and also is beyond the range of the Deep Space Network's 85-foot antennas. If Mariner continues to function until June, 1967, communications with it may be stepped up. Mariner's orbit will bring it to within 30 million miles of Earth next September, when it is planned to attempt several engineering experiments in addition to receiving interplanetary science information.

COLD WEATHER CAUTION

"As temperatures drop, fire dangers rise."

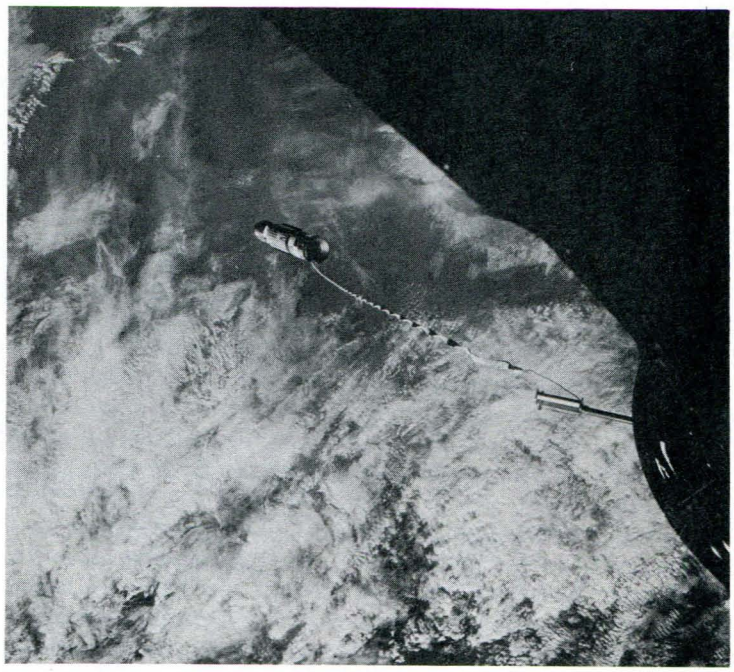
With cold weather on hand, it's smart to heed this conclusion of the National Fire Protection Association, based on studies of thousands of fire records.

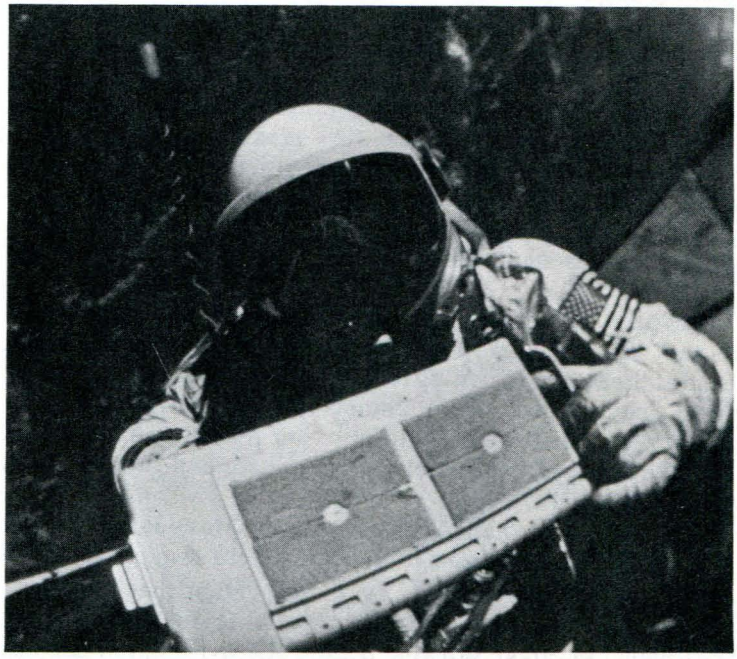
A major step to take for family safety is to have your heating equipment cleaned and checked. Correct any defects without delay.

Especially hazardous are any fixed or portable room heaters which are not in first-class operating contition.

Remember: It's good to be warm, but essential to be safe!

FOR SALE: Ravell slot car racing set. Wolberg, 838-3042.





The top photograph shows the Agena Target Docking Vehicle at the end of tether securing it to the Gemini XII spacecraft. Crew members for the last flight in the Gemini program were Astronauts James A. Lovell, command pilot, and Edwin Aldrin, pilot. Lower photo - Astronaut Aldrin carries a micrometeoroid package to the spacecraft from adapter section during extravehicular activity.

FOR SALE: 14-foot runabout with fiberglas bottom and deck, 18 hp Evinrude motor, trailer, accessories - $300, also student trombone. Keller, 838-1905.

FOR SALE: Storkline cribs and mattress, also stroller. Miller, 877-3431.

FOR SALE: 1959 Oldsmobile 88. Sealey, 826-2679.

FOR SALE: 3-cushion sofa - $35. Robertson, 898-6782.

FOR SALE: 1965 Allstate motorcycle, $ 95. Poling, 826-8975.

FOR SALE: Snare drum with white pearl finish, stand, and carrying case - $50. Randolph, 887-5056.

PLANETARY PARACHUTE FLIGHT

Scientists at Langley Research Center announced that a preliminary analysis indicates a flight experiment to test parachute designs and techniques which might be useful in future attempts to soft-land instrumented capsules on Mars was completely successful.

A two-stage rocket was launched December 10 at the White Sands Missile Range, New Mexico, to an altitude of 127,500 feet - where the Earth atmosphere compares with that of Mars - and a parachute was deployed to study its flight characteristics in that environment.

The 30-foot-diameter test parachute was of the disc-gap-band type. It was enclosed at launch in a payload 5 feet long and 13-1/2 inches in diameter, and was ejected by the firing of a mortar after separation from the second rocket stage.

The parachute descended with the 200-pound payload suspended from it. The payload contained instrumentation for measuring parachute opening shock and its oscillation characteristics during terminal descent. A camera installed in a pod on the side of the payload recorded the parachute opening sequence as it was ejected.

The camera, parachute and payload were recovered after they landed on the test range.

An Honest John-Nike rocket carrying the scientific experiment was launched by the Missile and Drone Branch of Holloman Air Force Base. New Mexico.

The payload was traveling approximately 1100 miles an hour at 127,500 feet altitude when the parachute was deployed about 77 seconds after launch. The payload landed about 10 miles from the launch site after a flight of nearly one hour.

The disc-gap-band parachute, composed of a fabric disc as the roof, a gap providing the desired porosity, and a band at the skirt, is one of four types of parachute systems under study in the NASA Planetary Entry Parachute Program for selection of a suitable deceleration for Project Voyager. Other types include the cross, and two versions of the ring-sail.

Since all components used on any Mars lander of the future will be sterilized to prevent Earth organisms from contaminating the planet, it is important that the parachutes used as decelerators be able to survive the heat treatment in good working order. All parachutes used in the flight experiments are sterilized prior to launch to permit scientists to determine the effects of the heat treatment on their flight characteristics.

The parachutes are exposed to 125 degrees Centigrade temperatures for 60 hours prior to launch. It requires 30 hours for the parachutes to come up to 125 degrees and another 30 hours for them to cool - representing a total heat treatment time of 120 hours.

NASA scientists indicate that the parachutes flown to date in the Planetary Entry Parachute Program have not shown any appreciable degradation due to the sterilization heat cycle.

Saturday's flight was the fourth in a series of 15 experiments planned in the program. The series includes ten rocket-launched flights using sub-scale test units, this launch being the third in that series. Five balloon-launched, full-scale flight studies are planned, the first of which was conducted in August.

The Planetary Entry Parachute Program is managed by Langley Research Center. Clarence L. Gillis, Applied Materials and Physics Division, is program manager. Harold N. Murrow, Dynamic Loads Division, was project engineer for the rocket flight.

Visiting with Santa at the Activities Association's Annual Children's Christmas Party were Bonnie Jeane Brooks, daughter of Joseph D. Brooks, Full-Scale Research Division, and Mark R. Kepley, son of Bryce M. Kepley, Electrical Systems Division. Entertainment was furnished by Ann Woodard (right) and her puppets.

NEW YEAR'S DANCE DEC. 31

The Activities Association plans to welcome in the New Year and see the old one out on Saturday, December 31 at the Activities Building. This outstanding social event of the year will be semi-formal which means the ladies may wear long or short dresses and their escorts may wear business suits, tuxedoes or tails.

Only a limited number of tickets will be sold and they will be available at the Activities Building only. Admission will be eight dollars per couple which includes free setups and seasonal favors. Reservations may be made by calling the Activities Building, telephone 4583. No reservations will be held after 10:30 p.m.

Music for the affair will be furnished by Charlie Johnson and his band from 9 p.m. until 1 a.m.

Fireworks will not be permitted in the building and monitors will be stationed at various points.

THE COVER

Our thanks to Nettie J. Chandler, Technical Illustrating Section, Research Reports Division, for designing and drawing the beautiful winter scene on the cover, for her outstanding line drawing of Dr. Floyd L. Thompson, Director, and for her illustrations with the Director's Christmas message.

Nettie is a native of Christian County, Kentucky. She graduated from Hopkinsville High School, Hokpinsville, Kentucky, and studied art at Watkins Institute and Advertising Art School, both in Nashville, Tennessee, and Oklahoma City University. She joined the Center staff on September 18, 1956.

FOR RENT: One bedroom furnished apartment in Seaford, water and heat furnished - $70. Childs, 898-6719.

Langley Researcher

VOLUME 5, NUMBER 26 LANGLEY RESEARCH CENTER DECEMBER 30, 1966

GEMINI, SURVEYOR AND LUNAR ORBITERS TOP 1966 SPACE NEWS

Completion of the 12-mission Gemini project, a soft landing on the Moon, and startling new photographs of the Earth and the lunar surface highlighted the United States space program during 1966.

When astronauts James A. Lovell and Edwin E. Aldrin splashed down in the Atlantic Ocean on November 15 in their Gemini 12 spacecraft, a major milestone had been passed toward achieving the national goal of landing men on the Moon by 1970.

They and the crews of the preceding six Mercury and nine Gemini manned flights had proved that men could withstand the rigors of space, maneuver their craft, rendezvous in orbit and carry out activity in the hostile environment.

NASA's 1966 unmanned satellite program just as importantly continued its contribution to the ultimate lunar landing by gathering information necessary to the success of the manned program.

Surveyor I was vital to NASA because many of its elements of design and concept are similar to those on the Lunar Module designed to place U.S. astronauts on the Moon.

Launched from Cape Kennedy May 30, the Surveyor dropped gently on the Moon's Ocean of Storms two and one-half days later. Its contribution was more than 11,000 photographs of the lunar surface.

Later, two Lunar Orbiter spacecraft were launched to photograph possible landing sites for the astronauts. Lunar Orbiter I transmitted the first picture of the Earth made from the area of the Moon. Lunar Orbiter II, launched November 6, made on November 23 the first close-up (28 miles) pictures of the Crater of Copernicus, one of the most prominent features on the Moon's face.

This photograph gave many persons the first lunar picture they could readily relate to Earth topography.

It clearly showed mountains rising 1,000 feet from the crater floor with slopes up to 30 degrees. This photo and others taken by the Orbiter's telephoto lens will be used in analyzing potential landing areas before astronauts attempt their first flight to the Moon.

Also in preparation for the manned Apollo mission - the

(Continued on page 3)

HUMPHREY COMMENDS STAFF

Dr. Floyd L. Thompson, Langley Director, received the following letter of congratulations from Vice-President Hubert H. Humphrey:

"As Chairman of the National Aeronautics and Space Council, I extend my congratulations to you and your fine associates for your competent work in making the Lunar Orbiter program a brilliant success."

LANGLEY CENTER TO CELEBRATE GOLDEN ANNIVERSARY IN 1967

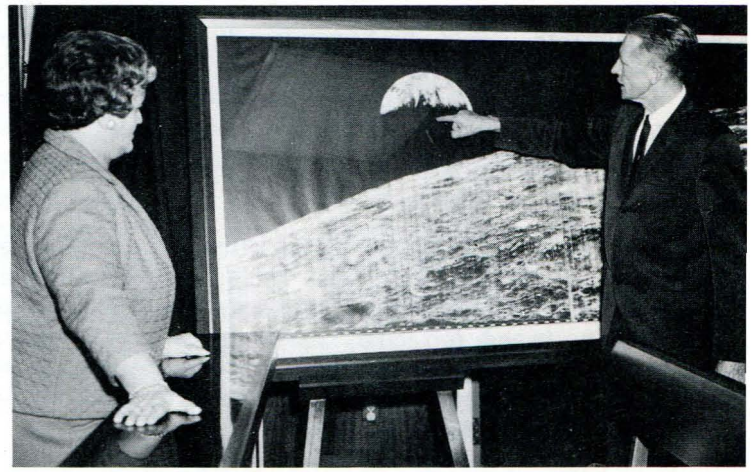
Langley Research Center's Golden Anniversary will be observed during 1967 in recognition of the Center's 50 years of service to the Nation.

Dr. Floyd L. Thompson, Director, has appointed a committee to organize and make plans for the Golden Anniversary celebration.

Members of the committee are: Axel T. Mattson, chairman, Donald D. Baals, H. Lee Dickinson, Henry A. Fedziuk, Peter F. Korycinski, Powell M. Lovell Jr., Edward T. Maher, and Anshal I. Neihouse, secretary.

A new official stationery with gold letter head will be used throughout the year to inform the public of Langley Research Center's 50 years of service to the Nation. All official correspondence must be on the new stationery by January 3. New supplies may be ordered from the Stock Section and the order number is 7530-P-19-1224. The stationery comes in lots of 500 and sections are requested to order one month's supply at a time.

The many celebration plans being made by the committee will be announced in future issues of Langley Researcher.



Dr. Floyd L. Thompson, Langley Director, presented an enlarged photograph of the Earth taken from the vicinity of the Moon at a meeting of the Hampton City Council on December 14. Looking on is the Honorable Mrs. Ann C. Kilgore, Mayor of Hampton. The picture will be placed in the Aerospace Museum when the building is completed. In the meantime, it will hang in the Council Chamber. The photograph represents the world's first view of the Earth taken by a spacecraft from the vicinity of the Moon. The photo was transmitted to Earth by the United States Lunar Orbiter I and received at the NASA tracking station at Robledo de Chavela near Madrid, Spain. This crescent of the Earth was photographed August 23 when the spacecraft was on its 16th orbit and just about to pass behind the Moon. The surface of the Moon is shown at the bottom of the photograph.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised herein must be offered for sale or rent without regard to race, creed, color or national origin.

ANNOUNCEMENTS

ZIP CODE. . .Staff members are reminded that after January 1 Zip Codes must be included in the address of all official mail and in the return address of envelopes, letterheads, and in official publications when addresses are shown. All applications, questionnaires, and other forms which contain spaces for inserting addresses must contain the heading "ZIP Code" and space for the insertion of ZIP Codes.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, January 3 at 7 p.m. at the Central Labor Union Hall, Newport News.

DIAPER LINE. . .Announcing the birth of a six pound, seven ounce daughter, Renee, on November 30 is Thomas Popernack, Research Models and Facilities Division. . .Word has been received at the Center that Carol B. Blakeslee, Flight Vehicles and Systems Division, became the mother of an eight pound, eight ounce daughter, Lisa Carol, on November 17.

LOST AND FOUND. . .The Security Office has a number of unclaimed articles that have been turned in to the section. Included are two windbreakers, man's sweater, man's rain coat, man's tweed top coat, man's beige gabardine top coat and a scarf. If these items have not been claimed within 30 days, they will be turned over to a charitable organization. For information call 2297.

PROFESSOR TO VISIT. . .Dr. Ralph A. Lowry, Department of Aerospace Engineering, University of Virginia, will visit the Center on January 5. Employees wishing an interview with Dr. Lowry should call the Training Office, telephone 2611, for an appointment.

REPRESENTATIVE TO VISIT. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on January 10 from 3 until 4 p.m. Employees having problems or questions concerning the plan may call Lois Taylor, 2605, for an appointment.

BOAT COURSE. . .The Hampton Roads Power Squadron will hold registration for a free small boat handling class at Ferguson High School cafeteria on January 10 at 7 p.m. The 12-week course is offered free twice a year.

UNDERGRADUATE COURSES

The Undergraduate Training Committee has approved the following courses for the Spring Semester which begins February 6:

Credit courses sponsored by William and Mary: Math 103 - Algebra and Trigonometry - 45 hours. An integrated study of the real number system, sets, functions, graphs, equations and inequalities, systems of equations, nometric functions and their properties.

Math 201 - Calculus with Analytic Geometry - 45 hours. Inequalities, absolute values and analytics through conics. Sets, ordered pairs and functions leading to limits and derivatives of algebraic and transcendental functions including application to maxima, minima, plane motion and Law of the Mean Value. Differentials and their applications.

Math 203 - Calculus with Analytic Geometry - 45 hours. Sequences and series including Taylor's and Macluarin's series and convergence. Solid analytic geometry and partial differentiation with applications. L'Hospital's Rule.

Math 410 - Vector Analysis - 45 hours. Topics from the algebra and calculus of vectors including addition and products of vectors, derivatives of vector functions, divergence and curl, integrals of vector functions.

Non-credit course sponsored by William and Mary: Basic Mathematics for College - 45 hours. The content of this course will include a review of advanced high school algebra, including trigonometry, and the introduction and the relationship of algebra and trigonometry to analytical geometry. Also the basic curves normally used in the equations associated with these curves that are normally encountered with analytical geometry.

Basic Mathematics for College - 45 hours. This will be a continuation of the course that began in the fall semester of 1966. The content of this course will consist of the function of angles, the solution of right and oblique plane triangles of trigonometric equations and of identities.

Non-credit course sponsored by Christopher Newport: Chemistry 001. Continuation of the course that began in the fall semester.

Non-credit course sponsored by Old Dominion: Electronic Instrumentation - 45 hours. This course is designed primarily for technicians who have previously studied in the field of electricity or electronics. This course will include the study of transducers, servo-systems, and the methods of measurements. Other subjects such as strain gages, fluid pressures, vacuum measurements, differential transformer applications, photo-devices, temperature measurements, vibration and sound will be investigated.

William and Mary courses are scheduled to begin Tuesday, February 7, and will be conducted immediately after work for three hours, one afternoon each week.

Course sponsored by Old Dominion will meet Monday or Tuesday afternoon from 4:30 to 7:30 p.m. for 15 weeks.

The Chemistry course will be held Monday and Wednesday nights from 7 to 10 o'clock at Christopher Newport.

Application forms for enrolling are available in the Training Office, telephone 2611. Approval of the supervisor and division chief is required before the applicant may enroll - except those who are continuing the courses that began in the fall. Applications must be returned to the Training Office by January 13.

WANTED: Ride from Glen Garden Apts. to W.A. on 8 shift. Robinson, 3401.

GEMINI, SURVEYOR AND ORBITERS

(Continued from page 1)

first scheduled early in 1967 - the launch vehicle development program saw three successful firings of the Uprated Saturn I, predecessor of the mighty Saturn V which will be used for the lunar landing flight.

Other scientific, weather and communications satellites launched in 1966 included the second Nimbus meteorological craft, Nimbus II, which was placed in polar orbit, as well as three Environmental Science Services Administration (ESSA) satellites. The ESSA launches inaugurated the operational meteorological satellite system established by the U.S. Department of Commerce.

An Orbiting Geophysical Observatory (OGO) joined two others already in orbit to study the relationship between the Sun and the nature of the Earth's environment. The Passive Geodetic Survey Satellite (Pageos I) offered better geodetic data on the entire Earth than could have been gained by traditional means.

Explorers XXXII and XXXIII returned information about the Earth's environment with XXXIII looking at areas in space far beyond the Moon. In addition, Pioneer VII joined Pioneer VI in orbit around the Sun to continue a program of measurements at widely separated points in interplanetary space over the solar cycle.

The Centaur hydrogen-powered launch vehicle was test-fired twice successfully and launched two Surveyor spacecraft. The vehicle was established as fully operational and capable of placing large payloads on the Moon and ready for interplanetary roles in the future.

An all-solid propellant rocket motor producing 3.5 million pounds of thrust was ground-tested successfully. Meantime, a 260-inch-diameter motor with 5 million pounds of thrust was scheduled for the test stand in 1967.

Flown successfully was the M-2 lifting body, a two-and-one-half-ton manned vehicle under study to help NASA establish a technological base for the design of future spacecraft.

International cooperative space activities carried out during the year included sounding rocket experiments with Argentina, the Federal Republic of Germany, Brazil, Canada, India, Norway, Pakistan and Spain.

In particular, the U.S. cooperated in the launching of sounding rockets during solar eclipses in May and November with Greece, Brazil and Argentina. An agreement with France was reached for a joint project to collect meteorological data with balloons and satellites.

In December, the U.S. and the Soviet Union entered into a treaty banning nuclear weapons in space and specifying the Moon and other celestial bodies will be used "exclusively for peaceful purposes."

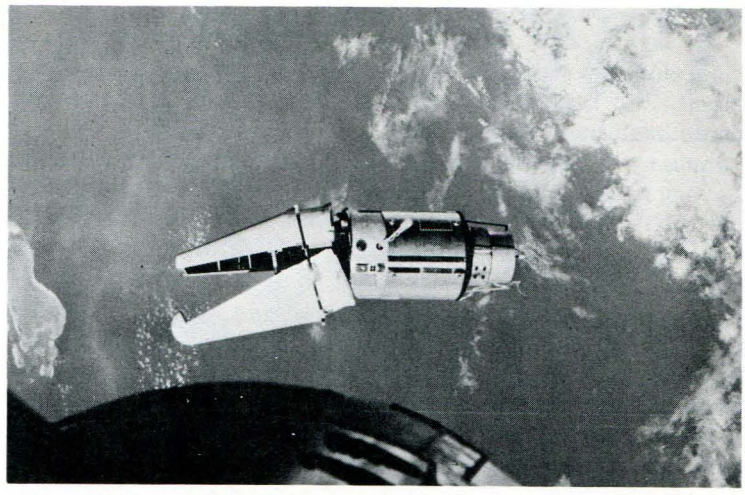
FOR SALE: Girl's 20 inch bike. Youngblood, 877-1224.

FOR SALE: Siamese kittens - $15. Garrison, 826-7081.

FOR SALE: Lionel 027 train, 30 feet of track, many extras, $15. Fournier, 596-0758.

FOR SALE: Kenmore washing machine - $75, size 7 shoe skates and carrying case - $10, twin-size foam rubber mattress, box spring, hollywood-type bed - $20. Neihouse, 826-0239.

FOR SALE: 1963 Ford Falcon - 2-door sedan - $250. Kooi, 596-7598.



ANGRY ALLIGATOR. Looking like a riled-up alligator with jaws agape, the Augmented Target Docking Adapter which was launched during the Gemini 9 mission failed to jettison its fiberglass cover. The jaws-open scene greeted astronauts Thomas P. Stafford and Eugene A. Cernan when they aimed their cameras at their target vehicle which had preceded them from a Cape Kennedy launch.

EXAM OPEN FOR SUMMER JOBS

Three nationwide exams are being given for summer employment in Federal installations. Filing dates for the first two exams have passed, but candidates who apply by January 9 will be tested February 4.

The Office and Science Assistant Examination covers positions at grades GS-1 through GS 4, depending on the applicant's education and experience.

The jobs are located in Federal agencies and installations through the United States. Most of the appointments will be made to fill office jobs such as typists, office machine operators, stenographers, and clerks.

To apply for the exam Application Card Form 5000-AB should be mailed to the U.S. Civil Service Commission, Washington, D.C. 20415 by January 9. Application forms may be obtained from college placement offices, post office, or interagency Boards of Examiners.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile made its last visit of the year to the Center on December 7 and staff members donated a total of 167 pints of blood.

Harry J. Thompson and Charles J. Yates reached the five-gallon mark and Harold D. Stalnaker, Boise E. Brinkley and Joseph Daniels completed their quota for a four-gallon pin. Reaching the three-gallon mark were Harry B. Slade, William E. Cox, Ralph E. Moscater, and John H. Anderson. H. W. Leonard, Thomas Desmett, and George L. Meidinger received two-gallon pins. One-gallon pins were presented to Robert V. Doggett and William A. Tuck.

Assisting during the visit were Dr. Grey C. Hughes and Dr. Donal S. Parker.

WANTED: Ride from Clay St., Newport News, to W.A. on 7:30 or 8 shift. Betty Deans, 3607.

WANTED: Driving combination from Boxley Hills to W.A. on 8 shift. Anspach, 3221.

FOR SALE: Siamese kittens - $20. Crommie, 596-5801.

FOR SALE: Gibson 12-string guitar - jumbo concert body-$225. Anthony, 838-2616.

LIFE AT LANGLEY DURING 1966

As another eventful and progressive year comes to a close, we take time out to look back over the news that made headlines during 1966.

January - Horne Presented Thulin Medal by Swedish Aeronautical Group. . .Center Plans Safety Slogan Contest. . .Gemini and Mariner Successes Mark Year In Space. Project Christmas Star Highly Successful. . .Forty-four Retired Employees Honored.

February - Five Scientists Receive Special Service Awards. . .Explorer I Marks Eighth Anniversary. . .Barbara W. Sain Wins Safety Slogan Contest. . .Scout Reentry Test At Wallops Provides Data On Heat Shield. . .Edward A. Hudgins Assists In Rescue Of Three In Helicopter Crash At Sea. . .Inspection Team Visits Center. . .NASA Defers Voyager Mission.

March - Gemini 8 Launched From Cape Kennedy. . .Jet Shoes Seen For Space Walk. . .Amole Heads Joint Drive. . . Film Produced By Langley Wins International Award. . . Spacecraft Contractor For Scout Reentry Heating Experiment Named. . .Honeywell Named For Horizon Definition Experiment Study.

April - Astronauts Develop Flight Techniques In Langley Simulators. . .Homer G. Morgan Selected Winner Of Sloan Fellowship. . .Contractor Selected By Langley For Advanced Lifting Body Study. . .VARC Offers Graduate Study Program In Physics. . .Perry Deal Reaches Record Speed In Winged Helicopter. . .Langley Gives Scout Launch Vehicle To Aerospace Park.

May - Langley To Test Parachutes For Use In Mars Research. . .13 Groups Receive Shop Safety Awards. . . NASA-Developed Parawing Tested By Army Chutists. . . Langley Negotiates For Two-Gas Sensor System. . .Gemini 9 Launched. . .John F. Clark Named Goddard Director.

June - American Helicopter Society Presents Fellowship To Reeder. . .Joyner and Horne Honored At National Meeting Of Society Of Automotive Engineers. . .Joseph A. Walker, Test Pilot, Dies In Aircraft Accident. . .Struhar Elected President Of Accountants Association. . .West Cafeteria Receives Face-Lifting. . .Patrick Riley Wins Detroit News Award. . .Mariner IV Again Reporting.

July - PAGEOS Orbits Poles On Earth Mapping Project. . . Sixty Staff Members Receive Advanced Degrees. . .Rogallo Elected AIAA Fellow. . .Reactor Power System Under Study For Manned Spacecraft. . .Fifteen Pilots Test Army XV-5A. . .Henderson Named President-Elect Of Supersonic Tunnel Association. . .Gemini 10 Launched. . .Staff Members Complete Skin Diving Course.

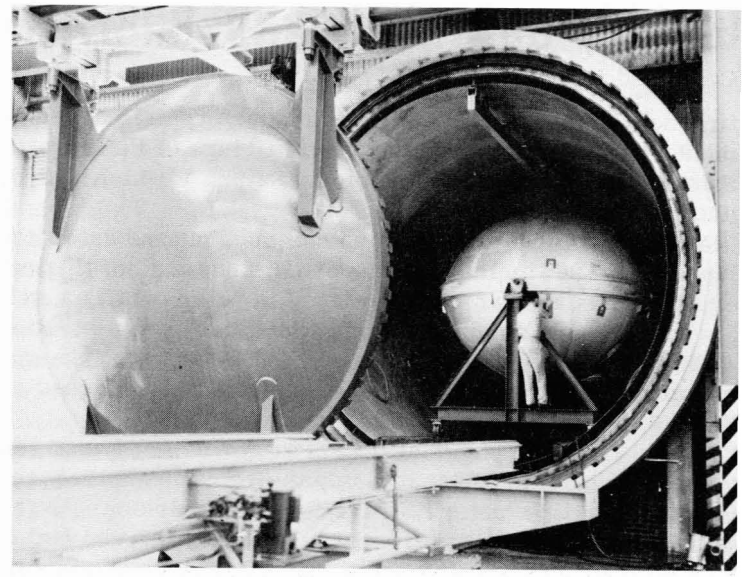
August - Lunar Orbiter I Photographs Moon. . .Robert W. Boswinkle Heads United Fund Drive. . .Leonard Roberts Named Director Of Mission Analysis. . .Study Underway To Use Balloon As Venus Probe. . .Scanner Experiment Launched. . .New Research Facility Opens At Ames. . . Pay Bill Offers New Benefits.

September - Lunar Orbiter Team Returns After Successful Mission. . .News Media Praise Lunar Orbiter Launch - Congressman Downing Commends Staff. . .Langley Group Completes Noise Research Program. . .Orbiter Reveals Moon To Be Pear Shaped. . .1500 Attend Lunar Orbiter Introductory Briefings. . .Gemini 11 Launched. . .Parachute Test Successful. . .Retirement Act Amended.

October - Herbert A. Wilson, Dr. George F. Pezdirtz And Two Langley Teams Honored At NASA's Annual Awards Ceremony. . .Annual Awards Ceremony Held At Langley. . Scientists-Astronauts Needed For Future Space Missions. Eighty-Seven Apprentices Graduate. . .Langley Federa Credit Union Dedicates New Building.

November - Lunar Orbiter II Launched Successfully Fron Cape Kennedy. . .Hugh L. Dryden Memorial Fund Established To Build Auditorium. . .Activities Associatio Celebrates Twentieth Anniversary. . .Scout Vehicle Set New Record. . .Staff Members Donate $69,434 To Unite Fund. . .Gemini Space Flight Program Ends With Launc Of Gemini 12. . .Langley Conducting Flight Tests On P-112 Airplanes. . .Kock Resigns As ERC Director; Elms Name Successor. . .Apollo Launch Due Next Year.

December - Lunar Orbiter II Sends Back Excellent Picture of Moon Surface. . .Arthur W. Vogeley Cited Fo Gemini Contributions. . .Planetary Parachute Flight Successful. . .Wright Brothers Day December 17.



Newest research tool at Marshall Space Flight Center is this giant autoclave. The 39-foot-diameter vessel provides a controlled atmosphere for curing (hardening) adhesives in honeycomb panels. Operating temperature of the big pot is 800 degrees F. with nitrogen gas used to pressurize the cylindrical autoclave to as high as 100 pounds per square inch. A technician is preparing a "gondola" for a pressure test. Marshall engineers are studying other uses for the unit.

NEW YEAR'S DANCE DEC. 31

The outstanding social event of the year will be held Saturday, December 31 when the Activities Association sponsors the annual New Year's Dance at the Activities Building The affair will be semi-formal which means the ladies may wear long or short dresses and their escorts may wear business suits, tuxedoes or tails.

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