Langley Researcher

VOLUME 3, NUMBER 1 LANGLEY RESEARCH CENTER JANUARY 3, 1964

NASA TO NEGOTIATE WITH BOEING FOR LUNAR ORBITER SPACECRAFT

The Boeing Company, Seattle, Washington, has been selected by NASA for negotiation of a contract to build the Lunar Orbiter spacecraft. The incentive-type contract is expected to exceed $60,000,000.

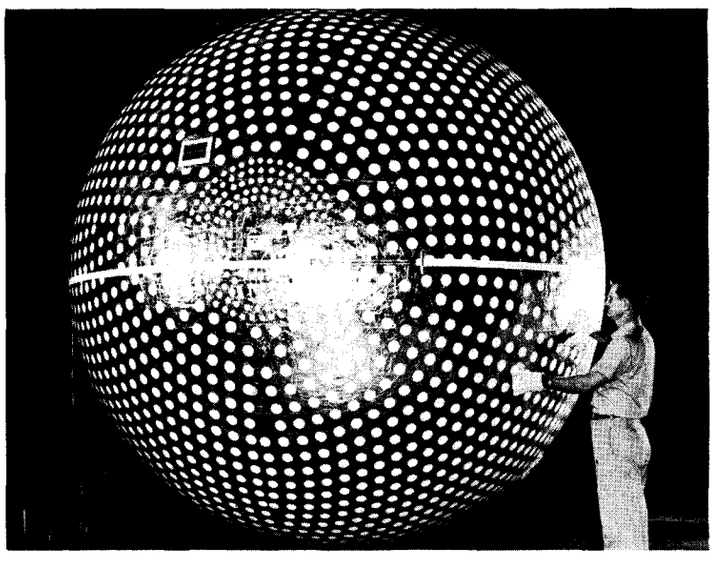
Boeing was one of five firms bidding. The others were: Hughes Aircraft Company, Space Systems Division, Culver City, California; Lockheed Missiles and Space Company, Sunnyvale, California; The Martin Company, Baltimore, Maryland; and Space Technology Laboratories, Inc., Redondo Beach, California.

After detailed technical review of the various methods proposed by the competing companies, Boeing was selected as offering the greatest assurance that mission objectives would be met. This method calls for the spacecraft to be three-axis stabilized, use an Eastman Kodak-developed camera system, and RCA power and communications subsystems.

Project management of the Lunar Orbiter mission will be by the Langley Research Center under the over-all direction of the Office of Space Science and Applications, NASA Headquarters.

The Lunar Orbiter Program will include five spacecraft to be launched by NASA to take close range photographs

(Continued on page 3)



A Langley technician inspects an inflated Air Density Explorer satellite similar to the one which was launched from the Pacific Missile Range December 19. The 12-foot diameter sphere is covered with white painted dots for temperature control to insure satisfactory operation of the tracking beacon, solar cells and batteries mounted on the skin of the sphere. The white band around the sphere is an insulating gap, dividing it into halves which then form an antenna for the tracking beacon.

AIR DENSITY EXPLORER SUCCESSFULLY LAUNCHED

NASA launched a 12-foot diameter spherical satellite from the Pacific Missile Range, Pt. Arguello, California, on December 19.

The inflatable sphere, which is called Air Density Explorer, was launched by a Scout Vehicle. The mission is similar to that of Explorer IX which was flown by NASA from Wallops Island in 1961.

An NASA official said both the 12-foot diameter balloon and the cannister from which it was ejected in space were sighted with binoculars at an optical tracking station in Australia. Until the sighting it was in doubt whether it had achieved orbit and inflated as planned.

Both the spacecraft and launch vehicle are programs of NASA Headquarters Office of Space Science and Applications directed by Dr. Homer E. Newell. Project management for both the Explorer and Scout is by the NASA Langley Research Center.

Covered with aluminum, the fragile sphere will be visible to the naked eye under twilight conditions. Scientists estimate it will have the brightness of a third magnitude star at perigee.

The major objectives of this mission are:

1. To extend upper atmospher air density studies to the polar regions and to determine density and temperature of the atmosphere at various latitudes.

Although the density of the **Earth's atmosphere** diminishes rapidly at high altitudes, there are enough gas molecules to cause resistance or drag to spacecraft moving through them.

Information about high altitude air density is gathered by measuring the slight variations in satellite orbits. Lightweight satellites of large size such as the Air Density Explorer are ideal instruments for making such measurements since they are extremely sensitive to any resistance they encounter in space.

2. To measure flight performance of the new X-258 fourth stage of the Scout launch vehicle.

A package of instrumentation was carried in a rack on top of the fourth stage to monitor flight environment and performance of the stage -- such things as shock, vibration, chamber pressure, temperature and accelerations.

The X-258 is a solid stage and normally Scout project officials must rely on the orbit achieved by a launch to determine its performance. In early Scout developmental flights, the predecessor X-248 fourth stage was instrumented to determine its flight characteristics.

With detailed environmental data on the new X-258, Scout project officials will be able more accurately to predict for future launches the performance of this stage in injecting spacecraft into orbit.

Additional information on performance characteristics also may make possible some relaxation in spacecraft

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

MARRIAGES. . .Wedding bells rang on December 14 when Louette Dail, Administrative Services Division, took her final vows with Lanny E. Mosley, Virginia Beach, at the Free Will Baptist Church, Newport News. Helen Lamberth, Administrative Services, was maid-of-honor. . .Linda Thompson, Personnel Division, married James E. Johnson, Hampton, on Christmas Day.

NEW ARRIVALS. . .Weighing in at eight pounds, four ounces on December 15 was John James, new son of Judy, Dynamic Loads Division, and James Ferris, 8-foot Tunnel. . . Announcing the arrival of a six pound, eight ounce son, Richard James, on December 13 is Bob McGhee, 8-foot.

ENGAGEMENTS. . .A division romance reached the engagement stage when Mary Ella Gerich and Leonard P. Kopia, both of Instrument Research Division, announced their plans for a spring wedding. . .Dan Cupid scored another victory when Nancy Powell and George Sykes, both of Structures Research Division, announced their engagement. 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 January 14 from 3 p.m. until 4. Richard F. Brody, Government-wide Service Plan representative, will be here on January 15 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

THEATRE TRYOUTS. . .The Community Theatre will hold tryouts for its winter play, "The Gang's All Here," Sunday, January 12 at 2:30 p.m. and Monday, January 13 at 7:30 p.m. at the Jewish Community Center, Newport News. The play will be directed by H. Granville Derby, 8-foot. Four women and 14 men are needed in the cast and tryouts are open to the public. Scripts are available to anyone wishing to read the play before tryouts. Anyone interested in the production end of the theatre is asked to attend tryouts or call Clyde Winters, 4875.

CREDIT UNION MEETING. . .The annual meeting of the Langley Federal Credit Union will be held on January 20 at 7:30 p.m. in the Activities Building. Further information will be published in the January 17 issue of Langley Researcher.

FOUND: Man's wedding ring. Langley Researcher, 2375.

BLOOD DONORS THANKED

Mrs. Patricia B. Stern, Executive Director of the Hampton Chapter, American Red Cross, has sent the following letter of thanks to Dr. Floyd L. Thompson, Director:

"The Hampton Chapter of the American Red Cross wishes to express its most sincere appreciation to you and through you to all the employees who donated their blood during our Bloodmobile visit of December 11, making it a tremendous success. The total of 197 pints collected made all the work and planning that go into a successful Bloodmobile more than worthwhile.

"...Not only are thanks due for this particular visit, but for each and every visit during the year for we can always count on making our quota every time we visit NASA.

"We are deeply appreciative of NASA's cooperation in the Tidewater Blood Program."

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of January 6:

Monday - Minestrone soup, hot roast beef sandwich with mashed potatoes and gravy .50, barbecued spare ribs .45, spaghetti with meat sauce .40, fish cakes with cole slaw .25.

Tuesday - Cream of potato soup, pot roast of beef .50, veal cutlet Parmesan .45, grilled ham slice .40, barbecued sandwich .25.

Wednesday - Bean soup, roast veal with dressing .55, corned beef and cabbage .45, fried chicken .35, baked hash .25.

Thursday - Cream of tomato soup, grilled steak .60, fried fantail shrimp .45, liver and onions .35, tamale pie .25.

Friday - Clam chowder, roast beef .50, barbecued beef chunks over steamed rice .45, broiled fish .35, fried fish .35, frankfurter .15.

The menu for the week of January 13 is as follows:

Monday - Split green pea soup, chuckwagon steak .45, baked ham .40, chicken chow mein over crisp noodles .35, Western omelette .25.

Tuesday - Tomato-barley soup, roast ribs of beef .50, shrimp Newberg .45, Salisbury steak .40, cheese omelette .25.

Wednesday - Chicken-noodle soup, Swiss steak .50, chicken and dumplings .45, creamed dried beef on toast .35, hamburger .20.

Thursday - Vegetable-beef soup, grilled rib eye steak .65, baked stuffed pork chop .45, ham and noodle casserole .40, cheeseburger .25.

Friday - Clam chowder, fried clams .55, Spanish pot roast .50, broiled fish .35, fried fish .35, beef ravioli .25.

HELICOPTER SOCIETY MEETS JAN. 15

The Hampton Roads Section of the American Helicopter Society will meet on January 15 in the Warwick-James-York Room, Officers Club, Fort Eustis.

John Reeder, Assistant Chief of Flight Mechanics and Technology Division, will speak on "Summary of Pilot Experience With First Generation V-STOL Aircraft." The talk will be illustrated with movies.

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.

For reservations call one of the following by noon on January 14: LeRoy Ludi, 877-1161, or Robert J. Pegg, PA 3-5276.

AIR DENSITY EXPLORER

(Continued from page 1)

environmental standards and testing. In addition to increased performance, the X-258 is a smoother burning stage than the X-248 and spacecraft will not be required to withstand such high vibration levels.

The fourth stage instrumentation was designed and built by the NASA Goddard Space Flight Center. The Scout was launched by the U.S. Air Force 6595th Aerospace Test wing.

In addition to the two major objectives, the mission will test recent modifications to Scout's third stage hydrogen peroxide control system. Some additional instrumentation was carried by the third stage to monitor the control system environment and performance.

This was the first in a series of three planned launches of Air Density Explorers. In the following two launches, scheduled for next year, an Injun Explorer will be flown along with the inflatable sphere.

The Air Density Explorer spacecraft, like Explorer IX, is an inflatable structure built up of four alternating layers of 1/2 mil thick aluminum foil and 1/2 mil polyester film known as Mylar. (A mil is one-thousandth of an inch). The inner layer is plastic; the outer most aluminum is foil which reflects both sunlight and radio waves. It was built by technicians of the Langley Center who bonded together 40 flat gores of the aluminum-Mylar sandwich to form a sphere. In order to make the sphere serve as its own radio antenna, it is separated into halves by a strip of plastic. Temperature control is provided by painting a series of white dots on the outer surface, giving the spacecraft a polka-dot appearance.

A tracking beacon is placed inside the skin of the satellite, diametrically opposite a group of nickel-cadmium batteries which form a part of the power supply. Four groups of solar cells protected from radiation damage by quartz windows are located on the outer surface of the satellite. The energy they gather when the satellite is in sunlight will recharge the storage batteries and provide electrical power to operate the tracking beacon. All the elements of the beacon electrical system are interconnected by ribbon wire.

WALKER PILOT OF THE YEAR

Chief X-15 pilot Joseph A. Walker has been selected by the National Pilots Association as its 1963 Pilot of the Year. Walker, who is chief research pilot for NASA's Flight Research Center, was honored at ceremonies held in Miami, Florida, last month.

The award was made in recognition of Walker's contribution to aeronautical research and the general advancement of aviation. Participating in the X-15 research program since its inception, Walker has flown the rocket-powered aircraft 25 times, more than any other man. He has also flown the X-15 to its fastest speed, 4,104 miles per hour, and its highest altitude, 354,200 feet. Both of these marks are unofficial world records for manned winged vehicles.

The National Pilots Association is an organization comprised of pilots from all branches of aviation. A. Paul Vance, president of the NPA, presented the award to Walker at the banquet following the annual NPA convention.

FOR SALE: 1963 4-door Chevrolet with straight shift. Hudgens, LY 6-1997.

A technician inspects the telemeter instrumentation of an Air Density Explorer inflatable satellite The container with the packaged 12-foot sphere was lofted into orbit in the nose of a four-stage solid-fuel Scout vehicle.

LUNAR ORBITER SPACECRAFT

(Continued from page 1)

of the Moon's surface. The first launches are planned to begin in 1966. The spacecraft will also carry scientific sensors to measure such conditions as radiation and micrometeoroid density.

The Lunar Orbiter is a major addition to the nation's program of space exploration. It will complement the Ranger hard landing spacecraft and the soft landing Surveyor. As well as providing important scientific data about the Moon, these three projects are needed to pave the way for Apollo manned lunar landing missions.

Both broad and narrow areas of the lunar surface will be photographed by the Lunar Orbiter camera system. These pictures will be useful in selecting the landing sites for future missions, both manned and unmanned. Photographs taken by the orbiter will be transmitted by telemetry to ground receiving stations of NASA's Deep Space Network (DSN) operated by the Jet Propulsion Laboratory, Pasadena, California.

In addition to the on-board experiments, tracking data from the spacecraft over a period of time will provide information on the gravitational field of the Moon and its mass distribution -- important in the design of lunar navigation systems.

BASKETBALL SCHEDULE

The NASA Basketball League will begin its season on January 6. The league is the same as last year with two divisions with six teams in one group and five in the other. Scoring will be handled the same way as last year and each team on the night they play must supply one man for this job. There will be a playoff between the top 4 teams of each division at the end of the regular season. For further information call David Vann, 4691.

	5:00	6:15	7:30	8:45
Jan. 6	8-10	7-9	1-5	8-10
Jan. 9	2-4	1-3	9-11	7-8
Jan. 15	8-9	7-10	2-3	5-6
Jan. 18	1-6	2-5	7-11	9-10
Jan. 22	8-11	3-6	7-9	1-2
Jan. 23	2-6	1-4	3-5	10-11
Jan. 27	4-5	7-8	1-3	9-10
Jan. 29	1-6	8-11	7-10	3-4
Feb. 5	2-3	1-5	10-11	7-8
Feb. 6	8-9	2-4	3-6	7-11
Feb. 10	3-5	8-10	4-6	1-2
Feb. 12	9-11	7-10	2-4	5-6
Feb. 17	9-10	3-5	2-6	7-8
Feb. 19	3-6	8-10	2-5	9-11
Feb. 20	1-5	7-9	8-11	3-4
Feb. 24	2-6	7-11	1-4	9-10
Feb. 26	10-11	4-6	8-9	1-2
March 4	2-3	4-5	7-10	8-11
March 5	1-3	7-9	8-10	5-6
March 9	10-11	8-9	4-6	---
March 11	4-5	1-6	9-11	---
March 16	1-4	2-5	7-11	---

TEAMS: 1. Misfits, 2. Short Circuits, 3. AMPD, 4. 8-foot, 5. Hoteyes, 6. Bucket Brigade, 7. Scout. 8. Greenhorns, 9. Packers, 10. 8-foot HTST, 11. Reid's Raiders.

CIVIL SERVICE EXAM OPENED

Applications are now being accepted for Stenographer and Typist under Announcement PH-1(64). Because the requirements have been changed, all eligibilities under the previous announcement are being cancelled. Those wishing to establish eligibility under the new announcement must submit an Application Form No. 5000-AB to the Board of U.S. Civil Service Examiners, NASA, Langley Research Center, Langley Station, Hampton, Va.

This Board maintains the Stenographer and Typist registers for all Federal agencies in the Hampton-Newport News area. Persons wishing to be in the first group to be tested under the new announcement must submit their application on or before January 17.

CAFETERIA NOTICE

The Armed Forces Staff College will visit the Center on Tuesday, January 7 and will use both the East and West Cafeteria facilities that day starting at 12:25 p.m.

Employees are urged to arrange their lunch periods so as not to interfer with the time allotted for the visitors.

FOR SALE: 3-bedroom brick home with garage. Stewart, 838-1917.

FOR SALE: Youth bed with mattress and box springs - $15. Keynton, 826-5549.

Gloria Alto, Clerk Stenographer in the Flight Vehicles and Systems Division, was recently presented the Peninsula Secretary of the Year Award by the Peninsula Chapter, National Secretaries Association. The group is composed of local professional secretaries and the recipient of the annual award is elected on a point system by a committee of former winners of the honor.

MARINER MARKS ANNIVERSARY

One year ago on December 14, the first successful interplanetary spacecraft, Mariner II, flew past the planet Venus, probing the cloud-covered planet with electronic detectors and radioing its findings to Earth.

After passing Venus, Mariner II continued in a perpetual orbit of the Sun. The last contact with the spacecraft was on January 3, 1963, twenty days after it completed the fly-by mission of Venus.

Scientists at the Jet Propulsion Laboratory which managed the project for NASA have tried to contact Mariner since then but without success.

Mariner II has traveled 754 million miles in 474 days since launch on August 27, 1962. It is currently ahead of Earth at a straight line distance of 76,172,000 miles. Its velocity, relative to the Sun, is 89,000 miles per hour, compared with Earth's 71,844 miles per hour.

During the 129 days that Mariner communicated with Earth, it reported 11 million measurements on interplanetary magnetic fields, micrometeorites, cosmic rays, protons and electrons emanating from the Sun and electromagnetic radiations from Venus.

It has been determined from the Mariner data that the clouds shrouding the planet Venus are cold and dense and the planet has a surface temperature on both sunlit and dark sides of 800 degrees F.

WANTED: Alternate drivers from Foxbridge and Fox Hill area to W.A. on 8 shift. Brown, 4835.

BOWLING NOTICE: Any individual interested in joining others to form a new team to bowl in the NASA Tenpin League on Tuesday nights at 6:45 at Hidenwood Fair Lanes are asked to call Joe Poslik, 4811, or send his name, address and telephone number to Poslik, Electrical Experimental and Development Section, Building 1244.

Langley Researcher

VOLUME 3, NUMBER 2 LANGLEY RESEARCH CENTER JANUARY 17, 1964

LOCAL AIAA CHAPTER TO HEAR TALK ON SURVEYOR PROJECT

John B. Gustavson

The Hampton Roads Chapter of the American Institute of Aeronautics and Astronautics will hear a presentation on the Surveyor Project by John B. Gustavson, Jet Propulsion Laboratory. The meeting will be held on Wednesday, January 22 at the Warwick Yacht and County Club.

Gustavson is a Project Engineer responsible for the rocket propulsion systems on the Surveyor, a spacecraft being developed under Jet Propulsion Laboratory management for NASA. Gustavson's job includes management of both liquid and solid propellant rockets presently under development at various industrial contractors.

After receiving his masters degree in Chemical Engineer-

(Continued on page 4)

Taxpayers who will receive a tax refund this year and Classified employees who received a pay increase this month as a result of the Federal Salary Reform Bill passed last year may watch their money grow by placing the refund or increase in U.S. Savings Bonds. Thousands of Americans received their Federal income tax refund in Savings Bonds last year. Those receiving refunds this year will enjoy the same privilege. Just check the box that says "U.S. Savings Bonds." Employees interested in subscribing to Savings Bonds or increasing their present allotment may obtain a bond authorization card from their attendance clerks or the Payroll Office, telephone 2267.

GENERAL PUTNAM TO ADDRESS ANNUAL CREDIT UNION MEETING

Brig. Gen. Walter B. Putnam

Langley Federal Credit Union will hold its 27th annual membership meeting on Monday, January 20, at 7:30 p.m. in the Activities Building and all members are urged to attend.

The meeting will feature a guest speaker, Brig. Gen. Walter B. Putnam of Tactical Air Command Headquarters; announcement of the 1963 dividend; election of the directors and credit committeemen; and presentation of the annual financial report.

To encourage member participation, two door prizes, one $50 and one $25, will be given, and the first 150 members who present their membership plates will each receive a silver dollar.

Business to be transacted by the membership includes selection of four directors and two members of the Credit Committee. Nominees for directors are Bernard Ellis, Victor Harkavy, Col. Glenn B. Riggles, and James C. Tingle. Credit Committee nominees are Frank A. Lofurno and Major Donald C. Mills.

Anshal I. Neihouse, Office of the Associate Director, will serve as toastmaster of the evening, and the meeting will close with light refreshments.

General Putnam, the featured speaker, completed his flight training and received his commission in the Air Force in 1938. At the beginning of World War II, he was stationed in the Philippine Islands with the 24th Pursuit Group. In the following nine months, General Putnam flew

(Continued on page 4)

GOUGH RETIRES FROM FAA

Melvin N. Gough, former Chief of the Center's Flight Research Division, recently retired from the Federal Aviation Agency where he served for about two years as Director of Aircraft Development.

A native of Anacostia, D.C., Gough attended Johns Hopkins University, graduating in 1926 with a B.S. degree in Mechanical Engineering. He joined the Center that same year and served first as an engineer, then test pilot and later Chief of the Flight Research Division.

When NASA was established in 1958, Gough was assigned to the Cape Canaveral facility. Two years later he left NASA to accept an appointment as Director of the Civil Aeronautics Board's Safety Bureau. He remained with the CAB for about two years before accepting a position with the Federal Aviation Agency.

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Staff Photographer.....Bob Nye
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ANNOUNCEMENTS

WEDDING BELLS. . .Jane Bryant Thompson, Analysis and Computation Division, took her final vows with Carlton Burton Kemper, Hampton, last Saturday at the First Presbyterian Church in Hampton. The bride was given in marriage by her father, Dr. Floyd L. Thompson, Center Director. Frances Taylor, Analysis and Computation Division, served as a bridesmaid.

NEW HEIR. . .Announcing the birth of a ten pound son, Steven, on December 21 are Sue, formerly of Applied Materials and Physics Division, and Sandy Stubbs, Structures Research Division.

ENGAGED. . .Making plans for a February wedding is Annice Whitehurst Bailey, Aero-Physics Division. She is engaged to William Chase Schuler of Farmville.

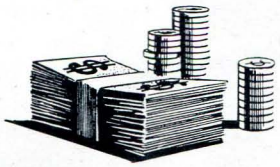
SLOW DOWN. . .Staff members using Gate 5, located behind the Unitary Wind Tunnel, are urged to observe the 25 mile per hour speed signs when entering the gate.

NIGHT OF HARMONY. . .The Hampton Roads Barbershop Chorus will present its first Annual Night of Harmony at Hampton High School on February 28. Featured will be such championship barbershop quartets as the Checkmates from Paterson, N.J., the 1963 Mid-Atlantic District Champions, the Continental Four from Willow Grove, Pa., the Spellbinders from Catonsville, Md., and the Portsmen, Norfolk's finest. The Hampton Roads Chorus, recently organized, brings barbershopping back to the Peninsula after an absence of five years. Its singing ensemble of 45 male voices includes a number of NASA employees. Tickets are available and may be obtained from Ira Ramsey, 2203; Norman Crabill, 3265; Jim Youngblood, 4528; Jack Davidson, 3401, and John McFall, 4895.

LIONS CLUB NOTICE. . .The nine Lions Clubs of the Peninsula are conducting a drive to collect all discarded eye glasses including lenses and frames. The glasses will be turned over to CARE for reconditioning and distribution overseas to the needy. The drive ends today and persons having old glasses may turn them in at any Esso Service Station or leave them with the empty milk bottles on the stoop to be picked up by the milkman.

FOR SALE: 1963 Chevrolet Impala. McElveen, 838-2374.
FOR SALE: Crosley electric range, $20, duo-therm space heater with blower, $15. Sharps, LY 6-3227.

Your
PAY RAISE
will mean more to you
TOMORROW
...if you put part of it in
SAVINGS BONDS
TODAY



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CAFETERIA MENU

The following menu will be served in the cafeterias during the week of January 20:

Monday - French onion soup, roast ribs of beef, deep fried shrimp, grilled pork steak, chili con carne.

Tuesday - Cream of tomato soup, sliced turkey with dressing and cranberry sauce, pot roast of beef, liver and onions, baked hash.

Wednesday - Chicken-noodle soup, half-pound chopped steak, corned beef and cabbage, fried chicken, franks and beans.

Thursday - Vegetable-beef soup, grilled rib eye steak, stuffed flounder, Polish sausage with sauerkraut, tamale pie.

Friday - Clam chowder, roast beef, veal stew, broiled halibut steak, fried fillet of flounder, hamburger.

The menu for the week of January 27 is as follows:

Monday - Minestrone soup, Swiss steak, breaded veal cutlet Parmesan, spaghetti with meat suace, grilled cheese and bacon sandwich.

Tuesday - Green split pea soup, Spanish pot roast, baked ham, chicken chow mein over crisp noodles, fish cakes with cole slaw.

Wednesday - Bean soup, roast beef, grilled pork chops, fried chicken, chili con carne.

Thursday - Vegetable-beef soup, grilled rib eye steak, baked Smithfield ham, pot roast of beef, chicken livers and rice, beef ravioli.

Friday - Clam chowder, roast veal with dressing, ham and noodle casserole, broiled fish, fried fish, hot dog.

Four employees recently retired from the Center with a combined total of over 138 years of Federal Service. Top left photo - Harold R. Turner (left) receives a photograph album from Dr. Floyd L. Thompson, Center Director. Top right photo - John C. Palmer, Chief of Flight Test Division at Wallops Station, presents a model of an early rocket vehicle to Joseph A. Shortal (right). The model is a replica of one of the first ones fired from Wallops. At that time Wallops was a part of Shortal's division here at Langley. Bottom right photo - William E. Hutcheson, Head of Purchase Branch, Procurement Division, presents a gift to Mrs. Rinda G. McBrayer who retired December 30.

FOUR EMPLOYEES RETIRE

Four employees recently retired from the Center with a combined total of over 138 years of Federal service. The retirees are Harold R. Turner, Safety Engineer; Joseph A. Shortal, Chief of Applied Materials and Physics Division; Mrs. Rinda G. McBrayer, Supervising Procurement Clerk in the Procurement Division, and Joseph Poslik, Cleaning Inspection Lead Foremen in the Plant Maintenance Division.

Turner was born July 30, 1894 in Ridgely, Maryland and graduated from Ridgely High School. He worked for private industry for ten years before serving with the Army in World War I. During the war he was in three different Army branches prior to duty with the chemical warfare service where he suffered from liquid fire burns that temporarily blinded and disabled him. For over a year he was almost totally disabled, but after careful treatment he was able to undertake vocational training.

Turner worked briefly for the Curtiss Aeroplane Company, Hempstead, Long Island, New York, under the Federal Board for Vocational Training until 1922 and, under the same program, he was a student at Langley Research Center from March to November 1922. On November 1, 1922, he officially joined the Center staff as a wind tunnel mechanic.

In August 1928 he was made chief engineering aide; in September 1941 he became Associate Aeronautical Engineer; and in May 1947 was appointed Safety Engineer. As Safety Engineer he was responsible for the administration and coordination of the safety program at Langley and served as a consultant and advisor to management and operational personnel on safety matters.

At the time of his retirement on December 30, he had over 42 years of Government service.

Shortal, who retired December 27 with more than 34 years NASA service, was born October 12, 1908 in Lufkin, Texas. He attended Lufkin High School and received his B.S. degree in Mechanical Engineering from Texas A & M College in 1929.

Shortal joined the Center staff in June, 1929 as a member of the Atmospheric Wind tunnel group. In 1937 he was placed in charge of the Free-Flight Tunnel. Appointed Assistant Chief of the Stability Research Division in 1947, he was responsible for the Spin Tunnel, Stability Tunnel and Free-Flight Tunnel. He was named Assistant Chief of the Applied Materials and Physics Division on November 1, 1948 and appointed Chief on June 30, 1951.

Mrs. McBrayer is a native of Mooresboro, North Carolina. She graduated from Boiling Springs High School in Boiling Springs, N.C. and received her A.B. degree in Commerce from Limestone College, Gaffney, South Carolina. She also attended Bowling Green Business University in Bowling Green, Kentucky.

From 1931 to 1940 she was head of the Commercial Department at Boiling Springs Junior College. She joined the Center staff on January 2, 1941 as a Junior Stenographer.

Poslik was born January 15, 1899 in Pittsburgh, Pennsylvania. He joined the U.S. Army in May 1918 and was retired December 1948 with the rank of Major. He joined the Center staff on November 2, 1955 as a Cleaner Foreman.

TWO FEDERAL POLICIES CITED

In accordance with Financial Interests and Investments Policy, NASA employees may engage in lawful financial transactions provided there are no real, apparent, or potential conflicts between their financial interests and their official responsibilities and duties.

The provisions forbid any employee who is directly or indirectly interested in the pecuniary profits or contracts of any business entity from acting as an officer or agent of the United States for the transaction of business with that business entity.

According to NASA policy, employees shall not participate on behalf of the Government in the negotiation or administration of any contract or agreement; in the selection or approval of any known sub-contractor under a NASA prime contract; in the technical monitoring or direction of work under contract; in any phase of source evaluation work; as a project monitor, or in any other similar type of activity when such activity of the employee affects a business organization in which he or his immediate family has a financial interest. This prohibition also applies if the business organization affected by such activity of the NASA employee is one with which he has a present or prospective employment relationship or with which he is negotiating concerning prospective employment.

Questions concerning these regulations should be referred to your supervisor or the Personnel Office.

Under Public Law 87-849, effective January 21, 1963, previous Conflict of Interest laws were repealed and re-enacted in a modified form.

In general the Conflict of Interest Statues deal with situations where a Government employee's private interest, usually of an economic nature, conflicts or raises a reasonable question of conflict with his public duties or responsibilities. These statutes are generally applicable to all NASA employees, including consultants.

Considerable emphasis is being placed on such situations and all employees are urged to re-read their copy of the Management Manual Instruction No. 3-7-1.

Questions concerning the interpretation or applicability of the Conflict of Interest Statutes should be referred to the Langley Chief Counsel.

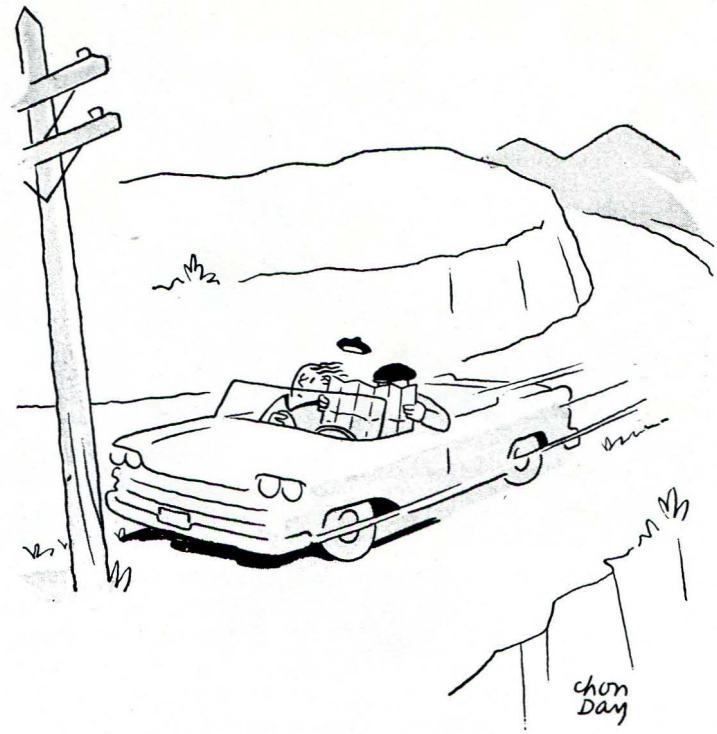
AIAA MEETS JANUARY 22

(Continued from page 1)

ing from the Technical University of Denmark in 1956, he gained experience in the field of space flight through employment at General Dynamics/Astronautics followed by one and a half years of graduate study in Aeronautical Sciences at the University of California at Berkeley. Later he specialized in solid rocket propulsion at Lockheed Propulsion Company and at the Rocketdyne Division of North American Aviation.

Gustavson's talk will describe the Surveyor Project, it's objective, and the role of the Jet Propulsion Laboratory in space. In conclusion he will look at follow-on missions with emphasis on the Lunar Roving Vehicle. His talk will be illustrated with slides and a motion picture on progress of the Surveyor.

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and Gustavson's talk at 8. Reservations must be made today with E. Boxer, CH 5-6212; C. Sandahl, LY 6-2392, or J. Ward, LY 5-0869.



"Let's have a look at this stupid map."

BASKETBALL SCHEDULE

	5:00	6:15	7:30	8:45
Jan. 18	2-4	6-10	7-9	1-5
Jan. 22	4-5	2-3	9-10	7-8
Jan. 23	1-4	3-5	6-9	8-10
Jan. 27	2-3	9-10	7-8	4-5
Jan. 29	8-9	1-2	3-4	6-7
Feb. 5	6-10	7-9	1-5	2-4
Feb. 6	2-5	6-8	7-10	1-3
Feb. 10	9-10	7-8	4-5	2-3
Feb. 12	6-8	7-10	1-3	2-5
Feb. 17	1-2	3-4	6-7	8-9
Feb. 19	7-9	1-5	2-4	6-10
Feb. 20	3-5	6-9	8-10	1-4
Feb. 24	3-4	6-7	8-9	1-2
March 4	7-10	1-3	2-5	6-8
March 5	6-9	8-10	1-4	3-5
March 9	7-8	4-5	2-3	9-10
March 11	1-5	2-4	6-10	7-9

TEAMS: Division A - 1. Misfits, 2. Short Circuits, 3. Palko's Pack, 4. 8-foot, 5. Bucket Brigade. Division B - 6. Hoteyes, 7. Scout, 8. Greenhorns, 9. Packers, 10. Reid's Raiders.

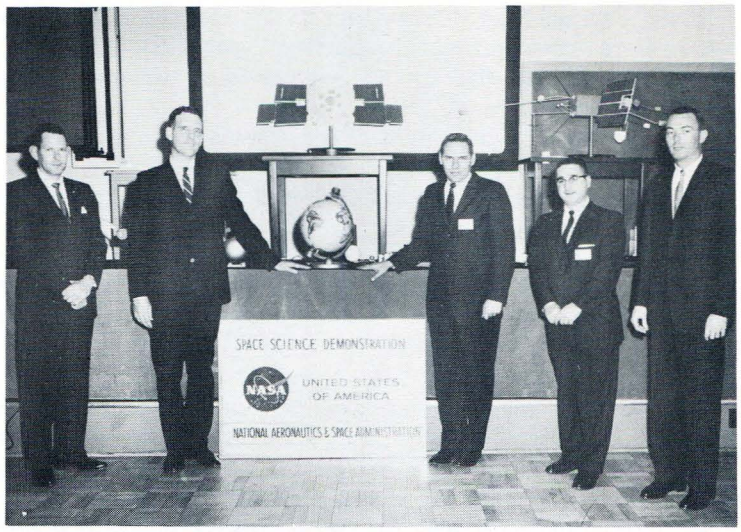
CREDIT UNION MEETING

(Continued from page 1)

more than 200 combat missions in P-39 and P-40 aircraft.

After the War, General Putnam served in a number of important Air Force assignments, as commander of the Operational Test Center at Eglin AFB, Fla., commander of the 36th Tactical Fighter Wing, Bitburg, Germany, and as Deputy Director, Directorate of Personnel at USAF Headquarters, among others. Since December, 1962, he has been Deputy for Personnel at Tactical Air Command Headquarters.

TWO SPACEMOBILES ASSIGNED TO LANGLEY CENTER



Two NASA Spacemobiles similar to the one in the photograph on the left have been assigned to the Langley Center. They will operate in North Carolina, South Carolina, Kentucky and Virginia. Right photo - Lecturers for the space science demonstrations are (from Left): Harold E. Mehrens, Lloyd E. Jones, William D. Nixon, Ugo Amelio and Richard C. Berne Jr., who serves as coordinator for the Langley units. -Photos by William Frazier

Two NASA Spacemobiles have been assigned to the Langley Research Center. Spacemobiles are specially designed panel trucks carrying equipment and materials utilized in in space science lecture-demonstrations. They operate throughout the United States and overseas. The two units assigned to Langley will operate in North Carolina, South Carolina, Kentucky and Virginia.

The main purpose of the Spacemobile program is to inform the public on the progress made in space exploration and investigation and to interest students in pursuing a career in science.

The space science demonstration includes a brief history of rocketry, the chemistry and physics of rocketry, how a satellite gets into orbit and what keeps it in orbit, the various types of scientific and applied satellites and the results of these craft, interplanetary space probes, and the manned space program.

The program may be modified so as to satisfy the needs of audiences from elementary school level through the university level.

A staff of five members is assigned to the two Langley units. Richard C. Berne Jr., coordinator of the group, is a graduate of Georgia Southern College. He has also done graduate work at South Dakota School of Mines and Technology and Georgia Southern College.

William D. Nixon and Ugo Amelio are assigned to the unit working in North Carolina and South Carolina. Nixon is a graduate of the University of Miami, Ohio where he also did graduate work. Amelio received his B.S. degree from St. Lawrence University in New York and did graduate work at the University of Colorado.

Lloyd E. Jones and Harold E. Mehrens are assigned to the unit working in Kentucky and Virginia. Jones is a graduate of the University of Missouri and Mehrens received his degree from the University of New Mexico and did graduate work at the University of Maryland.

In addition to the lecture-demonstration, the lecturers conduct science education teacher-workshops in an effort to aid the teachers in keeping abreast of the latest results of research and development in the sciences. They also serve as curriculum development consultants and resource persons for the State Departments of Education, universities and local school systems.

All lecturers were chosen on the basis of the recognized achievements which each of them had experienced in the field of science education. All have received scholarships or grants for advanced study in the sciences. These men have been instrumental in the elevation of the quality of science teaching in this nation. This has required their working beyond the classroom level in their efforts to aid in the establishment of the logical science curriculum beginning with the first grade and extending through the college level. They have also been instrumental in coordinating a closer relationship among government, educational and industrial agencies concerning problems and needs in the field of education.

The Spacemobile program has been in effect about two years and now has 18 active units operation in the United States and overseas. The ultimate goal is 33 active units.

The International Spacemobile Program has projected and enhanced the image of the NASA as a U.S. Government agency which conducts a program of peaceful exploration of space for the benefit of all mankind. The program fulfills one of the mandates given to NASA by Congress which is that the results of our efforts in space research should be conveyed to the peoples of the world for its application to the betterment of mankind.

The Spacemobile summer activities include lecture-demonstrations for university, civic, church, youth and adult organizations.

The scheduling for school demonstrations are arranged through the State Department of Education. Individual requests by civic, youth and adult groups may be made by writing Richard C. Berne, Training Office, NASA-Langley Research Center, Langley Station, Hampton, Virginia, or by calling him at 722-7961, extensions 2347 or 2326. Other services such as obtaining film and publications may be handled through Berne's office.

LOVELACE NAMED CONSULTANT

NASA has announced the appointment of Dr. D. W. Randolph Lovelace II as a consultant to Dr. George E. Mueller, Associate Administrator for Manned Space Flight, on matters concerning the medical aspects of current manned space programs.

Dr. Lovelace is president of the Lovelace Foundation for Medical Education and Research, Albuquerque, N.M., which is engaged in medical research and problems associated with the aerospace-nuclear medicine.

In 1959 as chairman of the NASA Life Sciences Committee, he was instrumental in establishing the medical qualifications for NASA astronauts. The Mercury astronauts underwent medical examinations at the Lovelace Clinic in Albuquerque.

Dr. Lovelace was graduated as a flight surgeon from the School of Aviation Medicine, Randolph Field, Texas, in 1937. He was called to active duty in the Medical Corps, Air Force, in 1942. In 1943 he became Chief of the Aero-Medical Laboratory, Wright Field, Dayton, Ohio, where he was responsible for directing research and development of life support equipment for this nation's combat Air Forces. He participated in numerous combat air missions while personally testing various types of equipment. His military awards include the Air Medal, Distinguished Flying Cross and Legion of Merit. He holds the rank of Brigadier General, Air Force Reserve.

In 1940 Dr. Lovelace was a joint recipient of the Collier Trophy for his work in aviation medicine and specifically for research into the causes and effects of pilot fatigue. He was awarded the Royal Order of Sword, Degree of Officer First Class by the Swedish Government in 1947 for his assistance in establishing the first aviation medicine program in that nation. In 1949, he received the Institute of Aeronautical Sciences John Jeffries award for outstanding contributions to advancement of aeronautics through medical research. He was co-recipient of the Air Force Association's Science Trophy for contributions to national security in the field of science in 1959.

Dr. Lovelace was born in Springfield, Mo. in 1907. He attended high school in Albuquerque, received a B.A. degree from Washington University, St. Louis, in 1930, and his M.D. degree from Harvard University, Cambridge, Mass., in 1934. After serving his internship at Bellevue Hospital, New York City, he entered the Mayo Foundation as a fellow in surgery in 1936. In 1940 he received the degree of M.S. in Surgery from the University of Minnesota.

PROFESSORS TO VISIT CENTER

Dr. James B. Eades, Head of the Department of Aerospace Engineering at Virginia Polytechnic Institute, will visit the Center on January 31 to confer with scientists interested in doing graduate work at VPI.

Dr. Johan A. Friedericy and Dr. Richard T. Eppink, Department of Civil Engineering, University of Virginia, will visit the Center on Monday, January 20 to confer with employees interested in graduate work in Applied Mechanics.

Persons interested in meeting with these professors should call the Training Office, 2326, for an appointment.

FOR SALE: Hide-a-bed with inner spring mattress and foam cushion. Sidebottom, Williamsburg 229-5431.

WANTED: Ride from Stuart Gardens to W.A. on 8 shift. Shields, 4553.

John Schmidt (right), Diversified Risks Department, Pilot Life Insurance Company, presents C. S. Hudgens, Treasurer of the Langley Federal Credit Union, with a premium refund check for $5,450, marking the first anniversary of the Credit Union's popular and successful insurance plan.

CREDIT UNION'S INSURANCE PROGRAM IS SUCCESSFUL

A little over a year ago members of the Langley Federal Credit Union voted to adopt an insurance program recommended by the Board of Directors.

The master policy was established October 1, 1962. Under it (with certain age restrictions beginning at 55) if a member dies, his estate benefits in the amount of shares held up to $2,000 and in the amount necessary to pay any Credit Union loan balance up to $10,000. The carrier selected was the Pilot Life Insurance Company of Greensboro, North Carolina.

Twelve months of operation have proved the program a success. Members have been pleased with claim settlements and the low cost of the insurance. Statistically, the monthly premium is 35 cents per $1,000 of insurable balance for both savings and loans. This is an unusually low figure and refund provisions make it even lower. For instance, the premium refund check represents a refund of $5,450 out of an annual premium of $15,837. There is no extra cost to members for this insurance coverage.

The following claims were paid between October 1, 1962 and October 1, 1963: 29 death claims representing 20 savings balances for a total of $2,260 and 9 loan balances for a total of $4,822 and 3 disability claims totalling $1,500.

The insurance program makes a definite contribution to the sense of financial well-being and satisfaction enjoyed by Credit Union members. It is one of the many services provided. Loans are made at a low rate of one percent per month on the unpaid balance (3/4 percent on new automobiles). Savings in 1961 and 1962 earned a 5 percent dividend.

LOST: Silver charm braclet with baby charms. Lost near Building 587 in East Area. Rowland, 2216.

FOR RENT: 2-bedroom house. Wilson, 838-2941.

WANTED: Driving combination from Norfolk to W.A. on 8 shift. Louette Mosley, 4738.

WANTED: Driving combination from Beachwood to W.A. on 8 shift. Jones, 4478.

HIGHLIGHTS OF NASA'S YEAR IN SPACE

If a single event were to be selected as the highlight for 1963 in the nation's space program, that event would have to be the 22-orbit flight, May 15-16, of Astronaut L. Gordon Cooper in Faith 7.

The 34-hour-20-minute flight brought to a successful conclusion the Mercury phase of the U.S. program to land men on the Moon in this decade.

Even as Cooper manually brought his spacecraft safely down in the Pacific, work was well advanced in Gemini and Apollo, phases two and three of the manned space flight program.

There is high drama in manned flight, and people the world over, through the medium of modern communications, were "taken live" on the venture. While this high drama tended to overshadow other performances in the space program, these performances were nonetheless important and successful. Some, in their own right, were also quite spectacular.

It was a good year in space exploration for Americans and, to a large extent, for people in other parts of the world. NASA shared cooperative space programs with over 60 countries. It was a year in which significant successes were enjoyed with communications, weather and scientific satellites. It was a year in which scientists rejoiced on the success and in the abundance of data resulting from the Mariner II flight past Venus the previous December.

It was a year in which NASA successfully launched ten satellites in ten attempts, and made five important launch tests, four of them successful. These tests included the mock-up of the three-man Apollo spacecraft. And 14 more astronauts were named on October 18, bringing NASA's total to 30.

In all, NASA went to the launch pad 15 times and succeeded in 14 attempts, a batting average of .933.

There were 70 successes with sounding rockets, the little known atmospheric probers launched from Wallops Island.

All this was a far cry from the discouraging percentages--one success in five tries--when NASA was born five years ago.

The single major failure in 1963, a heat shield reentry test, occurred when the first stage of a Scout rocket malfunctioned at Wallops Island on July 20.

Stricter adherence to quality assurance criteria and greater knowledge of the "art" improved NASA's chances of success. Where, in pre-launch checkouts, any doubts developed, flights were postponed until all possible doubts had been removed.

An example of the "chance" factor is the reliability criteria for Apollo. These require a .999 safety probability and a .90 chance of success. There will be no rushing to the pad without this kind of assurance.

It was a year, after patient and painstaking effort, when NASA, on November 27, launched the Centaur in the first known ignition of liquid hydrogen fueled rocket engines in space. This is important, not only because Centaur will be used to launch the Surveyor satellite which will soft-land on the Moon and explore its surface, but because the high energy liquid hydrogen will also be used in the upper stages of the Saturn rockets in manned lunar exploration.

Achievements extended to aeronautics and the application of space technology. It extended, too, to scientific exploration of space.

Astronaut L. Gordon Cooper orbited Earth 22 times

Joe Walker on August 22 flew the X-15 to a new unofficial altitude record of 354,200 feet. This was the fifth time the rocket plane exceeded its design altitude.

The NASA placed new concepts for supersonic passenger and cargo planes into the hands of industry during the year. It was also the year in which significant progress was made leading toward the solution of difficult problems in developing nuclear engines for space boosters.

Scientists and technicians sought improved performance from both the communications and weather satellites. A second Telstar was launched by NASA on May 7 for AT&T Company.

TIROS VII joined the family of workhorse weather satellites on June 19. On December 21 TIROS VIII went into orbit with its new automatic picture transmission system (APT). The potential has stirred enthusiasm in 40 countries expressing an interest in buying ground receiving equipment.

On July 26, Syncom II was launched in one of the most difficult and sensitive maneuvers in space engineering. It became the first operating communications satellite put in synchronous orbit and linked the U.S. with Africa and Europe.

Via the communications satellites Relay, Telstar and Syncom the world was linked in the rapid transmission of news events. The funeral of President Kennedy carried by Relay satellite was seen in Europe and Japan. The world's first trans-oceanic news conference via satellite was held between Geneva, Switzerland and Washington, D.C. with the Syncom.

It was via Relay satellite that Sir Winston Churchill witnessed the ceremony that made him an honorary citizen of the U.S. In addition, the first television transmission to Japan was made by Relay I.

Launching of IMP, the interplanetary monitoring platform, on November 26 heralded the most recent scientific space achievement. The data this satellite returns, particularly on solar flares, is necessary in the planning for further manned space flight.

Last week 270 members of the Armed Forces Staff College in Norfolk visited the Langley Research Center and Langley Air Force Base. Included in the group were officers from the Navy, Army, and Marine Corps. Left photograph - Charles J. Donlan (center), Associate Director, shows a group of models to Major General J. Stanley (left), Commandant of the school, and Colonel William L. Curry, Langley Air Force Base. Right photograph - Peter R. Kurzhals (right), Applied Materials and Physics Division, explains a space station exhibit to the visitors.

RELAY I STILL GOING STRONG

NASA's Relay I communications satellite which led a versatile and durable life in 1963 persists, contrary to the plans of scientists and engineers, on extending its performance into 1964.

Launched from Cape Canaveral on December 13, 1962 with a life expectancy of a year, the stubborn satellite refuses to die. The built-in destruction device which was supposed to have killed off communications in Relay I has not done its job yet.

The RCA-built Relay I carries a timing device, an electrolytic solution which was supposed to have eaten its way through the main power lead to switch off the transmission power. NASA and RCA experts speculate that the temperature around the "destruct" device has been colder than anticipated and the erosion has been slower.

The reason for destroying Relay I's communications capability is to prevent possible interference with other satellites after the useful lifetime of Relay I. A more advanced Relay is scheduled for launch about January 21.

How much longer Relay I will last cannot be determined. In the meantime it continues to function effectively and is still capable of spanning oceans and continents with experiments and demonstrations which brought world renown to the satellite in 1963.

During its lifetime, Relay I achieved a brilliant performance record. It spanned continents and oceans with about 2000 experiments. It transmitted teletype and voice messages across both the Atlantic and Pacific. It transmitted still photographs and live television including color TV. It was used successfully in the transmission of automatic data.

By the end of 1963 it had operated 358 days, longer than any other communications satellite. In this period it completed more than 290 hours of transmission time, the majority of it wideband transmission or television.

FOR SALE: 1957 Pontiac, 4-door. Stacey, 851-0046.
FOR SALE: 4-bedroom brick rancher with attached garage. Flynn, 596-9486.

NASA BOWLING LEAGUES

In the NASA Tenpin League Tom Cats lead in Group a with 40 wins and 20 losses. Top scores were rolled by Henry Lee with a 264 game and Richard Hanna with a 663 set. Misfits lead Group B with 41 wins and 19 losses. Top scores were rolled by Ray Moore with a 263 game, Charles Gerrity with a 603 set and Mary J. Joslin with a 208 game and Mary Jane King with a 530 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	40	20	Misfits	41	19
Unitary	38	22	Latecomers	36.5	23.5
Crusaders	37	23	Cee Pees	36	24
Phantoms	35.5	24.5	Ten-Benders	36	24
Hornets	35	25	Hucksters	35	25
Pinwigglers	33	27	Spare Parts	34.5	25.5
Short Circuits	31.5	28.5	Dynamos	34	26
Alley Cats	31	29	Ranch House	33.5	26.5
Devious	31	29	Sudz	32	28
Frame Ups	30	30	Barristers	31	29
Johnnie's	30	30	Bowling Belles	30	30
Payloads	29.5	30.5	Tarey Drive-In	28	32
Electronic Shop	28	32	Question Marks	28	32
Spare Oops	27	33	Analogs	27	33
Flyers	26.5	33.5	Alley Oops	27	33
Flight Eng.	26	34	Gliders	25.5	34.5
Galaxies	25	35	Greenhorns	25.5	34.5
Odd Balls	22	38	Dillys	22	38
Malfunctions	22	38	CCCP	19.5	40.5
A-OK's	22	38	Sandbaggers	18	42

Ten Spots lead the NASA Duckpin League with 39 wins and 21 losses. Top scores this week were rolled by Bill Letko with a 144 game and 371 set and Ann Insley with a 127 game and 326 set.

STANDINGS

Ten Spots	39	21	Lt. Mach. 2	29	31
Strike Outs	37	23	Lt. Mach. 1	28	32
Doodle Bugs	34	26	ACD	27	33
AMC	31	29	Rebel Bombers	25	35
Pinpoppers	30	30	Reentry	24	40

Flare

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 3 LANGLEY RESEARCH CENTER JANUARY 31, 1964

FOUR EMPLOYEES PRESENT PAPERS AT AIAA MEETING

Four papers by eight Center scientists were presented at the Annual Meeting of the American Institute of Aeronautics and Astronautics. The national meeting was held January 20-22 in New York City.

Three of the papers were presented at the session on Structural Dynamics. "Studies of Touchdown Stability During Lunar Landing" by William C. Walton Jr., Robert W. Herr and H. Wayne Leonard, all of Vibration and Dynamics Branch, Dynamic Loads Division, was delivered by Walton. "Vibrational Characteristics of Thin-Wall Conical Frustum Shells" by Jerry D. Watkins and Robert R. Clary, both of Vibration and Dynamics Branch, was presented by Watkins.

Harold C. Lester, Dynamic Response Section, Dynamic Loads Division, presented a paper on "Determination of Launch Vehicle Response to Detailed Wind Profiles". Homer G. Morgan, Head of Dynamic Response Section, was co-author on the paper.

Charles J. Donlan, Associate Director, served as chairman of the session on Atmospheric Flight Mechanics and Astrodynamics. At the same session E. Brian Pritchard, Mission Analysis Group, Aero-Physics Division, presented a paper on "Survey of Velocity Requirements and Reentry Flight Mechanics for Manned Mars Missions".

RELAY LAUNCHED SUCCESSFULLY

NASA successfully launched a second Relay communications satellite aboard a Delta rocket from Cape Kennedy on January 21. It was the 22nd straight success for the Delta launch vehicle.

First intercontinental voice and scientific tests via Relay II were conducted between ground stations at Nutley, N.J., and Raisting, West Germany. Stations in seven countries on four continents - North and South America, Europe and Asia - planned experiments.

Relay's mission is to continue the work of its successful sister satellite, Relay I, which is still orbiting more than a year after launch, and to provide an evaluation of improvements built in the new spacecraft. Its communications experiments, including television, will help determine the feasibility of this type spacecraft in future operational space communications networks.

At the same time, engineers will get a better estimate of the spacecraft's lifetime. The expanding network of ground stations around the world will get an opportunity to work with two Relay satellites. The new Relay will send back to Earth data of radiation encountered and the degradation radiation may cause the spacecraft's components.

Direction of the Relay program is under NASA's Office of Space Science and Applications with direction management of the project under Goddard Space Flight Center. RCA's Astro-Electronics Division, Princeton, N.J., built the spacecraft under contract to Goddard.

SECOND ECHO COMMUNICATIONS SATELLITE LAUNCHED BY NASA

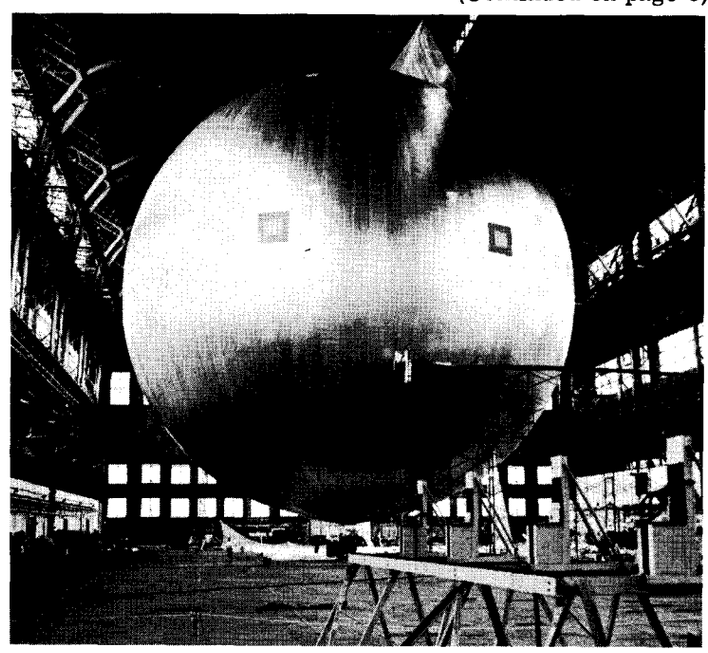
Another Echo passive communications satellite, the 13-story balloon satellite Echo 2, was launched into space on January 25.

The 135-foot diameter balloon was injected into space by a Thor-Agena launch vehicle from Vandenburg Air Force Base, Pacific Missile Range, California. Without accessories it weighed 535 pounds; with accessories -- canister, beacon transmitters and other equipment -- it weighed 770 pounds.

Echo II achieved an apogee of 816 statute miles, a perigee of 642 miles, an orbital period of 109 minutes for each complete lap around the earth, and an inclination of 81.5 degrees from the equator.

The spacecraft is designed to permit conduction of passive satellite communications experiments (radio, teletype and facsimile) as well as to accumulate data about the spacecraft's orbital environment. It is designed to be rigid enough to withstand the stresses of space and remain spherical without collapsing after the inflating gas has leaked out.

The United States and Russia have agreed to try to bounce radio signals off its reflective aluminum foil skin in the first joint experiment in communications via space between the two countries. A date for the first tests has not been announced. (Continued on page 8)



NASA technicians conduct inflation test on Echo II which joined Echo I in space orbit on January 25. The new passive communications satellite is bigger, will orbit lower and will be easier to see than Echo I which was launched into space on August 12, 1960.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDINGS. . .Dianne Lassiter, Personnel Records, took her final vows with Ernest Mason of Hampton on January 24. . .A Center romance was climaxed when Maxine MacDonald, Instrument Research Division, and Charles Drummond, Flight Vehicles and Systems Division, were married on January 24 at the Tabernacle Methodist Church in Poquoson. . .Wedding bells rang on January 24 when Aubrey Gary Price, Mechanical Service Division, took his final vows with Mallory Ann Sinclair, Hampton, at the Colonial Place Church of Christ in Hampton.

INDEMNITY PLAN REPRESENTATIVE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, Federal Employees Health Benefit Program, will visit the Center on February 11 from 3 p.m. until 4. Employees having problems or questions concernung the Indemnity Benefit Plan may call Linda Hale, 2323, for an appointment.

BLOODMOBILE. . .The Red Cross Bloodmobile will make its first visit for 1964 to the Center on February 19. New donors are still needed to help fill the Center's quota. Employees who have not registered to give blood to this worthwhile cause and wish to do so may call East Dispensary, 2243.

ENGAGEMENT. . .Making plans for a September wedding is Russell W. Loop, Electrical Shop Section. He is engaged to Gail Stubbs of Yeadon, Pennsylvania.

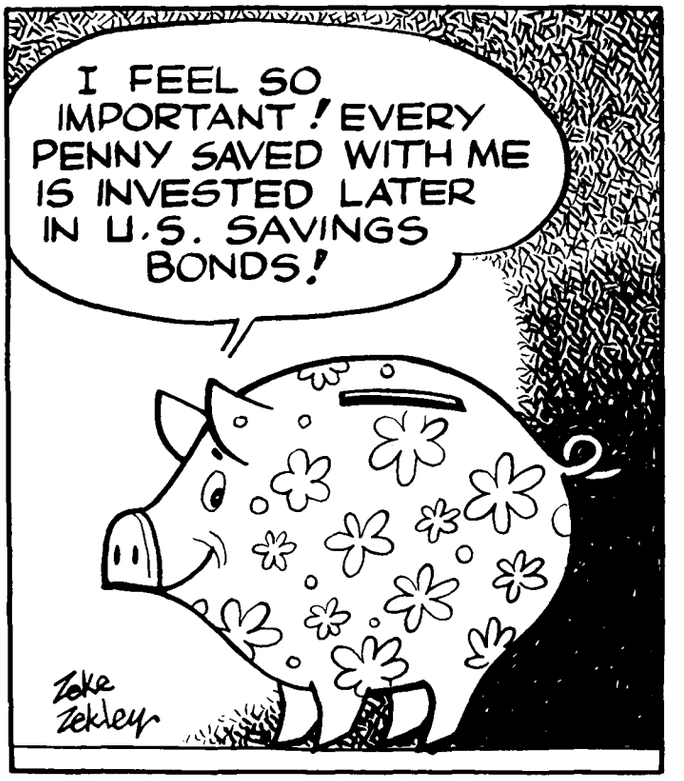
CORRECTION. . .The Hampton Roads Barbershop Chorus will present its first Annual Night of Harmony at Hampton High School on February 29 and not February 28 as reported in the last issue of Langley Researcher.

TOASTMASTERS. . .The Cavalier Toastmasters of Hampton are sponsoring an 8-week speechcraft course, starting February 4. The meetings will be held on Tuesdays from 7 p.m. to 9 at the Chinese Restaurant on Kecoughtan Road. The tuition charge of $20 includes the costs of the dinners for each meeting. For further information call Joe Boyle, PA 3-3400.

TABLE TENNIS. . .Persons interested in forming a group to play table tennis regularly in the afternoon are asked to call Bruce Amole, 4583.

WANTED: Alternate driver from Williamsburg to E.A. or W.A. on 8 shift. Swartzwelder, 2381.

Zeke Zekley



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of February 3:

Monday - Cream of tomato soup, roast ribs of beef, grilled pork steak, shrimp Newberg, cheeseburger.

Tuesday - Chicken-rice soup, country style chopped steak with gravy, pot roast of beef, fried chicken, chili con carne.

Wednesday - Green split pea soup, hot roast beef sandwich with mashed potatoes and gravy, Alaskan fried shrimp, liver and onions, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, broiled ham slice, fried breaded chicken livers on steamed rice, hot dog.

Friday - Clam chowder, roast beef, Polish sausage with sauerkraut, broiled fish, fried fish, hamburger.

The menu for the week of February 10 is as follows:

Monday - French onion soup, Spanish pot roast, chuckwagon steak, baked ham, Western omelette.

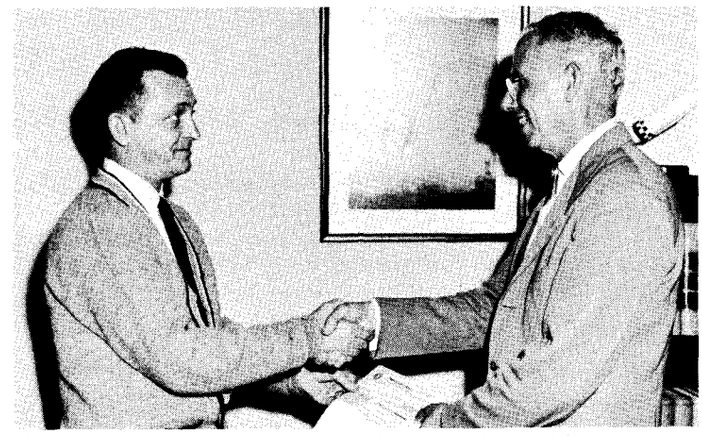
Tuesday - Vegetable-beef soup, roast ribs of beef, grilled pork chops, beef stew, grilled cheese and bacon sandwich.

Wednesday - Clam chowder, half pound chopped steak, shrimp Newberg, fried chicken, baked hash.

Thursday - Bean soup, grilled steak, fried shrimp, broiled ham slice with pineapple slice, tamale pie.

Friday - Clam chowder, Swiss steak, crab cakes with cole slaw, broiled halibut steak, hamburger, 8-0z. Delmonico steak.

WANTED: Girl to share apartment. Cynthia Dysleski, 595-2640.



Six employees recently received cash awards for suggestions that might result in the granting of patents. Top left photograph - Edwin C. Kilgore (left), Chief of Flight Vehicles and Systems Division, presents checks to Wilbert C. Falk and David H. Butler. Top right photograph - Howard B. Edwards, Assistant Chief of Instrument Research Division, presents an award to Charles A. Gurtler. Bottom left photograph - Paul R. Hill, Assistant Chief of Applied Materials and Physics, congratulates Dewey L. Clemmons on his award. Bottom right photograph - Hill presents a check to Robert A. Jewell. Absent when the photographs were taken was Noel T. Wakelyn.

EMPLOYEES RECEIVE AWARDS

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

Robert A. Jewell and Noel T. Wakelyn, both of Applied Materials and Physics Division, shared a $100 award for their suggestion entitled "Coating Process and Article". Jewell joined the Center staff on September 29, 1948 as an apprentice sheetmetal worker and graduated from the Apprentice School in 1953. He received his B.S. degree in Physics from the College of William and Mary in 1962. Wakelyn received a B.S. degree in Chemistry from Furman University and a M.S. degree from the University of Florida. He joined the Center on June 6, 1956.

David H. Butler and Wilbert C. Falk, both of Flight Vehicles and Systems Division, shared a $700 award for their suggestion for a "Miniature Vibration Isolator". Butler joined the Center staff on September 15, 1955 as an apprentice and graduated from the Apprentice School as an engineering draftsman. Falk started his NASA career on November 5, 1941 as an apprentice and graduated as a machinist.

Dewey L. Clemmons, Applied Materials and Physics Division, received $600 for his suggestion entitled "Thermal Control of Space Vehicles". Clemmons received his B.S. degree in Physics from Florida State University and entered on duty February 6, 1959.

Charles A. Gurtler, Instrument Research Division, was awarded $600 for his suggestion entitled "Pressurized Cell Micrometeoroid Detector". He received a B.S. degree in Mechanical Engineering from Kansas State College and joined the Center staff on June 1, 1944.

FOR SALE: Pekingese pups, Boykin, 723-2510.

WANTED: Passengers from Sinclair Farms to W.A. on 7:30 shift. Dearer, 4437.

WANTED: Passenger to Florida to share driving with elderly person. Leaving Feb. 1. Johnson, 851-2624.

WANTED: Driving combination from Gloucester Point to W.A. on 8 shift. Lina, 4510.

FOR SALE: Lionel train 027 gauge, engine, tender, 4 cars, and accessories - $20. Levin, 838-1189.

FOR SALE: 1958 Travelo mobile home. Dayton, Ordinary.

FOR SALE: Auxiliary sloop 25x7x4, sleeps 4. Hooker, CH 4-3038.

FOR SALE: Roller skates size 10. Spencer, 851-2036.

WANTED: Alternate drivers from Hidenwood to W.A. on 8 shift. Cunningham, 4597.

FOR SALE: EICO 20 watt amplifier. Pickrell, 722-4611.

WANTED: Alternate drivers from Northampton to W.A. on 8 shift. Kenney, 4753.

SILVERSTEIN RECEIVES AWARD

Dr. Abe Silverstein, formerly of Langley and now Director of the Lewis Research Center, has been named recipient of the Sylvanus Albert Reed Award for 1963.

The award, presented by the American Institute of Aeronautics and Astronautics, is given annually for notable contributions to the aerospace sciences.

Dr. Silverstein received the award in New York at the AIAA Winter Night Dinner.

Dr. Silverstein was selected to receive the award specifically for "major contributions toward the development of propulsion systems for aircraft and spacecraft and for outstanding leadership in the nation's programs of scientific satellites and manned space flight."

A government scientist for almost 35 years, he joined the Langley Center's staff in 1929. He helped design Langley's Full-Scale Wind Tunnel and in this facility directed important aeronautical research which led to increased performance of many combat aircraft used in World War II.

In 1943 he transferred to the Lewis Center in Cleveland where he headed the Wind Tunnel and Flight Division, directing work in propulsion aerodynamics. He also pioneered in research on large-scale ramjet engines.

Following World War II, he was responsible for the conception, design and construction of the country's first supersonic wind tunnels. He was placed in charge of all research at Lewis in 1949 and in 1952 was appointed Associate Director of the center.

In May 1958, Dr. Silverstein was assigned to Headquarters in Washington to help plan the organization and programs of NASA. He became Director of NASA's Office of Space Flight Programs, directing mission planning, spacecraft design and development and in-flight research and operations. In this capacity, he helped plan and organize the nation's first man-in-space program, Project Mercury.

He returned to Cleveland in November 1961 to become Director of Lewis, which is responsible for the research and development of advanced space propulsion and power generation systems.

Born in Terre Haute, Indiana, Dr. Silverstein attended Rose Polytechnic Institute where he earned his B.S. degree in Mechanical Engineering. He was awarded an honorary engineering degree by Case Institute of Technology in 1959, an honorary Sc.D. by Rose Polytechnic in 1959 and an honorary L.H.D. by Yeshiva University in 1960. In 1961 he received the NASA Medal for Outstanding Leadership.

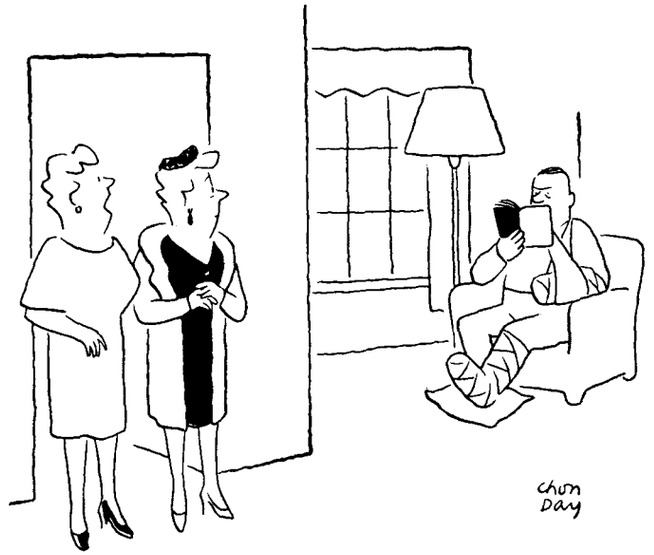
CREDIT UNION NOTICE

The Langley Federal Credit Union held its 27th annual meeting at the Activities Building on January 20.

At the meeting it was announced that a five percent dividend had been declared by the Board of Directors for 1963. Last year the organization also paid five percent dividends.

Elected to the Board of Directors were Ben Ellis, Victor Harvy, Col. Glen B. Riggle and James C. Tingle. Frank A. Lofurno and Major Don C. Mills were elected to the Credit Committee.

The Board elected the following officers for the year: Robert Girouard, president; Ben Ellis, first vice-president; Col. Glen Riggle, second vice-president; C. S. Hudgens, treasurer, and Bernard Deem, secretary.



"Oh, he was driving a very small car and he hit a very big pedestrian."

FAIR EMPLOYMENT RIGHTS

On March 6, 1961, the President issued Executive Order 10925. This order affirms an important policy with respect to all personnel actions in the executive branch of the Government, namely, that there shall, in such actions, be no discrimination because of race, creed, color, or national origin. The order is clear and direct. It instructs everyone in the executive branch who is responsible for personnel actions that merit and fitness alone shall be the basis for all decisions, whether in the selection promotion, separation, transfer or discipline of employees.

As a new year unfolds, this opportunity it taken to reaffirm that the principle of equal employment, promotion, and training opportunities without regard to race, creed, color or national origin will continue to be the policy at Langley Research Center, as it always has been. Consistent with this policy, all personnel actions and practices will continue to be based solely on merit and fitness.

Any staff member who might believe that he is discriminated against, under any circumstances or in any action taken which concerns him for any of the above reasons is encouraged to discuss the matter with his supervisor. However, if he desires, he may, within 90 days of the alleged discrimination, file a written complaint to the Center Compliance Officer (Edward T. Maher, Chief, Administrative Services Division), to the NASA Employment Policy Officer (Alfred S. Hodgson, NASA Headquarters, Code B) or the President's Committee on Equal Opportunity, Washington 25, D.C.

WANTED: Passengers from Newmarket and Forest Park to W.A. on 7:30 shift. Fred King, 4691.

WANTED: Gentleman to share house with 2 others starting Feb. 15. Carson, 2290 or Imig, 4439.

FOR SALE: 1957 2-door Ford sedan. Evans, PA 2-4676.

WANTED: Driving combination or passengers from N. Mallory St., Phoebus, to E.A. on 8 shift. Pearce, 2362.

HOW TO MAKE SUGGESTIONS

President Johnson recently challenged every Federal employee to "work hard to reduce the cost of Government" and to devise and propose ways to improve his performance, and he pledged his intention to "accord increased recognition to those governmental units and individuals that make notable advances in providing efficient service at lower costs."

Center officials are encouraging enthusiastic support of the Employee Suggestion Program. Employees are asked to search for ideas which will reduce cost in our operations and to submit these ideas to the Incentive Awards Committee for evaluation.

Langley Center needs your good work-improvement ideas and needs them as soon as possible. You are a big factor in the new-idea picture because you know your job better than anyone else, you know where hidden costs lie, you know where duplication exists, you know where production is held up.

Obviously you are in a good position to find and suggest ways to reduce costs, save man-days, supplies, equipment, space, and improve service in the day-to-day work that surrounds you.

How do you make worth while suggestions? Step by step-here's the way it's done successfully.

CONCENTRATE ON WHAT YOU KNOW BEST. Successful idea-getters and suggesters agree that your own work area usually is the best starting place for the development of a worthwhile suggestion. However, do not submit as a suggestion a job assignment or that which is normally expected as a part of your duties. Perhaps your study will lead you to something that applies to another unit, such as what happens to the work before or after it gets to you.

PICK A SITUATION WHICH NEEDS IMPROVEMENT. Look carefully, The things that need improvement most are not always apparent. Here are a few tips to help you zero-in on the improvement target. What needs improvement most? A bottleneck? Out-of-date method? Chasing around for materials, tools, and paperwork? Peak workload at the wrong time? Excess man hours?

PINPOINT THE PROBLEM. Clearly understand the specific problem, what you are trying to achieve. If the problem is large and complex, break it down into smaller parts. Then put your problem in writing. Be specific and concrete. With the problem defined, you're well on your way.

GET ALL THE FACTS. Jot down the procedures, equipment, forms, people, volume, and man-hours used in the area you've selected for improvement. Don't short-change yourself on facts or marshal too many unneeded ones. Arrange your facts so that you have answers to such questions as: What work is done? Who does it? Where is it done? When? How? How much time is spent?

ANALYZE THE FACTS. ASK WHY. After you've collected the facts, study them to determine what the possibilities for improvement are. To list possible improvements ask: What is done? Why? Where? Why is it done there? When is it done? Why is it done then? How is it done? Why is it done this way? Think only about ideas that may work in this step. Don't try to analyze why something won't work. List all possible improvements crystallized by your questions.

TELL US HOW TO DO IT BETTER. Unless your idea is submitted on an Employee Suggestion Form, cost can not be reduced and no action can be taken to recognize

and reward you as appropriate. Send your solution to Jess Ross, Secretary of the Incentive Awards Committee, Mail Stop 306.

NASA APPRENTICE SCHOOL

The Spring Semester of the Apprentice School will start on Monday, February 3 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 - Physics I, J. J. Mathis; Woodworking I, P. C. Geiger; Machine Shop Theory, S. E. Devan; Engineering Drawing II, C. P. Eichelberger, and Geometry, A. R. Vanasse.

Tuesday - Engineering Drawing II, W. M. Cook; Trigonometry, J. A. Walker; Basic Electricity, J. E. Gerringer; Trigonometry, G. E. Moore; Engineering Drawing II, C. T. Tiller, and Physics I, V. G. Collins.

Wednesday - Machinery's Handbook II, R. L. Goble; Fundamentals of AC and Circuit Analysis, R. H. Coultrip; Geometry, R. B. Holt; Physics II, L. P. Kopia; Math. (E and E) II, C. N. Robeson, and Sheetmetal Layout I, J. H. Belveal.

Thursday - Electronic Meas. Inst., A. B. Alcock; Essentials of Radio I, A. L. Jones, Strength of Materials I, R. B. Davis, and Engineering Drawing III, M. A. Weiner.

Friday - A.C. Fundamentals I, J. A. Coleman; Metallurgy, H. A. Reid; Physics II, F. A. Kern, and Differential Calculus, R. B. Grow.

WANTED: Alternate drivers from Foxbridge and Fox Hill to W.A. on 7:30 shift. Brown, 4835.

WANTED: Ride from Huntington Ave. and 54th St. to W.A. on 7:30 shift. Warner, 4861.

GENERAL PHILLIPS APPOINTED TO ASSIST APOLLO PROGRAM

NASA has announced the appointment of Air Force Brig. Gen. Samuel C. Phillips as Deputy Director of the Apollo Program in the Office of Manned Space Flight, effective January 15.

General Phillips, Vice Commander of the Air Force Ballistic Systems Division, joins some 200 other military officers serving in key posts with NASA.

He will work with Dr. George E. Mueller, Associate Administrator for Manned Space Flight, who is director of the Apollo Program. General Phillips will carry the major responsibility for the management and administration of the U.S. manned lunar landing program. Dr. Mueller will continue to have the major responsibility for technical direction of Apollo in addition to his other duties as head of the Office of Manned Space Flight.

The Apollo Program Office at NASA Headquarters has the complete responsibility and authority to carry out all aspects of the Apollo mission including overall responsibility for the spacecraft, Saturn V and Saturn I vehicles and their test and assembly.

General Phillips has been Vice Commander of Ballistic Systems Division since August 16, 1963. Prior to that he was director of the Minuteman Systems Programs, Headquarters Ballistic Systems Division, Air Force Systems Command, Los Angeles. He was Chief of Logistics for the Strategic Air Command's Seventh Air Division based in England from June 1956 until August 1959.

He entered pilot training after graduating from the University of Wyoming in 1942 and served in England with the Eighth Air Force during World War II. He received the Distinguished Flying Cross and Oak Leaf Cluster, Air Medal with seven Oak Leaf Clusters, and the Croix de Guerre. In 1950 he received his masters degree in Electrical Engineering from the University of Michigan where he specialized in electronics.

He joined the Engineering Division of Air Materiel Command at Wright-Patterson AFB and remained there for six years in research and development work with the exception of three months at Eniwetok as electronics officer on Project Greenhouse and three months at the Air Command and Staff School, Maxwell AFB.

NASA MAY USE GOLF FACILITIES

Officials of the Langley Golf Association have announced that non-member civilians who are employed by the Government at Langley and their dependents are entitled to use the association's golf facilities on week days only, excluding holidays, as a guest upon payment of the green fee and presentation of appropriate identification.

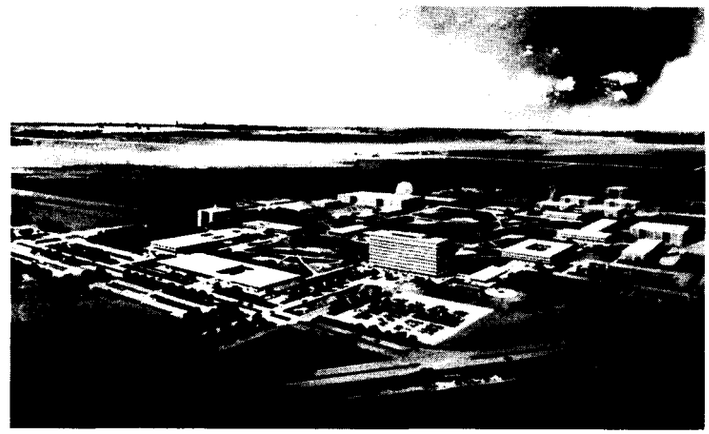
The green fees are $1.50 on week days and $3 on weekends.

LOST: "Proceedings of the Physical Society," Vol. 65, Section B, 1952. Return to Technical Library.

WANTED: Alternate driver from Northampton to W.A. on 8 shift. Gay, 4519.

FOUND: Man's raincoat and lady's watch in W.A. Cafeteria. Phelps, 4475.

WANTED: Girl to share 2-bedroom apartment in Wythe. Donnell Smith, 4458.



NASA's Manned Spacecraft Center is drawing to completion near Clear Lake, Harris County, near Houston. This is an artist's drawing of the home base of America's astronauts. Some of the buildings already are occupied, others are getting tenants as fast as they become ready. The space center is expected to be completed in a few months.

NASA BOWLING LEAGUES

Tom Cats and Unitary are tied for first place in Group A of the NASA Tenpin League with 41 wins and 23 losses each. Top scores for the week were rolled by F. Ballentine with a 265 game and C. Rector with a 676 set.

Misfits lead Group B with 44 wins and 20 losses. Taking high scoring honors was Ed Covington with a 265 game and 653 set. Frances Powell had a high handicap set of 705.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	41	23	Misfits	44	20
Unitary	41	23	Latecomers	39.5	24.5
Crusaders	39	25	Hucksters	38	26
Hornets	38	26	Cee Pees	37	27
Phantoms	36.5	27.5	Ten-Benders	37	27
Short Circuits	35.5	28.5	Ranch House	36.5	27.5
Devious	34	30	Dynamos	36	28
Johnnie's	34	30	Spare Parts	35.5	28.5
Pinwigglers	34	30	Sudz	35	29
Frame Ups	33	31	Barristers	33	31
Alley Cats	33	31	Bowling Belles	31	33
Electronic Shop	31	33	Question Marks	31	33
Payloads	30.5	33.5	Analogs	30	34
Spare Oops	30	34	Alley Oops	30	34
Flyers	27.5	36.5	Tarey Drive In	29	35
Flight Eng.	26	38	Greenhorns	26.5	37.5
Galaxies	26	38	Dillys	26	38
A-OK's	25	39	Gliders	25.5	38.5
Malfunctions	23	41	CCCP	20.5	43.5
Oddballs	22	42	Team 14	19	45

Strike Outs and Ten Spots are tied for first place in the NASA Duckpin League with 43 wins and 25 losses each. Top scores for the week were rolled by Dick Wampler with a 133 game and 373 set, Mary Carmines with a 124 game and 342 set and Helen Dupere with a 342 set.

STANDINGS

Team	W	L	Team	W	L
AMC	35	33	Strike Outs	43	25
Rebel Bombers	32	36	Ten Spots	43	25
Lt. Mach. 2	31	37	Doodle Bugs	35	33
ACD	27	41	Pinpoppers	35	33
Reentry	24	44	Lt. Mach. 1	35	33

LOW NAMED TO NEW POSITION

NASA has named George M. Low to be Deputy Director of the Manned Spacecraft Center. He replaces James C. Elms who is resigning to return to private industry.

Low is Deputy Associate Administrator for Manned Space Flight at NASA Headquarters. He will assume his new duties as Deputy Director of the Houston center when Elms leaves in February and, in addition, will continue to act in his post of Deputy Associate Administrator until May 1.

Low joined the National Advisory Committee for Aeronautics, predecessor of NASA, at the Lewis Research Center in 1949. There he specialized in research in the fields of aerodynamic heating, boundary layer theory and transition, and internal flow in supersonic and hypersonic aircraft. During his years at Lewis, he was head of the Fluid Mechanics Section and later Chief of the Special Projects Branch.

In October 1958, when NASA was established, he was assigned to the Headquarters Office as Assistant Director for Manned Space Flight Programs. Since that time he has held several positions of increasing responsibility in the Headquarters Office of Manned Space Flight.

He was awarded NASA's Outstanding Leadership Medal and the Arthur S. Fleming Award for his contributions to Project Mercury.

He attended Rensselaer Polytechnic Institute where he earned a B.S. degree in Aeronautical Engineering in 1948 and a M.S. in 1950.

ADULT EDUCATION PROGRAM

The spring term of Adult Education at Hampton Institute will start on February 11 and continue through April 16. This program offers lifetime learning through specialized courses in technical and trade areas.

Courses offered are as follows: Accounting-bookkeeping, architectural drawing, auto mechanics, automobile spray painting, commercial refrigeration maintenance, driver education and traffic safety, dry cleaning, electricity, income taxation, industrial arts, machine shop practice, masonry, painting and decorating, planning the home, basic radio servicing, plumbing and heating, real estate sales, tailoring, advanced tailoring, television servicing, upholstery and welding.

Further information may be obtained by calling the Training Office, telephone 2326.

NOTICE

All persons concerned with grounding of office type equipment made by IBM, Friden, Royal, Monroe, Marchant, Remington-Rand, Addressograph-Multigraph, and Soundscriber may have this work performed on an existing service contract by addressing an inter-office memo to William F. Giannini, Purchase, Mail Stop 138, giving the build- and room number, the name, inventory and serial number of the subject machine.

WANTED: Metal or wood tool shed for use in backyard. Berryman, LY 6-3988.

WANTED: Alternate driver from Buckroe to W.A. on 7:30 shift. Askew, 4691.

WANTED: Driving combination from 73rd St. and Warwick Boulevard to W.A. on 7 shift. Post, 4626.

WANTED: Driving combination from Dare to E.A. on 8 shift. Mulqueen, 898-6327.

The latest in second generation rocketry is TAD, off-spring of NASA's reliable Delta booster. TAD (Thrust Augmented Delta) gets extra boost from three power pods which break away after liftoff. TAD will place 1,000 pounds in orbit compared with 800 pounds for the Delta.

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 a conflict of interest or an apparent conflict of interest between the private interests of the employee and his official Government duties and responsibilities.

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 addressed 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. Method 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.

WANTED: Driving combination from vicinity of Tabernacle Baptist Church in Colony Area to W.A. on 8 shift. Croom, 3421.

SECOND ECHO SATELLITE

(Continued from page 1)

Echo II is expected to show whether such a satellite will stay spherical as long as it is in orbit. If it does, it will provide a large and unchanging reflecting surface, long life-time and multiple access (many transmissions from different gound stations at the same time). In addition, unlike active communication satellites which require specific ground equipment to work with specific equipment in the satellite, passive satellite ground communications technology may improve radically without requiring changes in the orbiting spacecraft.

Overall direction of the Echo program is under NASA's Office of Space Science and Applications with project management the responsibility of Goddard Space Flight Center. The spacecraft was built by the G. T. Schjeldahl Company, Northfield, Minn; the inflation system by Geophysica Corporation of America, Viron Division, Anoka, Minn; the canister by Grumman Aircraft Engineering Co., Bethpage, N.Y.; the TV system by Hallamore Electronics Division of the Siegler Corp., Anaheim, Calif.; and the beacons by Aero Geo Astro Corp., Alexandria, Va.

The Thor-Agena B. launch vehicle was built by the Douglas Aircraft Co. (Thor), Santa Monica, Calif. and the Lockheed Missile and Space Co. (Agena), Sunnyvale, Calif.

As in the case of Echo I, still in orbit, still visible and still partly effective as a radiowave reflector, the new Echo is expected to be seen by more persons than any other man-made object in the history of the world.

NASA has long been interested in controlled inflation systems for erecting large, platforms in space without the tremendous weight drawbacks that mechanical systems presently entail. Inflatable devices could be used to deploy huge airborne antennas or Earth-orientation devices which use the Earth's gravity gradient to name just two possibilities.

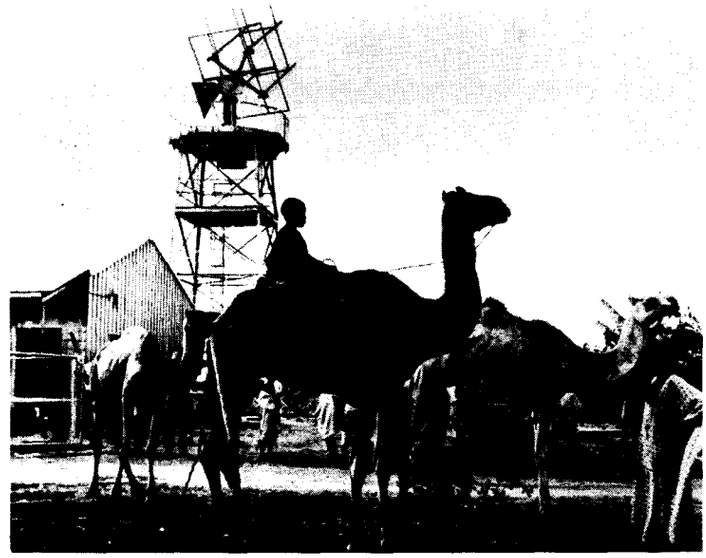
With the inflation system to be tested on this flight, the 135-foot sphere utilized a slower more controlled inflating method. This allowed the satellite to hold much higher pressures and with slower inflation there was not as much chance as previously for putting too much stress too fast on the thin skin, thus causing it to burst. The skin is made of Mylar plastic .00035 inches thick with .00018 inch thick aluminum alloy foil bonded on both sides.

In order to prevent heat reflected from the Sun from damaging the tracking beacons on the spacecraft or the laminate itself, the balloon was coated with alodine, a chemical acid which changes the surface to improve its reflecting properties.

To keep as even temperature as possible between the Sun side and the shade side of the sphere, the inside surface was coated with black India ink.

John Thole, Spacecraft Systems Manager at Goddard, is credited with devising the inflation system with the development work being done by Geophysics Corp. The heart of the system is the method of packaging 72 thinly folded and specially treated plastic bags containing chemical wafers of pyrazole. When these crystals of pyrazole are exposed to the heat of the Sun they turn into vapor filling the sphere with gas.

In order for proper inflation to occur, the small plastic bags are fastened on one side to the inside skin of the balloon in a definite pattern. When the sphere is injected into orbit and is partially inflated by residual air into a soft, round shape, solar heat beings its work. It first melts a wax sealant on the outer edge of each plastic bag. This causes the bag to expand and unfold inside the satellite. This in turn exposes thousands of tiny perforated holes on the inner folds of the small bags which allow the pyrazole to escape inside the balloon in the form of gas. Because the chemical envelopes are positioned in such a way that each releases gas at a different time, the gradual pressure build-up is achieved.



SYMBOLIC SILHOUETTE-Native boy on camel's back is etched against African skies with NASA space tracking antenna as modern backdrop. This silhouette at Kano, Nigeria, typifies the globe-girdling tracking and communications system that links many nations in space effort.

RICE EXPERIMENT LAUNCHED

Rice University's first venture into space, an experiment designated "Sammy I" in honor of the school's mascot, "Sammy, the Owl," was sent aloft from Wallops Island on January 14.

Purpose of the experiment was to measure and study the causes of "Aurorae and Airglow," and to determine if airglow is really a weak permanent aurora, or an entirely different and independent space phenomenon. The sources of airglow is a matter which has been debated by scientists for several decades since the first recorded detection of the weak glow seen in the night sky during the dark of the moon.

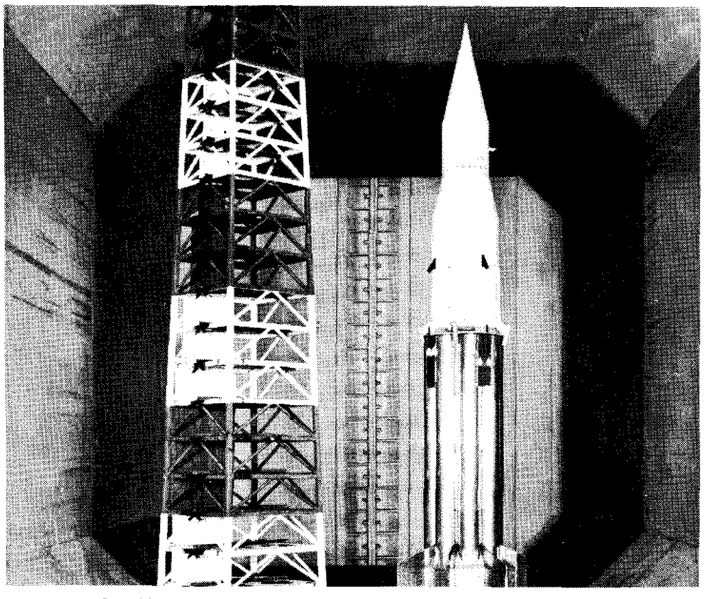
The 68-pound payload carried instruments designed and built by professors and students in the University's Space Science Department, created in January 1963.

The experiment was flown on a two-stage Nike-Apache vehicle and reached a peak altitude of 56 statute miles. Impact occurred 74 miles downrange in the Atlantic Ocean. No recovery operation was involved. Data telemetered to ground stations during the flight will be analyzed and interpreted by the University's Space Science Department.

The experiment was one of a series of four to be conducted under a NASA grant administered by the Goddard Space Flight Center. Dr. Brian J. O'Brien of Rice University is the Project Scientist. C. M. Hendricks is the Goddard Vehicle Manager.

Langley Researcher

VOLUME 3, NUMBER 4 LANGLEY RESEARCH CENTER FEBRUARY 14, 1964



An aeroelastically scaled model of the Saturn SA-5 is shown mounted in the Transonic Dynamics Wind Tunnel at Langley.

SATURN SA-5 TESTED HERE

Contributing importantly to the success of the January 29 flight of the Saturn SA-5 was an extensive series of laboratory and wind tunnel studies made by scientists of the Langley Research Center to support NASA's large launch vehicle program.

Results of the research at Langley and other NASA establishments were used by the engineers who designed the giant Saturn to assure that America's most powerful launch vehicle would perform as intended under every conceivable launch and flight condition.

Wind tunnel experiments like the one illustrated in the above photograph are one of many ways in which Langley scientists and engineers are contributing advanced knowledge to further the nation's efforts to master space.

In a cooperative program with the George C. Marshall Space Flight Center, an aeroelastically scaled model of the Saturn SA-5 is shown mounted in the Transonic Dynamics Wind Tunnel at Langley to study effects of ground winds on the launch vehicle.

The SA-5 model and a scaled model of the umbilical tower were mounted together on a turntable set into the wind tunnel floor. The table can be rotated to receive the force of the wind stream from any desired direction.

Before wind tunnel tests begin, the model is shaken mechanically to determine its vibration characteristics. Surface winds cause steady oscillatory deflections of free-standing launch vehicles. These deflections must be thoroughly understood to overcome problems of structural strength, guidance alignment and instrument checkout.

Wind tunnel test results guide the design of the launch pedestal to assure ample strength for any surface wind conditions.

LANGLEY AWARDS ANTENNA TEST FACILITY CONRACTS

Two contracts totalling $1,546,135 have been awarded by the Langley Research Center to begin construction of a Vehicle Antenna Test Facility to aid in solving spacecraft communications problems.

One contract, for construction of the building in which the facility will be housed, was awarded to Nat Harrison Associates, Miami, Florida, in the amount of $1,265,505.

The second contract, awarded to B. F. Goodrich, Sponge Products Division, Shelton, Connecticut, calls for the design and installation of anechoic chambers for the facility. It is valued at $280,630.

The facility will include two large test chambers in which scientists will be able to measure the performance of antenna systems intended for use by space vehicles in an environment nearly free of radio reflection and interferenence. The term anechoic means without echoes and describes the type of special construction used to achieve the necessary test environment.

Work on the primary construction contract is to begin at the end of February and is to be completed in 15 months.

PAUL L. STYLES NAMED NASA LABOR RELATION DIRECTOR

Paul L. Styles, Chief of Marshall Space Flight Center's Industrial Relations Office, has been named to the newly-created position of Labor Relations Director of NASA.

Styles heads the new Labor Relations Office in NASA Headquarters under the Deputy Associate Administrator for Industry Affairs, Earl D. Hilburn. He retains his position and responsibility at the Marshall Center and takes on the NASA-wide function additionally. Most of his time will be spent at Huntsville, although a Washington office has been established and placed under the charge of an Assistant Director, C. Stuart Broad.

Styles has been negotiating labor agreements for 30 years. He served as a member of the National Labor Relations Board from 1950 to 1953 under an appointment by President Truman.

In his new capacity, Styles will advise NASA management officials at Headquarters and all field installations on all aspects of labor-management relations, especially in labor-contractor problems which threaten to delay or halt work on NASA contracts. He will also serve as the official NASA representative with the U.S. Department of Labor, the NLRB, the President's Missile Sites Labor Commission and the Federal Mediation and Conciliation Service.

Sytles was born in Knoxville, Tenn. and went to Huntsville in 1922 where he worked for 15 years in the textile industry and later for the Huntsville Times. He joined the NLRB staff as a field examiner in 1937 in Atlanta, Ga. and progressed steadily in that organization until he be-

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DIAPER LINE. . .Celebrating the adoption of a daughter, Laurie Frances, are Barbara, Thermal Projects, and Kenneth W. Holley, Electrical Shop. . .Weighing in at eight pounds and one ounce on January 30 was Robert E. Jr., new son of Robert E. McGee, Photographic Division. . . Announcing the birth of a son, John Eric, on January 14 are Peggy, formerly of the Editorial Office, and Melvin Anderson, Structures Research.

ENGAGED. . .A division romance reached the engagement stage when Carolyn Paige Jamison and Donald Joseph Lewis, both of Applied Materials and Physics Division, announced their plans to wed.

WEDDING BELLS. . .Stanley Mayhew, Analysis and Computation Division, took his final vows with Linda Simpson, Pulaski, on February 1 in Blacksburg.

CALCULUS COURSE. . .Calculus II is being offered to staff members under the University of Virginia extension. The four-hour credit course will start tomorrow and will be held at 9 a.m. in Building 167, Shellbank Area. For further information call Kenneth Margolis, 2359.

SERVICE PLAN REPRESENTATIVE. . .Mrs. Beverly Beale, Government-wide Service Plan representative, will visit the Center on February 19 at 2 p.m. Employees having problems concerning their Government-wide Service Benefit Plan may call Linda Hale, 2323, for an appointment.

RELAY CARRIES OLYMPIC GAME

The first public demonstration of NASA's new communications satellite, Relay II, occurred when portions of a Soviet-American hockey game, the first championship event of the 1964 Olympics held at Innsbruck, Austria, were transmitted to the United States.

Transmission of the event was from the French ground station at Pleumeur-Bodou and the U.S. ground station at Andover, Maine.

Relay II was launched from Cape Kennedy on January 22. Numerous wideband (TV-type) and narrowband (radio, telephone) tests have been conducted via the satellite. In addition, much information on the radiation environment along the spacecraft's orbital path has been transmitted back to ground stations.

FOR RENT: Room for girls. Loar, PA 2-7374.

TYPICAL AMERICAN

CAFETERIA MENU

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

Monday - Cream of potato soup, pot roast of beef, grilled pork steak, knockwurst and baked beans, fish cakes and cole slaw.

Tuesday - Tomato-barley soup, roast ribs of beef, breaded veal cutlet, pork chop suey on rice, chili con carne.

Wednesday - Minestrone soup, grilled steak, chicken and dumplings, baked fillet of flounder, Welch rarebit on toast.

Thursday - Chicken-rice soup, baked Smithfield ham, braised beef tips on egg noodles, fried chicken, hot dog.

Friday - Holiday.

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

Monday - Bean soup, Swiss steak, fried scallops with tartar sauce, grilled ham slice, baked hash.

Tuesday - Split green pea soup, roast beef, barbecued spare ribs, fried fish, cheese omelette.

Wednesday - Vegetable-beef soup, Spanish pot roast, baked lasagna, fried chicken, barbecued sandwich.

Thursday - Chicken noodle soup, grilled steak, roast fresh ham with apple sauce, chicken jambalaya, Austrian ravioli.

Friday - Clam chowder, country style chopped steak with onion gravy, fried oysters, tuna patties with cole slaw.

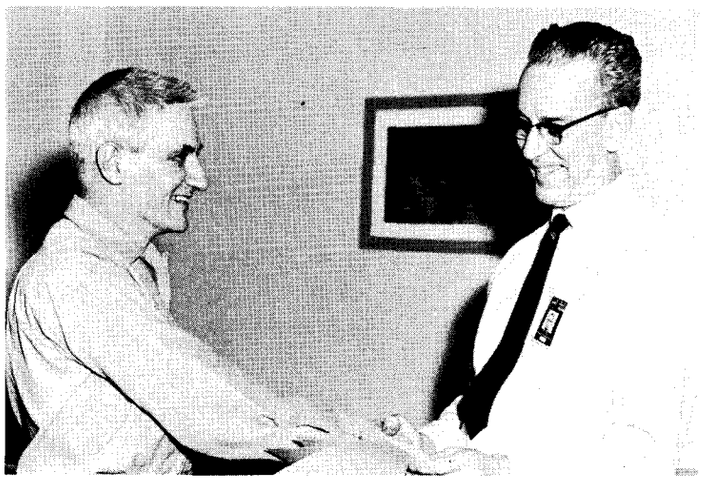
LOST: Clip board and note pad near Unitary Wind Tunnel. Henk, 4826.

FOR RENT: Room in private home in Riverdale. Rossman, 838-1758.

FOR SALE: Frigidaire refrigerator, $25. Norris, 245-1726.

FOUND: Make-up kit near Unitary. Keeter, 4711.

WANTED: Ride from Buckroe Ave. to W.A. on 8 shift. Cecil, 3416.



Eight employees recently received cash awards under the NASA Incentive Awards Program. Top left photograph - William E. Craig (left), Assistant to the Chief of Instrument Research Division, presents a check for $25 to Betty L. Phillips for her suggestion concerning a file card marker. Raymond M. Hansen, Head of General Research Instrumentation of IRD, presents a $25 check to Ronald F. Hoyt for suggesting a process for rapidly increasing pressure within a vacuum system. Top right photograph - William B. Mayo, Chief of Mechanical Service Division, presents checks to (from left): John L. Dupere, Charles E. Johnson, and Wilson G. Winfree. Dupere received $25 for suggesting the use of hollow core drills to save boron nitride material, Johnson was presented $25 for a technique for fabricating ceramic tube heaters, and Winfree received $25 for an improved sabot deflector. Lower left photograph - Mayo presents a check for $35 to Otis V. Stephens for a small vacuum valve of his own design to replace gum rubber tubing and clamps. Lower right photograph - Harry H. Hamilton (left), Chief of Photographic Division, presents a check for $50 to James W. Sparrer for installation of accessories for film and paper processors. Absent when the pictures were taken was Earl B. Snyder, MSD, who received $25 for a hydraulic jack cradle.

JOINT MEETING FEBRUARY 26

The Hampton Roads Section of the American Helicopter Society and the American Institute of Aeronautics and Astronautics will meet on February 26 at the Holiday Inn Restaurant, Hampton.

Dr. Paul Garber, Head Curator, National Air Museum, will present an illustrated history of aviation. A short movie of flights of the Wright biplane will be shown.

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

For reservations call one of the following by Saturday, February 22: Robert J. Pegg, PA 3-5276, Carl Sandahl, LY 6-2392; John Ward, LY 5-0869, or Emanuel Boxer, CH 5-6212.

VPI PROFESSOR HERE TODAY

Dr. Daniel Frederick, Engineering Mechanics Department, Virginia Polytechnic Institute, will visit the Center today. Employees wishing an appointment with Dr. Frederick should call the Training Office, 2346.

FOR SALE: 14-pound Manhattan bowling ball, boy's shoe skates size 8. Carter, LY 6-1823.

FOR SALE: Diamond ring set. Pilny, 722-1657.

FOR SALE: 14-foot boat with 40 hp Johnson motor, trailer and other accessories. Robinson, 826-4331.

FOR SALE: Utility trailer for compact car. Taylor, 828-2043.

FOR SALE: Sears Homart-Twenty water motor and pump, 1/2 hp - $30. Lawless, 868-9835.

FOR SALE: 2 pair custom made draperies with valance - 1 pair 83 inches long, 139 inches wide and 1 pair 55 1/2 inches wide and 83 inches long. Dearer, 723-8479.

EMPLOYEE-MANAGEMENT COOPERATION

The Executive order on Employee-Management Cooperation in the Federal Service (E.O. 10988) proclaims the right of Federal employees to organize. It provides, in Section 1 (a) that "employees of the Federal Government shall have, and shall be protected in the exercise of, the right, freely and without fear of penalty or reprisal, to form, join and assist any employee organization or to refrain from any such activity."

Agency heads are directed to take action to assure that agency employees are apprised of these rights, and that there is "no interference, restraint, coercion or discrimination" to either encourage or discourage membership in any employee organization. Whenever any considerable number of employees have organized for the purpose of collective dealing, the attitude of the Government should be that of an affirmative willingness to enter such relations.

Bona fide organizations of Federal employees, which are free of restrictions or practices denying membership because of race, color, creed or national origin, which are free of all corrupt influences, and do not assert the right to strike or advocate the overthrow of the Government of the United States may be recognized by Government agencies. Organizations of Federal employees may be granted recognition essentially according to the extent to which they represent employees in a particular unit or activity of a Government agency. This recognition may be informal, formal, or exclusive.

Informal recognition gives an organization the right to be heard on matters of interest to its members, but places an agency under no obligation to seek its views. Informal recognition may be granted to any organization, regardless of what status may have been extended to any other organization.

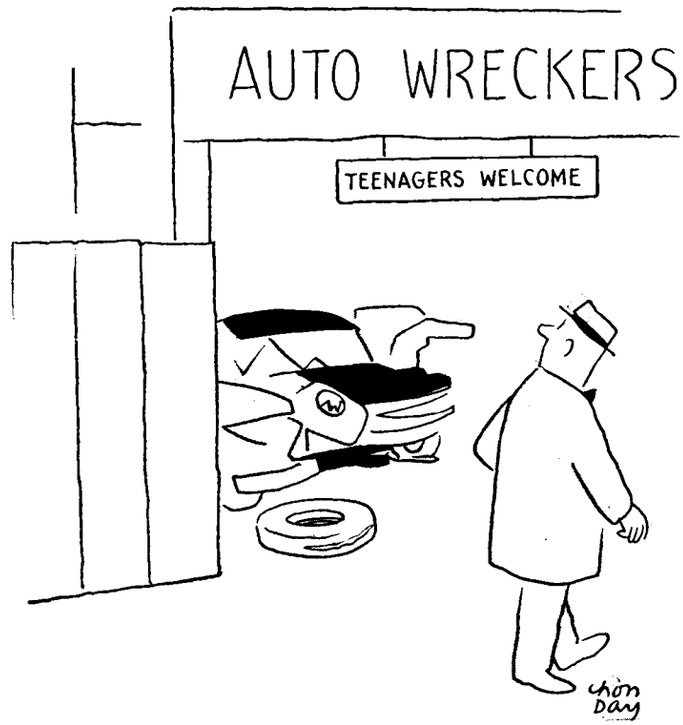
Formal recognition may be granted to any organization with 10 per cent of the employees in a unit or activity of a Government agency, where no organization has been granted exclusive recognition. Formal recognition gives an organization the right to be consulted on matters of interest to its members.

Exclusive recognition may be granted to any organization chosen by a majority of the employees in an appropriate unit. Exclusive recognition gives an organization the right to enter collective negotiations with management officials with the object of reaching an agreement applicable to all employees of the unit. Consultations or negotiations, according to the form of recognition granted, may concern matters in the area of working conditions and personnel policies, within the limits of applicable Federal laws and regulations, and consistent with merit system principles.

Under the Executive Order, each agency has the responsibility for determing whether or not a unit is appropriate for purposes of exclusive recognition and by an election or other appropriate means whether an employee organization represents a majority of the employees in such a unit.

Langley Research Center has granted exclusive recognition to the Pattern Makers' Association of Newport News and Vicinity for a unit composed of all modelmakers and apprentices assigned to the Dynamic Model Shop and the Model and Pliant Structures Shop.

FOR SALE: 1960 Valiant - $825. Grossman, LY 6-6759.
WANTED: Ride from downtown Newport News to W.A. on 8 shift. Drewry, 3431.



JAMES A. BENNETT DIES

James A. Bennett, Head of Engineering Contract Support Section, Research Models and Facilities Division, died unexpectedly on January 30 at his home at 21 Laurelwood Road, Newport News.

Bennett was born August 16, 1920 in Pittsburgh, Pennsylvania. He graduated from Peabody High School in Pittsburgh and received his B.S. degree in Industrial Engineering from the University of Pittsburgh. He started his NASA career on February 16, 1943 as a Junior Mechanical Engineer.

He transferred to the Space Task Group on December 11, 1960 and returned to the Langley Center staff on November 12, 1961.

He is survived by his wife, Mrs. Betty Clark Bennett; three daughters, Miss Barbara Bennett, Miss Karen Bennett and Miss Patricia Bennett, all of Newport News; his father, R. L. Bennett of Pittsburgh, and a brother, Dr. R. L. Bennett Jr. of Warm Springs, Georgia.

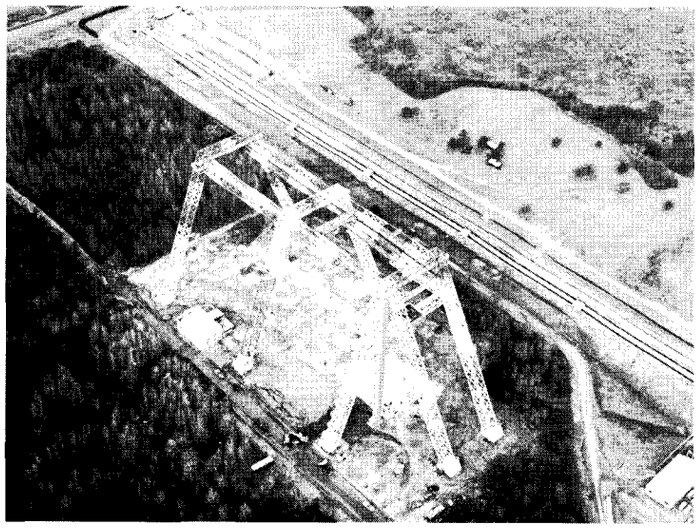
LABOR RELATION DIRECTOR

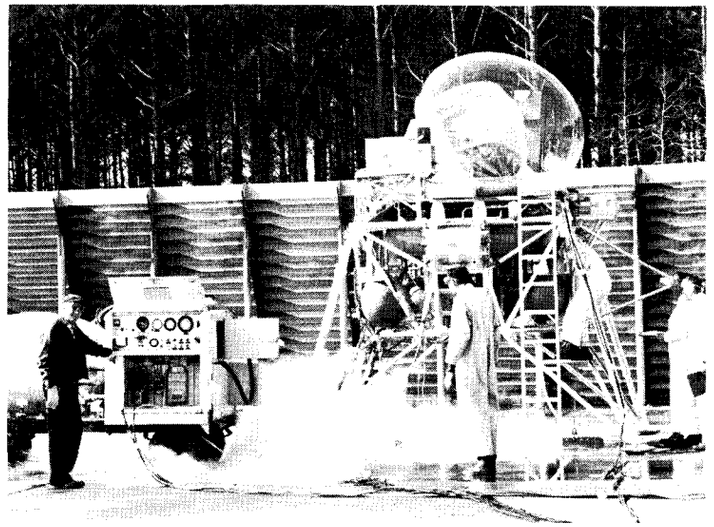
(Continued from page 1)

came a board member in 1950. From the time he left NLRB in 1953 until joining Marshall in 1961, he held industrial management consultant positions in Ohio and West Virginia.

Styles holds an honorary Doctor of Law Degree from the John Marshall Law School, Atlanta; belongs to several industrial relations organizations, and has written numerous articles in the labor relations field.

FOR SALE: 1955 Oldsmobile 88, $350. Wray, 722-4615.
FOR SALE: Chrome dinnette set, $15. Carmines, 826-2894.
WANTED: 283 cubic-inch Chevrolet engine or parts. Call Merrill, Justice 8-5168.
WANTED: 18-foot outboard cruiser or 18-foot sailboat. Earl, 898-5124.





Left photograph - Now nearing completion, the Lunar Landing Research Facility, located in a wooded area in West Area, is expected to go into operation in late spring. Right photograph - The research vehicle and rocket motors are being checked-out by the contractor prior to acceptance by NASA's Langley Research Center.

LUNAR LANDING RESEARCH FACILITY NEARS COMPLETION

Construction of a unique Lunar Landing Research Facility-- as tall as a 25-story building-- is nearly complete at the Langley Center. The 250-foot high and 400-foot long facility will provide a laboratory in which NASA scientists will work with research pilots to explore and develop techniques for landing a rocket-powered vehicle on the Moon, whose gravity is only one-sixth that of Earth.

Lunar gravity will be simulated in the facility by a special crane travelling along the red and white-painted gantry structure. The crane, capable of supporting research vehicles weighing as much as 20,000 pounds, will sustain five-sixths of the weight of the suspended research vehicle, which will be similar to the two-man lunar excursion module designed to land on the Moon. The remaining one-sixth of the vehicle's weight-- matching lunar conditions-- will be supported by the craft's hydrogen peroxide rocket system. A series of special pivots called gimbals will give the vehicle the same freedom to move in any direction that it would have in space, with pilot control being provided through main support rockets and smaller maneuvering rockets. A building at the edge of the gantry houses a control room from which the flight tests are monitored.

A vehicle designed as a research tool, not as an actual lunar lander, has been constructed for use on the facility. As such, it has been provided with a large degree of flexibility in instrumentation and control modes. The vehicle's gross weight is about 10,000 pounds including a two-man crew and 3,300 pounds of fuel. The main structure is a tubular steel framework housing the propulsion system with conventional oleo-type shock struts attached to the four corners.

The propulsion system including main and attitude motors utilizes 90 percent hydrogen peroxide as fuel. The main motors used for deceleration can be throttled from 600 to 6000 pounds. The motors are split into two clusters of 5 each.

The facility is now being checked-out by the contractor prior to acceptance by NASA. The research vehicle has been accepted and initial rocket motor firings have been accomplished. The office and vehicle hangar have been accepted and are now occupied by the Space Research Branch of Space Mechanics Division.

NASA'S COST REDUCTION, CONTROL PROGRAM CITED

The following message from Dr. Robert C. Seamans Jr., NASA's Associate Administrator, has been received at the Center concerning NASA's cost reduction and control program:

"On December 31, 1963, Mr. Webb announced the NASA cost reduction and control program to implement President Johnson's pledge 'that the Executive Branch will be administered with the utmost thrift and frugality; that the Government will get a dollar's value for a dollar spent; and that the Government will set an example of prudence and economy.' To carry out this pledge, the President stated: 'I intend. . .to accord increased recognition to those governmental units and individuals that make notable advances in providing efficient service at lower cost.' Promoting greater efficiency and achieving cost reductions wherever possible is the responsibility of each and every NASA employee.

"During Fiscal Year 1963, 409 employee suggestions were adopted with significant tangible savings of $180,706. Savings of $214,456 were brought about by superior job performance and achievements. NASA employees were given cash awards amounting to $137,456, with total tangible benefits of $395,162. These are significant savings, and I cannot emphasize too strongly the need to maintain active incentive awards programs designed to recognize those employees whose efforts contribute significantly to greater efficiency and cost reduction.

"With your active participation, I am sure the NASA awards programs can be used effectively in support of the NASA cost reduction efforts."

FOR SALE: 1929 Ford pickup with 1957 Chevrolet engine. Purgold, LY 6-6690.

FOR SALE: 1962 Sears Mo-Ped motor bike - $85, Go-cart with 2-cycle engine. Simpson, LY 6-4680.

NASA BOWLING LEAGUES

Tom Cats lead Division A in the NASA Tenpin League with 50 wins and 26 losses. Unitary is in second with 49 wins and 27 losses. Unitary, led by Harry Davis's 252 game and 673 set, set a new team record with a 3096 set.

Misfits lead Division B with 55 wins and 21 losses. High scores for the week were rolled by Joe Poslik with a 268 game and 695 set.

DIVISION A			DIVISION B		
Team	W	L	Team	W	L
Tom Cats	50	26	Misfits	55	21
Unitary	49	27	Latecomers	48.5	27.5
Hornets	46	30	Ten-Benders	46	30
Phantoms	45.5	30.5	Hucksters	45	31
Crusaders	44	32	Dynamos	43	33
Devious	43	33	Cee Pees	42.5	33.5
Frame Ups	42	34	Ranch House	42.5	33.5
Alley Cats	42	34	Sudz	39.5	36.5
Short Cirsuits	40.5	35.5	Spare Parts	39.5	36.5
Electronic Shop	39	37	Tarey Drive In	39	37
Payloads	37.5	38.5	Alley Oops	38	38
Johnnie's	37	39	Barristers	37	39
Pinwigglers	37	39	Question Marks	37	39
Flight Engineers	36	40	Dillys	35	41
A-OK's	31	45	Bowling Belles	33	43
Flyers	30.5	45.5	Analogs	33	43
Spare Oops	30	46	Gliders	32.5	43.5
Oddballs	29	47	Greenhorns	28.5	47.5
Galaxies	27	49	Moonlighters	23	53
Malfunction	24	52	CCCP	21.5	54.5

Ten Spots lead the NASA Duckpin League with 48 wins and 28 losses. High scores for the week were rolled by Oce Johnson with a 152 game, John Dupere with a 361 set, and Alene McCann with a 114 game and 321 set.

Ten Spots	48	28	Lt. Mach. 1	36	40
Strike Outs	47	29	Lt. Mach. 2	36	40
AMC	42	34	Rebel Bombers	35	41
Doodle Bugs	39	37	ACD	31	45
Pinpoppers	39	37	Reentry	27	49

VOTING LEAVE POLICY CITED

President Johnson has issued a reminded to all Federal agencies of the continuation of the policy established in 1953 of facilitating the exercise of the voting privilege by Federal employees by excusing them for a reasonable period of time to vote or to register to vote. Heads of activities and installations throughout the organization are requested to encourage all employees to plan their time to permit their participation in registration and voting during the coming year.

Insofar as practicable, without interfering seriously with operations, employees who desire to vote or register in any election or in referendums on a civic matter in their community shall be excused for a reasonable time for that purpose.

As a general rule, where the polls are not open at least three hours either before or after an employee's regular hours of work, he may be granted an amount of excused leave which will permit him to report for work three hours after the polls open or leave work three hours before the polls close, whichever requires the lesser amount of time off.

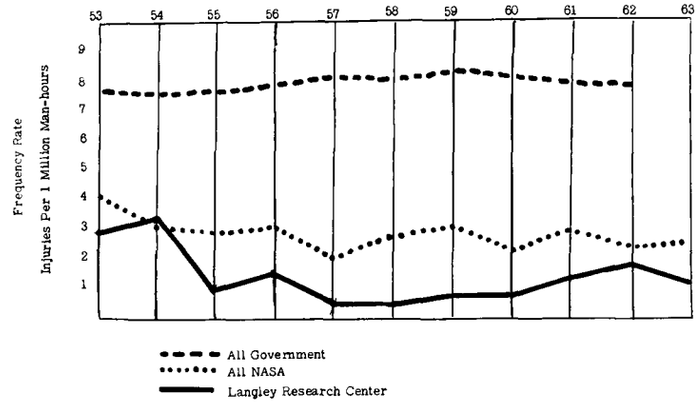
Under exceptional circumstances where the general rule does not permit sufficient time, an employee may be excused for such additional time as may be needed to enable him to vote, depending upon the particular circumstances in his individual case, but not to exceed a full day.

If an employee's voting place is beyond normal commuting distance and vote by absentee ballot is not permitted, the employee may be granted sufficient time off in order to be able to make the trip to the voting place to cast his ballot. Where more than one day is required to make the trip to the voting place, supervisors shall observe a liberal policy in granting the necessary leave for this purpose. However, time off in excess of one day shall be charged to annual leave or, if annual leave is exhausted, to leave without pay.

For employees who vote in jurisdictions which require registration in person, time off to register may be granted on substantially the same basis as for voting except that time off shall not be granted if registration can be accomplished on a non-work day.

SAFER WORKING HABITS URGED

The Langley Research Center's Executive Safety Committee met recently and Duane McSmith, secretary, gave a brief summary of the accident experience for 1963. T. A. Harris, chairman, noted the slight downward trend in 1963 and expressed the desire to continue in this direction.



The committee was briefed on four safety items accomplished in 1963-- the sign at Gate 4 which posts the accident experience daily, the safety posters on each bulletin board, the Department of Labor Safety Training Course given to 40 supervisors, and the re-establishment of the Shop Safety Award Program.

Center officials urged employees to develop safe working habits and to be alert in detecting and reporting the existence of hazardous conditions or defective equipment which might cause property damage or personal injury.

Officials also pointed out that in order to be eligible for compensation benefits, an employee must follow the rules and regulations of the Bureau of Employees' Compensation.

One of the most important of these regulations states that whenever any injury is sustained by an employee of the Government while in the performance of his duty, he shall immediately give written notice to his official superior. Unless written notice of injury is given within 48 hours or unless the immediate superior has actual knowledge of injury, compensation may be refused.

Form CA-1 is provided for filing written notice of injury. This form is available at either the East or West Dispensary or the Health Unit Office, Building 587.

Michael C. Garula

Andrew C. Dibble

William M. Phillips

Sarah O'Keefe

SIX RECEIVE CASH AWARDS

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

Receiving the awards were: Michael C. Garula, Financial Data Processing Branch, Fiscal Division; Andrew C. Dibble, Research Facilities Service Section A., Mechanical Service Division; William M. Phillips, Electronic Shop Section, Electrical Systems Division; Sarah O'Keefe, Model and Pliant Structures Shop Section, Mechanical Service; Bernard Spencer Jr., Stability and Performance Section, Full-Scale Research Division, and Ira E. Tilley, Research Project Support Section Section, Mechanical Service.

The citations read as follows:

Garula - "For outstanding design and development of complex programs associated with Fiscal Division reporting requirements."

Dibble - "For his superior performance in developing and applying special shadowgraph techniques for photographing sound waves and thereby making significant contributions to the understanding of supersonic jet noise generation."

Phillips - "For his superior performance in establishing a soldering school for technicians and thereby providing greater reliability in electronic circuitry utilized in aerospace research."

Miss O'Keefe - "For her high quality and quantity work performance as a clerk typist for the Modelmaking Branch of Mechanical Service Division."

Spencer - "For his outstanding ability to conceive and conduct aerodynamic research programs for advanced winged vehicles in a rapid and effective manner."

Tilley - "For his outstanding contributions and leadership in support of aerospace research experiments in radiation attenuation measurements, Scout and Saturn separation tests, and a variety of other spacecraft payload studies."

Bernard Spencer Jr.

Ira E. Tilley

PROCUREMENT NOTICE

Attention is called to those sections of the Langley Procedure Manual which deal with the receipt and shipping of material. The manual requires that all material, equipment and supplies received from any source for use at Langley must be reported to and recorded by the Stores Branch, Mail Stop 139.

It further provides that all material leaving the Center be cleared through the Procurement Division. This division has the responsibility of documenting all material which is to be repaired, altered, or furnished on a purchase order or contract, or loaned to other organizations. This division also issues the only document which may be used for the payment of the transportation of material, the Government Bill of Lading.

Expediting or tracing of shipments or contacts with transportation companies should be referred to the Procurement Division, as it is staffed with personnel trained in these duties.

For further details Langley Procedure Manual section 120 deals with receipts and sections 141, 144, 145 and 146 deal with shipments.

FOR SALE: 110 x 200-foot wooded lot in Edgehill. Carmines, UN 8-3811.

WANTED: Ride from Patrician Dr. to W.A. on 8 shift. Howell, 4432.

WANTED: Ride from Warwick Gardens to W.A. on 8 shift. Fansler, 3337.

LOST: Pair of men's black plastic frame glasses - near Buildings 1230 and 1293. Ingebritsen, 4691.

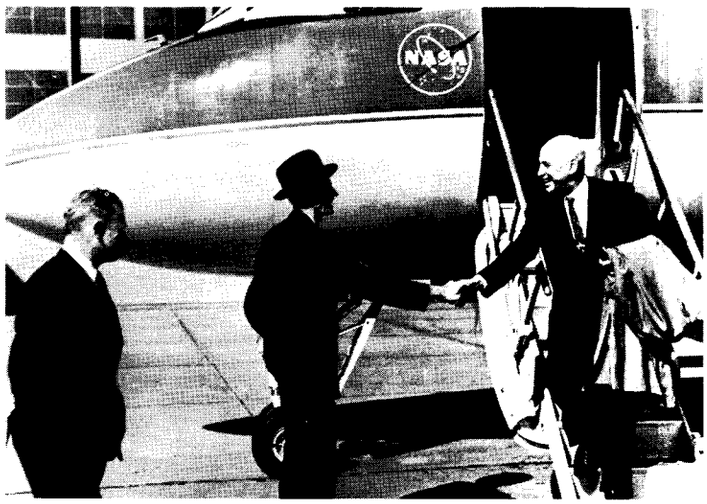
FOUND: Lady's black leather gloves. Weaver, 4644.

WANTED: Driving combination from Elizabeth Rd. to W.A. on 8 shift. Bloch, 3326.

FOR SALE: 1958 10 x 50-foot Travelo mobile home. Dayton, Ordinary 723-2788.

WANTED: Ride from E.A. to Bethel Park area 3:30 p.m. or 4 p.m. Capt. Peyser, Langley 5208 or 826-5951.

WANTED: Ride from Shore Park to W.A. on 8 shift. Dot Histand, 4866.



Last week Dr. Robert R. Gilruth, Director of Manned Spacecraft Center, and members of his staff visited the Langley Research Center. Upper left photo - Dr. Floyd L. Thompson, Langley Director, greets Dr. Gilruth while Charles J. Donlan, Langley Associate Director, looks on. Upper right photo - Donlan talks to the group on Langley's distribution of effort in terms of end objectives. Center left photo - Richard R. Heldenfels, Chief of Structures Research Division, explains the operations of the 8-Foot High-Temperature Structures Tunnel. Center right photo - Manuel J. Queijo (left), Head of Space Analysis Branch, Space Mechanics Division, discusses a part of a map of the lunar surface with the visitors. Bottom left photo - Shown in one of the Center research facilities are (from left): Dr. Thompson, Henry A. Fedziuk, Chief of Research Reports Division; Dr. Gilruth, Paul E Purser, Manned Spacecraft Center; Donlan, and Maxime A. Faget, Manned Spacecraft Center. Lower right photo - Dr. Thompson and Dr. Gilruth discuss some of Langley Research Center's contributions to the space effort.

Langley Researcher

VOLUME 3, NUMBER 5 LANGLEY RESEARCH CENTER FEBRUARY 28, 1964

LANGLEY COOPERATING IN PROGRAM TO STUDY SPACECRAFT CONCEPTS

NASA has requested industry proposals for construction of two low-speed lifting-body gliders for use in a space research program in which the Langley Research Center is cooperating with the Flight Research Center, Edwards, California, and the Ames Research Center, Moffett Field, California.

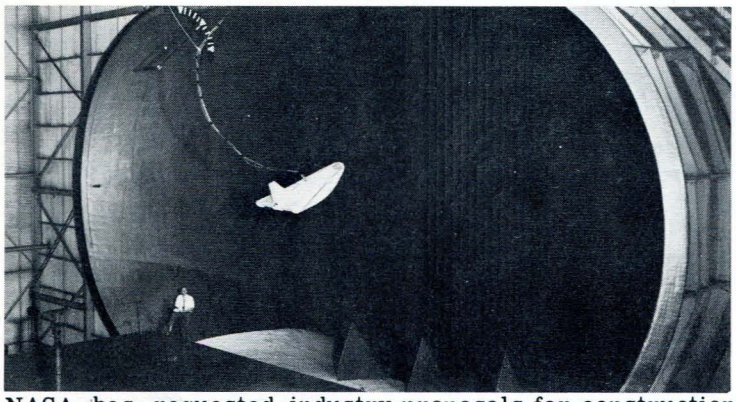
Twenty-six firms have been invited to submit proposals to the Flight Research Center for a fixed-price contract within five weeks. The gliders, one of which will be based on a Langley concept, will be used in investigating problems of piloting advanced spacecraft during landing.

The lifting-body research program, which is concerned with horizontal landing capabilities of future spacecraft, is a cooperative effort of Langley, Ames, and the Flight Research Center for NASA's Office of Advanced Research and Technology.

NASA is responsible for the research and test phases, while the selected contractor will be responsible for the structural design of the shell and control system of the gliders.

NASA will furnish the contractor with information obtained through lifting-body research experience on the HL-10 concept which underwent extensive study in wind tunnels and laboratories at Langley, and on the M-2 at Ames.

Both vehicles will be studied in the 40 X 80-Foot Wind Tunnel at Ames. After thorough testing and evaluation, the vehicles will be investigated in flight at Edwards. They will be carried aloft by a B-52 carrier-- in a manner similar to the X-15-- and released at 45,000 feet. The pilot will then glide the craft into a landing at Rogers Dry Lake at Edwards. Flight tests are expected to begin in 1965.



NASA has requested industry proposals for construction of two low-speed lifting-body gliders for use in a space research program. One of the gliders is based on the Langley HL-10 concept which has undergone extensive study in wind tunnels and laboratories at the Center. A model of the HL-10 vehicle is shown being studied in free flight in the Full-Scale Wind Tunnel to determine the low-speed dynamic stability and control characteristics of the vehicle.

NASA SELECTS HONEYWELL TO BUILD SCANNER SPACECRAFT

NASA has selected Honeywell Aeronautical Division, Minneapolis, Minnesota, for negotiation of a contract to furnish three spacecraft for a horizon definition experiment called Project Scanner. Honeywell was one of 12 firms bidding for the contract which is valued at approximately $1,000,000.

Project Scanner is a phase of the horizon definition research carried out by the Langley Research Center under the general direction of NASA's Office of Advanced Research and Technology. Horizon definition and measurement are important to spacecraft stabilization and guidance techniques.

The contract to be negotiated with Honeywell calls for construction of two Scanner payloads plus one backup, with delivery expected early in 1965. The Scanner vehicles will be flown on sub-orbital ballistic trajectories from Wallops Station.

Each vehicle will carry as prime instrumentation a radiometer and a star telescope called a star mapper. The telescope will provide accurate measurements of the attitude of the spin-stabilized spacecraft.

The dual radiometer assembly will measure the energy from the horizon in two specific wavelength bands, one in the region of 14 to 16 microns associated with carbon dioxide in the upper atmosphere and the other in the 20 to 40 micron region associated with water vapor.

Usual methods of defining a true vertical cannot be em-

(Continued on page 3)

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 op-

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

MARRIAGES. . .Jean Hayes, Fiscal Division, was married to Ronald Spinney, Boston, Massachusetts, on February 3 in Boston. . .Wedding bells rang on January 26 when H. Milton Holt, Electrical Flight Systems, took his final vows with Frances Lee Goodwin, Williamsburg, at the Danforth Chapel on the campus of North Carolina State College.

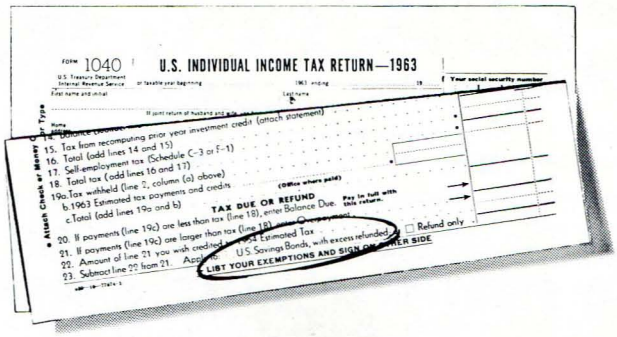
INDEMNITY PLAN REPRESENTATIVE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, Federal Employees Health Benefit Program, will visit the Center on March 10 from 3 p.m. until 4. Employees having problems or questions concerning the Indemnity Benefit Plan may call Linda Hale, 2323, for an appointment.

DESIGNATION OF BENEFICIARY. . .Employees somtime designate beneficiaries because the order of precedence established by law does not satisfy their requirements at the time, but fail to change or cancel the designations when their obligations or responsibilities change. As a result, some undesirable situations have developed. It is suggested that employees periodically review any designations they have made to assure that they are still appropriate.

WORLD FAIR TICKETS. . .The Activities Association has a number of tickets to the New York World's Fair available to Center employees at one-third discount. The $2 adult ticket is available for $1.35 each and the children's tickets may be purchased for $.67-1/2. This offer is being offered employees through March 15. For further information contact Betty Joyner, 4488.

THEATRE NEWS. . ."The Gangs All Here," the fourth show of the Community Theatre this season, will be held on March 4, 5, 6, and 7 at 8:30 p.m. at the Newport News High School auditorium. The play is about the Harding administration and the Tea Pot Dome scandal. The play is directed by Granville Derby, 8-foot Tunnel. Other employees who will appear in the cast are Richard T. Whitcomb, Head of 8-foot Transonic Tunnels Branch; Clyde Winters, Applied Materials and Physics Division, and John Shores, Instrument Research Division.

NEW POSITION. . .John Worth, a modelmaker at the Center for 22 years, has left the Federal service to assume the new job as Executive Director of the Academy of Model Aeronautics. Worth was president of the organization in 1963 and was re-elected for 1964. AMA is the official governing body for model aeronautics in the United States.



How to get MORE out of your tax refund

When you get your '63 tax return (Form 1040), take a look at line 23 on the bottom of the page.

It gives you the option of taking your refund in U. S. Savings Bonds instead of a check for the total amount.

There are two big advantages:

1. Taking your refund in Savings Bonds gives you an easy way to hang onto it.
2. When your Bonds mature, your refund becomes 33⅓% bigger. You get back $4 for every $3.

You also get a nice red, white and blue feeling from knowing you're helping your country's future as well as providing for your own.

Think it over when you ask for your refund this year.

Quick facts about Series E Savings Bonds

- You can buy Bonds where you work on the Payroll Savings Plan
- You pay no state or local tax and can defer the federal tax on interest until the Bonds are cashed
- You can get your money when you need it
- Your Bonds are replaced free if lost, destroyed, or stolen

Keep freedom in your future with

U.S. SAVINGS BONDS

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 2:

Monday - French onion soup, roast veal with dressing, corned beef and cabbage, chicken chow mein over crisp noodles, fish cakes and cole slaw.

Tuesday - Vegetable-beef soup, roast ribs of beef, stuffed flounder, liver and onions, chili con carne.

Wednesday - Bean soup, half-pound chopped steak with gravy, shrimp Newburg, baked ham, Austrian ravioli.

Thursday - Chicken-noodle soup, grilled rib-eye steak, meat loaf, fried chicken, hot dog.

Friday - Clam chowder, Spanish pot roast, baked fillet of perch, fried fillet of flounder, baked hash.

The menu for the week of March 9 is as follows:

Monday - Cream of potato soup, roast beef, grilled pork chops, pastafazool, fish cakes with cole slaw.

Tuesday - Split green pea soup, Swiss steak, breaded veal cutlet, broiled ham slice, grilled cheese sandwich.

Wednesday - Minestrone soup, pot roast of beef, chicken and dumplings, Salisbury steak, welsh rarebit on toast.

Thursday - Vegetable-beef soup, grilled rib-eye steak, spaghetti with meat sauce, fried chicken, meatless ravioli.

Friday - Clam chowder, corned beef and cabbage, broiled halibut steak, fried fillet of flounder, barbecued sandwich.

A group of Center employees were recently presented safe driving awards. In most cases the awards were made for a two-year period of safe driving. Shown above are the recipients and their supervisors. Front row (from left) - T. A. Harris, who spoke to the group; T. Melvin Butler, who presented the awards; Robert J. Davis, Ben Price, Frank Mitcher, John Perry, Stanley P. Shields, Charlie Johnson, Samuel S. Westbrook, Lloyd W. Harrell, Earlie Guy Boswick, and Duane McSmith, Safety Officer. Back row (from left): Thomas Harper, Robert Jackson, Otha Jackson, Lewis G. Hargrave, Joseph H. Hilton, Thomas Wilson, Theodore R, Perry, George O. Brooks, Vernon S. Courtney, Dennis H. Askew, Lloyd Fletcher, Ernest Dennis, John H. Mitchell, Leon R. Davis, Edward X. Maher, Clarence I. Brooks, James H. Selby, Horace V. Bunting, Charles E. Brown, Marvin E. Whitney, Earl R. Smoot, James Russell, Edward T. Maher, Chief of Administrative Service Division, and Milfred E. Cook, Chief of Plant Maintenance Division. Charles E. Brown and Otha Jackson received one-year awards.

SCANNER SPACECRAFT

(Continued from page 1)

ployed in an orbiting spacecraft because it is weightless. In their place, instruments to measure the horizon have been used, but they have not always provided the required degree of accuracy. Project Scanner is designed to measure the horizon in clearly defined regions of the spectrum so that more precise instruments making use of the horizon can be designed and built for future space missions.

The Project Scanner radiometer and star mapper will be built under separate contracts. Proposals by prospective contractors are still being evaluated.

Launch vehicle for Project Scanner will be a three stage solid propellant rocket. The first stage will be a Castor with two strap-on Recruit motors; the second stage a SKAT; and the third an X-248.

Langley Research Center will manage Project Scanner under the over-all direction of the Office of Advanced Research and Technology.

Project Manager at Langley is Howard J. Curfman Jr., of the Applied Materials and Physics Division. John A. Dodgen, Instrument Research Division, is Project Experimenter. Maurice L. Sisson, Flight Vehicles and Systems Division, is Technical Project Engineer.

MERIT PROMOTION PLAN

(Continued from page 1)

portunity 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.

FOR SALE: 1960 Valiant station wagon. Flagg, TW 8-5179.

FOR SALE: DX 100 transmitter, $125, Savage model 755A automatic loading 12 gauge shotgun. Perdue, 898-5105.

WANTED: Alternate drivers from Green Oaks, Ivy Farms, Brentwood or Sedgefield to W.A. on 8 shift. Schoonover, 4701.

WANTED: Driving combination from Thornhill to E.A. on 8 shift. Williams, 2392.

FOR SALE: 1958 Opel Rekord, $250. Cricker, PA 3-7143.

FOR SALE: Floor furnace, 85,000 btu. King, CH 7-3817.

QUESTIONS AND ANSWERS CONCERNING POLITICAL ACTIVITY

The Civil Service Commission emphasizes again that Federal employees and members of their families have the right and obligation to register and vote. Queries and comments of Federal employees indicate that many people do not realize the extent of permitted activities under political activity rules governing Federal employees.

The following questions and answers have been prepared for the guidance and information of employees.

Q. What is the Commission's general philosophy with regard to the individual's participation in registration?

A. The Commission, over the years, has expressed the view that it believes all citizens should be encouraged to register and to vote, and that no impediment should be permitted which would hamper an individual from participating in registration activities and voting.

Q. May a Federal employee participate in nonpartisan registration drives?

A. Yes, to the fullest extent possible.

Q. May he direct such nonpartisan registration drives?

A. Yes, he may exercise complete supervision.

Q. May a Federal employee participate in a registration drive conducted by a political party which is not carried out on behalf of specific candidates?

A. Yes, with certain qualifications. If the Federal employee is engaging in registration activities for the purpose of encouraging the registration of voters on a partisan political basis, such activity would violate the Hatch Act. The employee must see to it that his role in the drive is wholly nonpartisan in character and that he impartially registers voters for the party of their choice without attempting to influence the individual being registered.

Q. In most states a registrar is appointed by the County Clerk or Clerk of the Court. Can a Federal employee accept such appointment?

A. Yes, if in doing so he gets permission from his agency and the work does not interfere with his agency's business.

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. He 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.

Q. Does the Hatch Act apply to part-time Government employees?

A. Yes.

Q. What is the penalty for violation of the Hatch Act?

A. The most severe penalty for violation is removal. The minimum penalty is suspension without pay for 30 days.

Q. Please 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. Is it possible for a Federal employee to run for public office on a partisan party ticket?

A. No. Federal employees cannot be candidates for any National, State, county, or municipal office filled in partisan elections. They may run for local office only in elections that are nonpartisan; that is, where all the candidates appear on the ballot without partisan party designation such as Democratic or Republican.

Q. May a Federal employee serve as an election officer?

A. Yes, provided that in doing so he discharges the duties of the office in an impartial manner as prescribed by State or local law, except that he may not become a candidate for such office in a partisan election.

Q. May a Federal employee serve in an unofficial capacity at the polls as a checker, challenger, distributor, or watcher, or in any other post in behalf of a partisan political candidate or partisan political party?

A. No. He may not assist such candidate or party in any way at or near the polls.

Q. May a Federal employee use his auto to take voters to the polls on election day, or lend it, or rent if for this use?

A. Generally, no. However, the employee's auto may be used to transport himself and members of his immediate family to the polls. In addition, members of a car pool may stop at the polling place to cast their votes on the way to or from their places of employment.

Q. May employees covered by the Hatch Act wear campaign buttons in the interests of one of their favorite candidates?

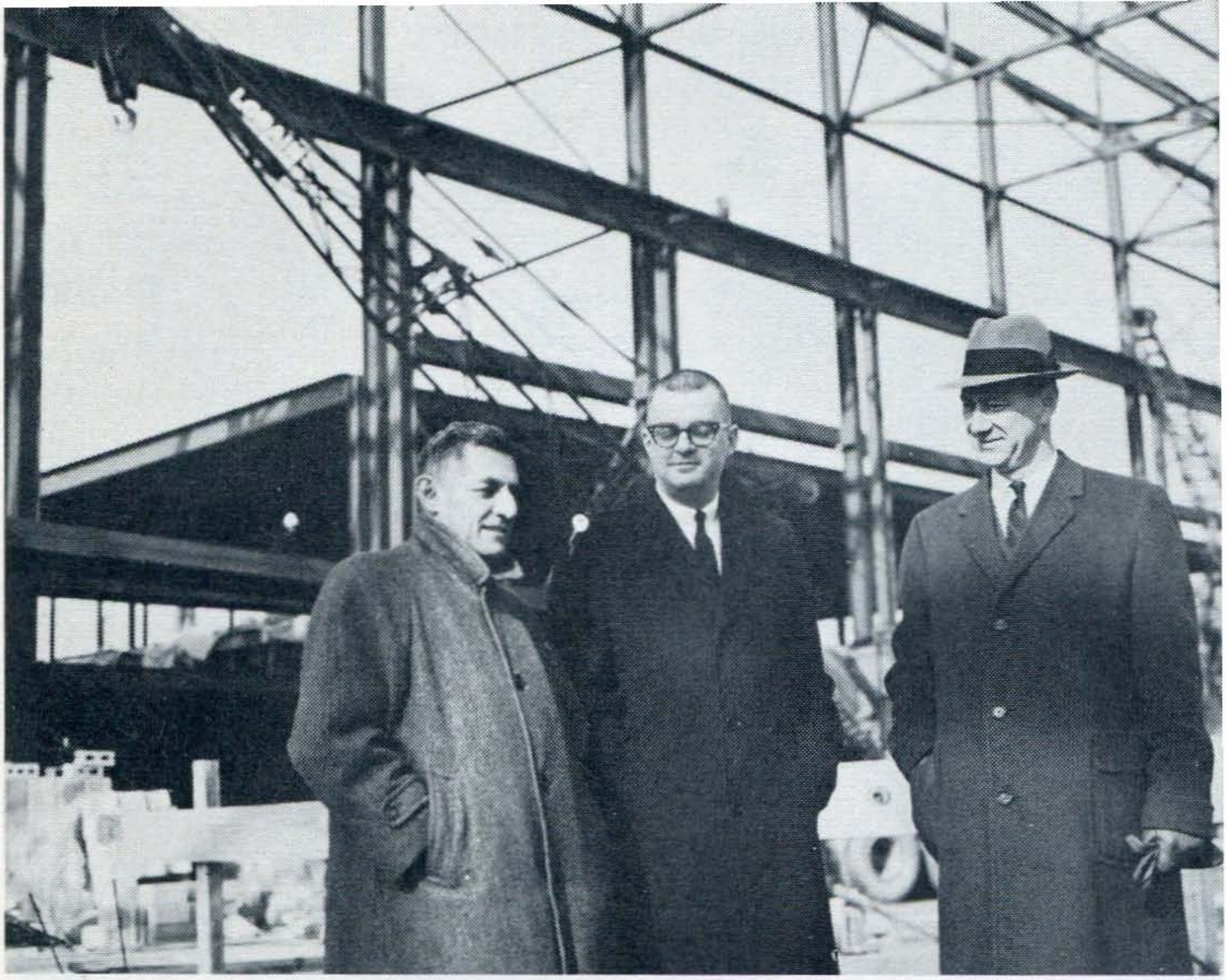
A. Yes. They may also display political posters or pictures in the windows of their homes or on their autos.

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, Washington, D.C. 20415, before engaging in the activity.

"These days, young man, does anyone know where he's going in such a mad rush?"

NASA
1213



The Scientific Advisory Board of the Virginia Associate Research Center visited Langley Research Center on Feb ruary 20. Top photograph - Members of the group include front row (from left): Dr. Floyd L. Thompson, Director o the Langley Center; Dr. Klaus Ziock, Acting Director o VARC; Dr. M. E. Rose, University of Virginia who wa elected chairman of the board; Dr. Davis Y. Paschal, President of the College of William and Mary and Chairman o the Governing Committee, and Charles J. Donlan, Langley' Associate Director. Second row - Dr. G. H. Vineyard Brookhaven; Dr. John E. Duberg, Langley Technical Assistant; Dr. C. N. Yang, Institute of Advanced Studies

row - Eugene E. Draley, Langley Assistant Director; Dr
George K. Green, Brookhaven, and T. Melvin Butler, Lang
ley Assistant Director for Administration. Fourth row
Dr. A. Robeson, Virginia Polytechnic Institute; Dr. T. E
Gilmer, VPI; Dr. H. Funsten, William and Mary; S. Walte
Hixon, Head of Langley's Training Section, and Raymon
M. Hansen, Instrument Research Division. Bottom lef
photo - Shown at the site of the Space Radiation Effect
Laboratory are Dr. Rose, Dr. T. Marshall Hahn, Presi
dent of VPI, and Dr. Edgar Shannon, President of the Uni

JOINT MEETING TONIGHT

The Hampton Roads Section of the Institute of Electrical and Electrical Engineers and the Engineers Club of Hampton Roads will hold a joint meeting tonight at the Norfolk Yacht and Country Club.

Brigadier General F. J. Clarke, Director of Military Construction, Office of the Chief of Engineers, Department of the Army, will speak on "The Changing Character of Military Construction."

General Clarke was born in Little Falls, New York. He graduated from West Point in 1937 and received a Master of Science degree in Civil Engineering from Cornell University in 1940.

He has held many assignments throughout the States as well as overseas including Ascension Island, South America, Africa, Middle East, Near East, Europe and the Philippines. In October 1945 he was assigned to the Manhattan Engineering District as Area Engineer for the plutonium production works at Hanford, Washington. In December 1949, he was transferred to Okinawa where he served for two years as Operations Officer and Executive Officer of the Okinawa Engineer District.

After graduating from the National War College in 1957, he was assigned as District Engineer, Trans East District, U.S. Army Corps of Engineers at Karachi, Pakistan. He returned to the United States in July 1959 and served as Chief of Staff, U.S. Army Training Center, Fort Leonard Wood, Missouri, until August 1960 when he was detailed as Engineer Commissioner for the District of Columbia. Upon completion of this tour of duty in July 1963, he was assign- to his present position.

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. For reservations call R. P. Faust, 4766, or Frank Senft, 3461.

CENTER HOST FOR SEMINAR

Langley Research Center is host for a two-day advanced classification seminar which ends today. The inter-agency seminar is co-sponsored by the Hampton Roads Classification Association and the Philadelphia Region, U.S. Civil Service Commission.

Yesterday approximately 50 participants were welcomed by T. Melvin Butler, Assistant Director for Administration. The keynote address was presented by Asa M. McCain, Head of Classification, Bureau of Inspections, U.S. Civil Service Commission.

Today's principal speaker will be Fred C. Lewis, Deputy Director, Wage and Classification Division, Office of Industrial Relations, Navy Department.

Officers of the Hampton Roads Classification Association include Elizabeth Johnston, Head of Langley's Classification and Wage Administration Section, as vice-president, with Otto Bryant, also of Langley's Classification Section, serving on the Executive Committee.

Katy Lyle, Head of Salary and Wage Administration Section, Marshall Space Flight Center, and William L. Williams, Langley's Classification Section, served as panel leaders during the seminar.

WANTED: Driving combination from Foxbridge to W.A. on 8 shift. Otero, 4483.

FOR SALE: 2-bedroom rancher near Wythe Shopping Center. Graham, CH 4-4468.

This year marks the Tenth Anniversary of the Civil Service Commission's Incentive Awards Act. In observance of the occasion, President Lyndon B. Johnson has issued the following message to Federal employees: "I ask your help in fulfilling the pledge I have made: that the Government will get a dollar's value for a dollar spent, and that the Government will set an example of prudence and economy. In this tenth year of a decade of progress under the Incentive Awards Act, I ask you to give your best to your job, to seek ways to do the public business more economically, and to make your suggestions known to your agency. I intend that special recognition will be given to those of you who make notable advances in providing efficient service at lower cost."

THREE COURSES OFFERED STAFF

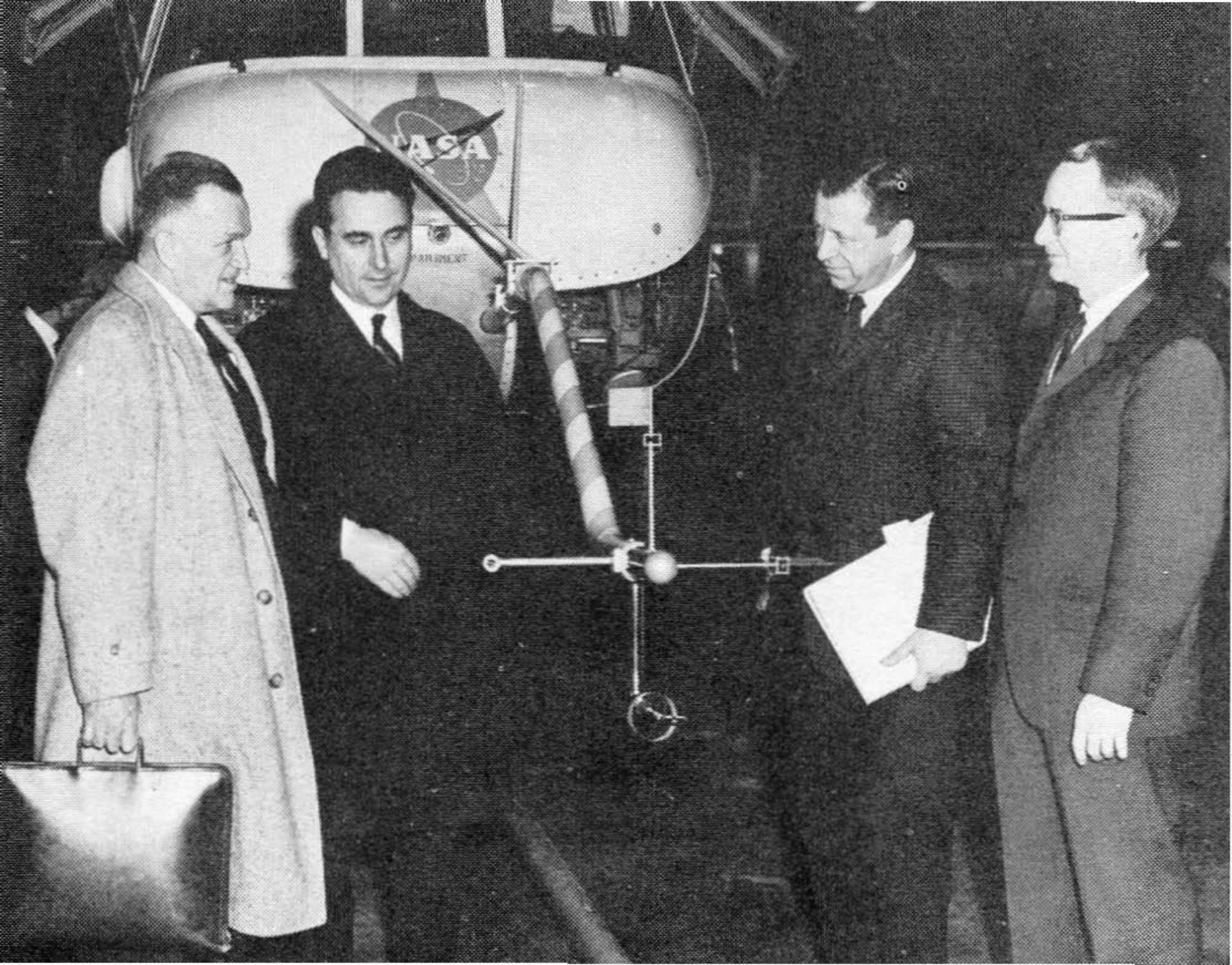
Training officials have announced that three non-credit courses are being offered to staff members. The courses are Vacuum Technology, Written and Oral Communicative Skills, and Scientific German.

Vacuum Technology is designed for technician and vacuum system operators. Pre-requisites are high school Algebra and some knowledge of Trigonometry and Physics The course will run for 12 weeks and will be taught on Monday afternoons from 4:15 to 6:45. Paul R. Yeager, Instrument Research, will be instructor.

The course in Written and Oral Communicative Skills will start March 5 and classes will be held on Monday and Thursday afternoons from 4:45 to 6:45 in Room 201, Building 1149. Professor Conrad Wilson, Old Dominion College will be the instructor.

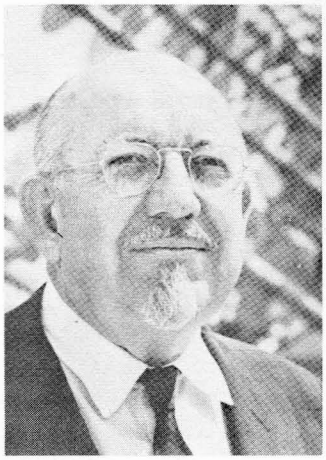
Scientific German will start on March 3. The group will meet on Tuesday and Thursday evenings from 6:30 to 8:30 in Room 110, Building 586.

Persons interested in these courses are requested to contact the Training Office, 2326.


NASA

The AGARD Flight Mechanics Panel visited the Center on February 17. Top left photo - Shown in the Langley Hangar are (from left): Melvin N. Gough, former member of the Langley staff; G. Ciampolini, Italy and chairman of the panel; Henry A. Fedziuk, Chief of Research Reports Division, and John P. Campbell, Associate Chief of Flight Mechanics and Technology Division. Top right photo - John P. Reeder (left), Assistant Chief of Flight Mechanics and Technology, talks with K. B. Marsh and R. P. Dickinson, England. Bottom photo - Members of the group are front row - Dr. Karl H. Doetsch, Germany; Mr. Hafer, Germany; Mr. Dohring, Germany; Charles J. Donlan, Langley Associate Director; G. Ciampolini, Italy; Riccardo Mautino, Italy; K. B. Marsh, England, and Melvin N. Gough. Second row - Col. Enzo Bianchi, Italy; Col. J. H. Polve, USAF; Dr. Gerhard Bruning, Germany; Frank O'Hara, England; Dr. A. J. Marz, Netherlands; Dr. O. H. Gerlach, Netherlands, R. P. Dickinson, England, and A. D. Wood, Canada. Third row - William S. Aiken, NASA Headquarters; W. D. Horsfield, England; Squadron Leader A. V. Rugienius, Canada; M. Bismut, France; Jean Renaudi, France; Mme. Monique Dubois, France, and Professor Enoch Durbin, Princeton University. Fourth row - Henry A. Fedziuk, Langley; Lt. Col Ivan Dethman, USAF, and Major Merritt A. Reeves, USAF. The group toured a number of research facilities during their visit to the Center.

DR. BROWN TO ADDRESS JOINT MEETING IN MARCH



Dr. George H. Brown

Dr. George H. Brown, Vice-President, Research and Engineering at Radio Corporation of America, will address a joint meeting of the Engineers Club of the Virginia Peninsula and the Institute of Electrical and Electronic Engineers on March 12 at 8 p.m. in the Jefferson Davis Junior High School Auditorium on Todds Lane.

Dr. Brown will speak on "Color Television Systems Development." He has made outstanding technical contributions to electronic communication and to modern tevevision, particularly in antenna development and system design. Among his major achievements is the conception of the turnstile antenna, which has become the standard broadcast antenna for television.

Born in North Milwaukee, Wisconsin, Dr. Brown was graduated in 1930 from the University of Wisconsin with a B.S. degree in Electrical Engineering and was awarded the Wisconsin Public Utilities Association Fellowship for 1930-31. In 1931 he received his M.S. degree from the University of Wisconsin and was awarded the Regents' Fellowship for the next two years. He received his Ph.D. from Wisconsin in 1933 and the Professional E.E. degree in 1942. In May 1962 he was honored by the University of Wisconsin with a Distinguished Service Citation for leadership in industry and engineering.

During World War II, Dr. Brown was responsible for important advances in antenna development for military systems and for the development of radio-frequency heating techniques. He and his associates also developed a method for speeding the production of penicillin, opening the way to a major increase in the supply of the important drug for wartime and postwar medical use. At the end of the war, he received a War Department Certificate of Appreciation "for his outstanding work in the research, design, and development of radio and radar antennas."

Dr. Brown has played a leading part in the direction of RCA's research and development of color and ultra-high-frequency television systems. He is also a prolific inventor, holding 79 U.S. patents.

160 EMPLOYEES DONATE BLOOD

The Bloodmobile visited the Center on February 19 and staff members donated a total of 160 pints of blood.

Billy A. Dancy completed his quota for four gallons and George Kerner and Lee McDaniel reached the three-gallon mark.

Two gallon donors were Billy Teagle, Harry B. Slade, Forrest H. Rexrode, James Hollinger, William B. Jones, Jacob L. Lichtenstein, Wilmer Reed, and William Igoe. A one-gallon pin was presented to Herbert Leybold.

TRAFFIC VIOLATORS MAY BE FINED

It has been brought to the attention of Center officials that a number of employees are violating Base traffic regulations.

The maximum speed on the installation is 25 miles per hour unless otherwise posted.

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.

It is also illegal to park in any of the following areas: within 20 feet of any intersection, within 20 feet of any stop or yield sign, within 15 feet of a fire hydrant, within 15 feet of any entrance drive, on a crosswalk or sidewalk, and on lawns, grass or seeded areas.

Employees who violate these regulations may be given tickets and required to appear before the U.S. Commissioner.

It has also been observed that vehicle operators are failing to stop while retreat ceremonies are in progress at the flag pole. Personnel are reminded that upon commencement of retreat ceremonies, vehicles in the vicinity of the flag pole shall be halted until the flag has been lowered. This is required not only by regulation but courtesy to the flag.

NASA BOWLING LEAGUES

TENPIN LEAGUE STANDINGS

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	53	31	Misfits	62	22
Hornets	53	31	Latecomers	52.5	31.5
Unitary	53	31	Dynamos	50	34
Devious	51	33	Ten-Benders	50	34
Crusaders	48	36	Ranch House	48.5	35.5
Short Circuits	47.5	36.5	Spare Parts	46.5	37.5
Phantoms	36.5	37.5	Cee Pees	46	38
Electronic Shop	45	39	Hucksters	45	39
Frame Ups	44	40	Lunar-Tics	43	41
Payloads	43.5	40.5	Alley Oops	43	41
Alley Cats	43	41	Barristers	42.5	41.5
Flight Engineers	43	41	Sudz	41.5	42.5
Johnnie's	40	44	Question Marks	40	44
Pinwigglers	39	45	Gliders	37.5	46.5
Odd Balls	34	50	Bowling Belles	36	48
Flyers	33.5	50.5	Analogs	36	48
Spare Oops	33.5	50.5	Dillys	36	48
A-OK's	32	52	Greenhorns	35.5	48.5
Galaxies	30.5	53.5	Moonlighters	25	59
Malfunctions	27	57	Mets	22.5	61.5

DUCKPIN LEAGUE STANDINGS

Ten Spots	51	33	Lt. Mach. 1	41	43
Strike Outs	50	34	Rebel Bombers	41	43
AMC	46	38	Doodle Bugs	40	44
Pinpoppers	44	40	ACD	37	47
Lt. Mach. 2	41	43	Reentry	29	55

WANTED: Driving combination from Lake Shore Apartments to W.A. on 8 shift. Whitlock, 4895.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 6 LANGLEY RESEARCH CENTER MARCH 13, 1964

SMALL BUSINESS BIDS ASKED FOR CONSTRUCTION JOBS

Langley Research Center has issued invitations to bid on two construction projects totalling more than $1,000,000 with a special provision that both jobs are to be done by small business firms.

In making the bids available only to small business, NASA is carrying out a national policy which requires that a fair proportion of government procurement be placed with small business concerns in the interest of maintaining the nation's full productive capacity.

One of the two construction projects calls for the installation of an underground utilities tunnel 3,600 feet long, extending from the Heating Plant in the West Area to the vicinity of the Unitary Plan Wind Tunnel Building.

The invitation to bid includes a brick and concrete wing to be added to the Heating Plant and the construction of a new access road to the Lunar Landing Research Facility.

Approximate value of the entire job is $1,000,000. Bids will be opened at Langley Research Center on April 2.

The tunnel itself will be a reinforced concrete structure seven feet high by seven feet wide. In it will be piping to carry steam, water, compressed air, and condensate. The contractor will install exhaust fan equipment, pumps, and a complete electrical system.

A second project specially set aside for small business firms calls for construction of a two-story addition to the Center's Headquarters Building. The work will consist of modifications to the existing building and the construction of a complete new steel frame and brick masonry addition for use as office space.

Approximate value of the contract will be $200,000 and bids will be opened on March 25.

Langley procurement officials explained that a small business construction firm is defined as an independently owned and operated company which is not dominant in its own field, and whose average annual receipts for the past three fiscal years have not exceeded $7.5 million.

NASA AND DOUGLAS SIGN CONTRACT TO STUDY SPACE STATION CONCEPT

NASA has signed a contract with Douglas Aircraft Company in the amount of $1,412,781 for a follow-on study for refinement and evaluation of an NASA Manned Orbital Research Laboratory concept. Last year Douglas completed a three-month MORL study contract which led to the new award and in December was selected to negotiate the contract just signed.

The new six to nine-month contract will be managed by the Langley Research Center's Manned Orbiting Laboratory Studies Office headed by William N. Gardner, under the over-all direction of NASA's Office of Manned Space Flight. Basic research on the technology of a manned orbit-

(Continued on page 3)

Joyce M. Anthony

Jean B. Elliott

CAMPAIGN HEADS NAMED

Joyce M. Anthony, Office, Chief of Personnel Division, and Jean B. Elliott, Head of Special Files Section, Administrative Services Division, have been appointed co-chairmen of the joint fund raising campaign for the National Health Agencies and the Federal Service Joint Crusade.

The campaign will be conducted at the Center from March 13 through April 10. A kick-off meeting of attendance clerks and other campaign workers will be held today at 1:15 p.m. at the Base Theater.

All donations to both efforts should be turned in to attendance clerks who will send them to division secretaries.

Included in the campaign will be eight health agencies and four crusade agencies.

The health agencies include The Peninsula Heart Association, The Lower Peninsula Association for Mental Health, Inc., Muscular Dystrophy Association of America, Inc., The National Multiple Sclerosis Society, National Society for Crippled Children and Adults, The National Cystic Fibrosis Research Foundation, The National Society for the Prevention of Blindness, and The American Cancer Society.

The crusade 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.

Last year Center employees contributed a total of $3,576 to the health agencies and $1,444 to the joint crusades.

Joyce was born in Washington, D.C. She graduated from St. Patrick's Academy, Washington, D.C. and joined the Center staff on July 3, 1956 as a Clerk-Stenographer in the Stenographic and Clerical Section. She transferred to Personnel Division on January 2, 1957.

Jean is a native of Poquoson. She graduated from Poquo-

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Patricia Armistead, Full-Scale Research Division, is engaged to John M. Ambrose, Mathews, and Sherwood Eugene Sutton, Electrical Systems Division, is engaged to Elizabeth Armistead, Mathews. A double wedding is planned for June 6. . .Making plans to desert the bachelor ranks is Glenn Allen Gates, Mechanical Service Division. He is engaged to Rebecca Odell Ragsdale, Hampton, and the wedding will take place on June 27.

AUTO TAGS . . .Virginia State and Hampton City automobile tags will be sold at the Phoebus Amoco Station, 201 Mellen St., Phoebus, from March 16 through April 16. The office will be open from 8 a.m. to 6 p.m. Monday through Saturday.

NEW ARRIVALS. . .Announcing the birth of a daughter on February 22 is Donald J. Progar, Applied Materials and Physics Division. . .Celebrating the arrival of a daughter on March 1 is Larry Pinson, Dynamic Loads Division. Weighing in at six pounds, two ounces on February 18 was the new daughter of Royce Toni, Flight Vehicles and Systems Division.

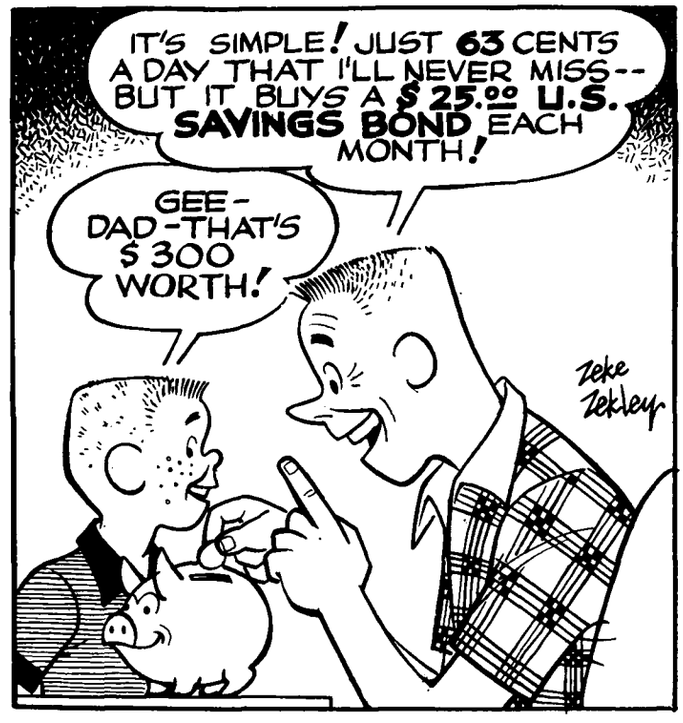
GOLF NOTICE. . .A few Center employees are abusing the privilege of using the Langley Golf Association facilities on week days by bringing outsiders as guests. The privilege is limited to NASA employees and their dependents. Employees will be required to present their identification cards or badges before using the facilities.

CAMERA CLUB. . .The Langley Camera Club will hold a meeting on Thursday, March 19 at 7:30 p.m. in the Activities Building.

LEWIS NEWS. . .The Lewis Research Center has resumed publication of their bi-weekly Center newspaper, the Lewis News. We wish them great success in this venture.

SERVICE PLAN REPRESENTATIVE. . .Mrs. Beverly Beale, Government-wide Service Plan representative, will visit the Center on March 18 at 2 p.m. Employees having problems concerning their Government-wide Service Benefit Plan may call Linda Hale, 2323, for an appointment.

COIN-A-RAMA. . .The Virginia Peninsula Coin Club will hold the 1964 Coin-A-Rama on March 14 and 15 at the Holiday Inn in Hampton. Duane McSmith, Safety Office, is president of the local organization. All interested persons are invited to attend. The bourse and exhibit room will open at 9 a.m. on both days.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 16:

Monday - Puree of bean soup, country style chopped steak with onion gravy, Alaskan shrimp fries, baked ham, beef ravioli.

Tuesday - Split green pea soup, roast ribs of beef, corned beef and cabbage, grilled pork steak with applesauce, cheese omelette.

Wednesday - Vegetable-beef soup, Spanish pot roast, turkey pot pie, deep fried fillet of flounder, hot dog.

Thursday - Chicken-noodle soup, grilled rib eye steak, deep-fried scallops, fried chicken, baked hash.

Friday - Clam chowder, shrimp plate, Swiss steak, broiled fillet of perch, chili con carne.

The menu for the week of March 23 is as follows:

Monday - French onion soup with croutons and cheese, hot roast beef sandwich with potatoes and gravy, grilled pork chops, stuffed flounder, franks and beans.

Tuesday - Cream of potato soup, sauerbraten, crab cakes with cole slaw, meat loaf, cheeseburger.

Wednesday - Cream of tomato soup, roast ribs of beef, chicken and dumplings, grilled liver and onions, fish cakes and cole slaw.

Thursday - Vegetable-beef soup, grilled steak, shrimp jambalaya, fried chicken, barbecued sandwich.

Friday - Clam chowder, sliced turkey with dressing, pot roast of beef, fried fillet of flounder, grilled cheese sandwich.

FOUND: Two pair gloves, pipe cleaner, Polaroid film in taxi. Holloway, 3449.

FOR SALE: Boy's 28-inch Schwinn bicycle - $25. Hamilton, 722-8726.

Five employees recently received cash awards for suggestions that might result in the granting of patents. Top left photograph - Richard R. Heldenfels (left), Chief of Structures Research Division, presents a check for $400 to Robert D. Ross for his suggestion entitles "Continuously Indicating Calorimeter." William A. Brooks Jr., Head of Entry Structures Branch, looks on. Top right photograph - Amos A. Spady Jr. (center) and Donald E. Hewes (right) share a $400 award for "Reduced Gravity Simulator." Making the presentation is William H. Phillips, Chief of Space Mechanics Division. Lower left photograph - Joseph Getsug, Chief of Electrical Systems Division, presents a $400 check to Warren J. Price (right) for his suggestion entitled "Method and Apparatus for Making Two-Sided Printed Circuit Boards." Lower right photograph - C. Donald Cone (center) receives a $500 check from Mark R. Nichols, Chief of Full-Scale Research Division, for suggesting a "Minimum Induced Drag Airfoil Body." Albert L. Braslow (left), Head of General Aerodynamics Branch, observes the presentation. Royce L. McKinney, who has transferred to Manned Spacecraft Center, also received $300 for a "Self-Calibrating Displacement Transducer."

SURVEY TEAM TO VISIT CENTER

Beginning on March 23, a survey team from the Personnel Division of NASA Headquarters will visit the Langley Center to evaluate the personnel management program. As a part of the evaluation process, the team will discuss personnel management with some management officials and line supervisors.

Also, a number of positions will be selected at random for site audit to determine the accuracy of position classification.

Employees who are selected by the team for an interview, are requested to give their full cooperation to the group.

FOR SALE: 1963 Rambler American. Richards, 138 Center Ave., Newport News, after 6 p.m.

SPACE STATION CONCEPT

(Continued from page 1)

ing laboratory has been in progress at Langley for several years.

In its study, Douglas will refine the NASA concept of an orbiting laboratory which assumes a cylindrical 6-man spacecraft capable of being launched by the Saturn rocket. The feasibility of using equipment to provide intermittent artificial gravity for the spacecraft crew, and the feasibility of launching both ferry and supply spacecraft on a single vehicle will be examined.

The study is designed to help determine the biomedical, scientific and technological problems and advantages involved in the possible future development of a Manned Orbital Research Laboratory.

CENTER'S JOINT CAMPAIGN DRIVE LAUNCHED TODAY

(Continued from page 1)

Harold Russell, a handless veteran of World War II and a trustee of the National Society for Crippled Children and Adults, visits a crippled boy at an Easter Seal center.

son High School and received an A.B. degree from Mary Washington College. She joined the Center staff on November 6, 1950 as a Clerk-Typist.

All funds collected for health agencies during the drive will be turned over to local participating agencies.

The President has urged all Federal establishments to support this joint campaign effort. Concerning the Federal Health Agencies he stated, "Our health standards in America are kept high by voluntary organizations as well as by the Government. These voluntary National Health Agencies have for many years been a spearhead in saving lives through active programs of research, information and community service. In my judgment, our support of the voluntary National Health Agencies is vital to the continued advance of American health standards. All of us in Government should respond readily and generously to this worthy appeal."

In his message supporting the joint crusades the President stated, "Every morning throughout the world there are millions of human beings who wake from the darkness of night only to enter the more terrible darkness of their daily lives. Some will not live to see the next morning. Some must endure oppression, hunger, sickness and illiteracy. In the long and difficult struggle against these ills there is need for courage, for faith and for money. You are taking part in that struggle when you support any or all of the four international agencies."

The Peninsula Heart Association, an affiliate of the American Heart Association, reported the following expenditures of each contributed Heart Fund dollar: research $.37, public education $.11, community service $.09, professional education $.02, State and National programs $.24, administration $.07 and fund raising $.10. Research includes direct grants to researchers at Virginia Medical Schools as well as state and nationally channeled research funds. One project supported totally by the local agency regards development of improved materials for synthetic heart valves.

The purposes of the Mental Health Association are the development and the continued expansion of coordinated citizens' movement to work toward the improved care and treatment of the mentally ill and the handicapped, for improved methods and services in research, prevention, diagnosis and treatment of mental illness and handicaps, and for the promotion of mental health.

The Muscular Dystrophy Association is dedicated to the scientific conquest of neuromuscular diseases through re-research into nerve, and muscle metabolism. It supports a worldwide program of scientific grants, maintains a unique research facility, the Institute for Muscle Diseases, and assists patients through therapy, service programs and clinics. The Tidewater Chapter, which serves the Peninsula area, maintains a year-round clinic at Norfolk General Hospital for area patients. It is staffed by local medical specialists who serve on a volunteer basis. A full-time physical therapist is employed by the Chapter. Medicines, drugs, and vitamins are provided, and appliances as needed, such as wheelchairs, special beds, lifts, braces, are also furnished.

The Multiple Sclerosis Society is an organization of 170 chapters, branches and units concerned with an estimated 500,000 Americans suffering from multiple sclerosis and related diseases of the central nervous system. At the national level the Society works to find the cause and cure of MS. The Peninsula Chapter attempts to provide for the needs of persons suffering with multiple sclerosis by providing direct patient aid and care. Over 40 persons with MS are know to the Peninsula Chapter, but there are many more who prefer to remain anonymous. Aids and equipment such as canes, crutches, wheelchairs, leg braces, walkers hospital beds, etc., are furnished patients.

Among the services provided by the local chapter of the Virginia Society for Crippled Children and Adults are hospitalization, medical care, diagnosis, convalescent care, aids and appliances, physical therapy, speech therapy, occupational therapy, vocational training, and medications. Persons with all types of crippling conditions are assisted as the program is not restricted to the orthopaedically handicapped. More than 9,000 individuals were aided during the past year in Virginia.

The Cystic Fibrosis Research Foundation was incorporated in 1955 "to foster and coordinate efforts seeking to combat cystic fibrosis." Cystic fibrosis is an inherited chemical disorder affecting the glands of external secretion. It is one of the most common and serious chronic diseases of childhood - the leading cause of life-threatening lung disease in babies and children. The Peninsula area is served by an established C/F Clinic at the Portsmouth General Hospital for diagnosis, treatment, drugs, and physical therapy.

The priority preventive services of the Virginia Society for the Prevention of Blindness aim to: find the 13,400 adult glaucoma victims unaware of it and its blinding potential; discover preschool children needing early eye care to avert visual impairment; help educators find the partially seeing children of school age and see that they receive proper special attention; promote safety to prevent innumerable unnecessary eye injuries, 3,200 of which were among children last year.

The American Cancer Society is the only nationwide agency which attacks cancer in three ways: research to

Victims of cystic fibrosis, an inherited chemical disorder, often must use special breathing equipment a few times a day. The National Cystic Fibrosis Research Foundation is searching for a control of the disease.

find the cause and cure for this disease, education to alert people to cancer's danger signals and keep the medical profession up to date on recent developments in cancer detection and treatment, and service to help the cancer patient obtain treatment and provide transportation to these centers and other necessities and comforts.

The American Korean Foundation is helping Koreans help themselves. AKF supports a varied program in the field of health, education, welfare, agriculture and economic development.

CARE offers aid to 38 countries on four continents. It gives food to rescue despairing millions from hunger, tools that give them the means to build a new life, and skills of U.S. doctors, surgeons, nurses and technicians through MEDICO, a service of CARE.

Eighty million captive people in Poland, Czechoslovakia, Hungary, Romania and Bulgaria depend on Radio Free Europe to answer Communist propaganda and help them resist Soviety indoctrination.

Project Hope offers health opportunity for people everywhere. The teaching-healing hospital ship, the S.S. HOPE, is a symbol of mercy and compassion to hundreds of thousands of people in Indonesia, Viet Nam, and Peru.

EASTER EGG HUNT MARCH 28

The Activities Association's Annual Easter Egg Hunt for children of Center employees will be held on Saturday, March 28 at 2 p.m. in the Activities area.

The annual event is free for NASA children and a special area will be roped off for the very small tots.

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 has been exhausted.

VRETAKIS JOINS LIAISON OFFICE

Nicholas G. Vretakis has assumed his new duties as Assistant Chief and Scientific Adviser of the Air Force Systems Command Liaison Office. He fills the vacancy left by the recent death of Alfred Loedding.

Nicholas G. Vretakis

Vretakis was born in Jersey City, New Jersey, but his family moved to Brooklyn, New York, when he was about six months old. He graduated from Brooklyn Technical High School and received his B.S. degree in Aeronautical Engineering from New York University in 1953.

Upon completing his college education, he entered the Air Force as a Second Lieutenant and was assigned to Wright-Patterson Air Force Base. Following his discharge in 1955 he remained at Wright-Patterson with the Structures Testing Analysis Section and served as Project Engineer for Structures on the F-105 and T-37 aircraft.

In 1960 he was transferred to the B-70 Engineering Office where he was Senior Project Engineer for Structures.

After visiting Langley on January 2, he was assigned to Washington for seven weeks to work on the supersonic transport. He assumed his duties with the Liaison Office on February 17.

Vretakis, his wife Voula, and three-year son George, live at 656 Dresden Drive, Newport News.

GRIEVANCE POLICY EXPLAINED

It is the policy of NASA that fair and prompt consideration be given to employee complaints and grievances. The types of grievances covered by NASA grievance procedure are those for which no other specific appeal procedures have been provided and, in general, these involve individual or group cases of employee dissatisfaction with working conditions or relationships.

Under this procedure, employees should attempt to settle any dissatisfaction through informal oral discussions with their supervisors. When such informal discussions do not resolve the situation to the employee's satisfaction, he may reduce the complaint to writing and present it to his immediate supervisor. If the situation is still unresolved, the employee may appeal to the Director.

For more complete information, consult your supervisor or the Personnel Office.

WANTED: Driving combination from Buckroe or Fordham to W.A. on 8 shift. Bright, 3210.

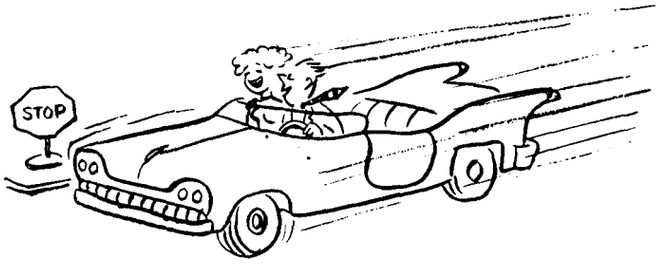
WANTED: Ride from Blair Ave. to W.A. on 7, 7:30 or 8 shift. Bradley, 3305.

WANTED: Driving combination from Bowditch Ford area to W.A. on 8 shift. Hubbard, 4422.

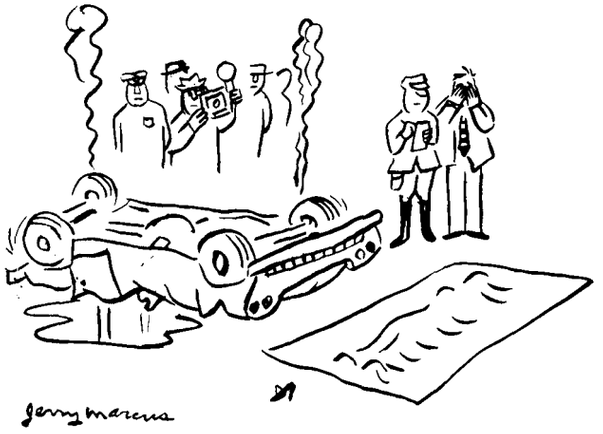
WANTED: Ride from East Holly Court to E.A. on 8 shift. Stilwell, 2242.

WANTED: Ride or driving combination from Rogers Ave., Buckroe, to W.A. on 8 shift. Rose, 3421.

FOR SALE: 1963 Volkswagon. Bailey, 595-1382.



"You kill me, Freddie!"



BEWARE OF DETERGENT GASES

Recently a peculiar type of accident struck two housewives undertaking a household chore in separate locations but under similar circumstances. Both were using an ordinary toilet-bowl cleaner. Dissatisfied with the way stains were being removed, each decided to add a household bleach and stirred the mixture with a brush. As a result, one died quickly - the other spent a long, long time in a hospital.

Another example - according to a government medical newsletter, twenty people were overcome a short time ago by toxic gases released from a do-it-yourself cleaner, a witches' brew of a cleanser, chlorine bleach and ammonia.

What occurred in each of these cases was the generation of a poisonous gas when the users decided to combine two or more cleaning agents commonly found in almost every household. The addition of the old familiar chlorine bleach (a sodium hypochlorite solution) to an acid or acid-producing substance, such as a toilet bowl cleanser or just plain vinegar, will suddenly release a quantity of toxic chlorine gas. Similarly, when it is mixed with other alkaline matter - ammonia or lye - the chemical action liberates a highly irritating gas. If inhaled, these fumes can cause serious injury and possibly death.

Don't make the mistake of thinking because certain household products are good and useful, a combination will do the job better. On the contrary this may be not only a waste of time and effort by producing poorer results through neutralizing or diluting one another, but may prove disastrous. Stick to the safe rule: read the label carefully and follow the manufacturer's directions exactly. Keep in mind that modern scouring powders often contain chlorine bleach.

Economically, it's unsound to use hypochlorite (chlorine) bleach in toilet bowls, sinks and bathtubs or on electrical appliances. This will, in time, dull and roughen the fine smooth porcelain surface which is attractive as well as utilitarian.

Don't mix bleaching agents with any of the following: toilet bowl cleansers, ammonia, lye, rust remover, vinegar and oven cleaner.

In short - never mix bleaching agents with any other cleaning components.

NASA BOWLING LEAGUES

In the NASA Tenpin League Tom Cats lead Group A with 61 wins and 31 losses. High scores for the week were rolled by W. F. Campbell with a 287 game and 656 set - with handicap.

Misfits lead Group B with 67 wins and 25 losses. High scores were rolled by Aubrey Cary with a 203 game, Dave Vann with a 544 set, Frances Powell with a 221 game and Jane Oehman with a 528 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	61	31	Misfits	67	25
Unitary	58	34	Ten-Benders	58	34
Hornets	57	35	Latecomers	55.5	36.5
Phantoms	53.5	38.5	Ranch House	54.5	37.5
Short Circuits	53.5	38.5	Dynamos	52	40
Electronic Shop	51	41	Dpare Parts	49.5	42.5
Devious	51	41	Cee Pees	49	43
Flight Eng.	50	42	Hucksters	49	43
Crusaders	50	42	Lunar-Tics	48	44
Alley Cats	48	44	Sudz	47.5	44.5
Frame Ups	47	45	Barristers	46.5	45.5
Johnnies	44.5	47.5	Alley Oops	46	46
Payloads	44	48	Question Marks	43	49
Pinwigglers	40	52	Gliders	40.5	51.5
Spare Oops	38.5	53.5	Dillys	40	52
Flyers	37.5	54.5	Greenhorns	39.5	52.5
Odd Balls	37	55	Bowling Belles	39	53
A-OK's	36	56	Analogs	37	55
Galaxies	31.5	60.5	METS	29.5	62.5
Malfunctions	31	61	Moonlighters	28	64

Strike Outs lead in the NASA Duckpin League with 55 wins and 37 losses. Mary Edwards rolled a 135 game and 342 set and Jim Link rolled a 134 game and 352 set.

Team	W	L	Team	W	L
Strike Outs	55	37	Lt. Mach. 1	46	46
Ten Spots	54	38	Rebel Bombers	44	48
AMC	52	40	ACD	43	49
Pinpoppers	48	44	Doodle Bugs	42	50
Lt. Mach. 2	46	46	Rebel Bombers	30	62

HORSESHOE LEAGUE: Persons interested in forming a horseshoe league to play in the afternoon on week days are asked to contact James Justice, 4489.

FOUND: Man's gray overcoat in Bldg. 121. Hogge, 4504.

WANTED: Two alternate drivers from Riverside to W.A. on 7:30 shift. Davidson, 4865.

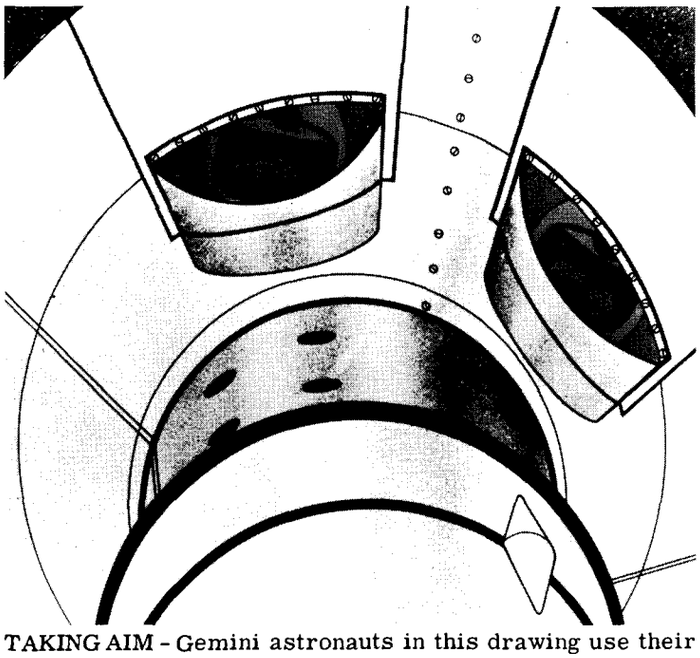
WANTED: Driving combination from Foxbridge to W.A. on 7 shift. Otero, 4483.

WANTED: Ride from Northampton to W.A. on 8 shift. Koch, 826-4333.

WANTED: To share apartment with one or two girls. White, 2216.

FOR SALE: Two Community Concert tickets for March 24. Maiers, 723-1392.

TV AND TINY WINDOWS TEST EYES OF PROJECT GEMINI



TAKING AIM - Gemini astronauts in this drawing use their cockpit windows to line up with the Agena and aim for docking in space.

SCHIRRA CHECKING - Astronaut Walter M. Schirra is briefed on details of the Visual Docking Simulator by Byron M. Jaquet, Space Mechanics Division. When cover panel is in place, it limits field of vision to size of actual Gemini window.

Inside a 20-foot spherical dome at Langley Research Center, two NASA engineering pilots who are also research scientists are seated within a full-sized replica of the Gemini spacecraft.

They are beginning one of many NASA simulator studies in support of the nation's next manned space flight program.

Through two small cockpit windows, the dark painted interior of the dome resembles the blackness of space, relieved only by tiny pinpricks of light from a star projector.

One small dot of light grows larger and still larger until it can clearly be seen as the Agena, an upper stage maneuverable vehicle, with which they plan to rendezvous and dock.

Careful control motions nudge the Gemini on a course to intercept the Agena, and even though their simulated spacecraft doesn't move, the projected image of the target vehicle appears to lessen the distance between the two craft.

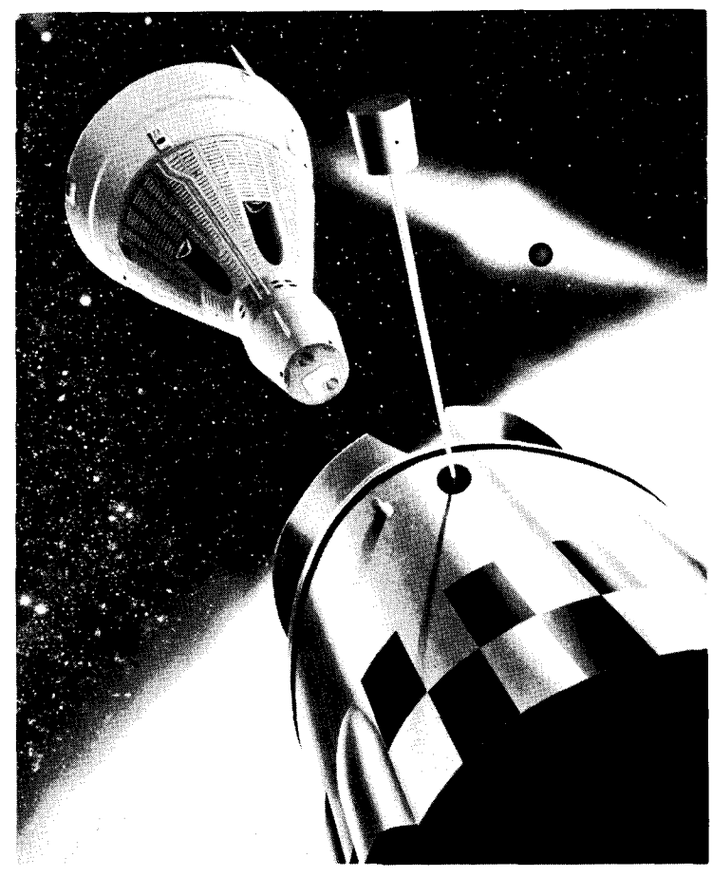
Finally, the Agena seems to loom up to its full size and the experiment ends with an accurate, gentle docking maneuver.

This is how NASA research scientists, with the help of an analog computer and an ingenious television system incorporating a two-axis mirror, are evaluating the visual ability of men to rendezvous and dock in space, one of the major objectives of project Gemini.

As the pilots move the spacecraft controls, the computer translates their actions into motions of a miniature Agena, which is constantly being watched by a television camera.

An image of what the camera sees is projected on the inside of the large, black dome, with a starry background for visual reference, and the pilots find it is a realistic simulation of flight in orbit.

The experimental device, called a Visual Docking Simulator, is one of many similar techniques used by scientists of the Langley Center in their constant search for more effective ways to aid man in his efforts to master space.



DOCKING IN SPACE - Artist's conception of rendezvous of the Gemini spacecraft and the Agena vehicle. They latch together as a result of visual observation by the astronauts.

JOINT MEETING MARCH 17

The Eastern Virginia Section of the American Society of Mechanical Engineers will meet jointly with the Engineers Club of Hampton Roads on Tuesday, March 17 at the Norfolk Yacht and County Club. The meeting will begin with a social hour at 6:30 p.m.

Edward W. Palmer, Structural Research Engineer, will deliver the principal address based on a paper he co-authored with E. A. Thornton. Both engineers are associated with the Underwater Explosions Research Division of the David Taylor Model Basin, Department of the Navy at Portsmouth. The title of the talk will be "Correlation of Shock Environment and Performance Data of Submarine Pressure Hull Penetrations under Explosion Attack."

Engineers are concerned with the damage resulting from high impact shock due to underwater explosions. Palmer will compare experimental and analytical data for submarines. High-speed motion pictures will be shown to illustrate the nature of the shock effects on equipment. Slides showing typical damage to the equipment will also be presented. Engineering relationships for design purposes will then be given as a conclusion for the presentation.

Palmer graduated from Virginia Polytechnic Institute in 1954 with a B.S. degree in Architectural Engineering and received his M.S. degree in Engineering Mechanics in 1963. He served as a Lieutenant with the U.S. Army for two years and was previously employed as an engineer at the American Bridge Division of U.S. Steel and two consulting structural engineering firms.

INDEBTEDNESS OF EMPLOYEES

The collection of private debts from Federal employees is not a function of the Government. Nevertheless, an employee should not incur indebtedness beyond his ability to pay within a reasonable length of time.

An employee who fails, without justification, to pay his just debts may be discharged as a person unsuitable for employment, if the offense is of sufficient gravity. Continued complaints of indebtedness against an employee shall be considered sufficient evidence of such irresponsibility with regard to his financial obligations as to justify discharge.

BASKETBALL PLAYOFFS PLANNED

The NASA Basketball League ended this week with Palko's Pack leading Division A and Greenhorns out in front in Division B. The playoffs will be held on March 16, 18, and 19 and the top four teams from each division will be in the playoffs.

On March 16 at 5 p.m. the second team in Division A will play the third team in Division B, at 6:15 the first team in Division B will play the fourth team in Division A, at 7:30 the first team in Division A will play the fourth team in Division B, and at 8:45 the third team in Division A will play the second team in Division B. On March 18 the winners of the first two games will meet at 6 p.m. and the winners of the last two games will play at 7:30. The finals will be held at 7:30 on March 19 with a consolation game scheduled for 6.

FOUND: Man's 1959 class ring. Hogge, 4455.
WANTED: Ride from 4th St., Buckroe to W.A. on 8 shift. Sandra Ghivizzani, 3414.

Send your suggestions to Jess Ross, Secretary of the Incentive Awards Committee, Mail Stop 306.

APPRENTICE HONOR ROLL

Training officials announced that 17 apprentices completed the fall semester with an average of 98 or above.

Members of the honor roll are as follows:

Jerry T. Bright, Polymer Research Laboratory; William W. Fernald, Light Machine Shop; William H. Irby and Wayne E. Silver, Fabrication Shop; Thomas K. Lusby Jr., Wayne W. Rohrbach, Frederick J. Rosensteel and James G. Smith, Electronic Shop; Ronald C. Mills and Allen N. Milton, General Electrical Service; Edward H. Ostwald and Vincent L. Pritchett, Instrument Construction Shop; Thomas L. Pressley, Magnetoplasmadynamics; Manfred P. Pross, Structural Mechanics Instrumentation; Charles M. Southall, Electrical Experimental and Development; Kenneth F. Test, Hypersonic Continuous Flow, and Leonard T. Twigg, Reliability and Quality Control.

GOLF LEAGUE: Anyone interested in playing in a golf league this summer is requested to send his name, section, and telephone number to one of the following: Jim Bertoci, Mail Stop 406; Jim Jones, Mail Stop 161; Bill McMillan, Stop 222; Harold Crane, Stop 247, and Ray Goodman, Stop 222.

FOR SALE: Mixed Beagle-Cocker-Terrier female pup. Deveikis, 723-0315.
WANTED: Ride from Marshall Ave. to W.A. on 3:30 shift. Edna Braxton, 245-1335.
WANTED: Alternate driver from Norfolk to W.A. on 7:30 shift. Coe, 4691 or JU 7-3366.

Langley Researcher

VOLUME 3, NUMBER 7 LANGLEY RESEARCH CENTER MARCH 27, 1964

STAFF CONGRATULATED ON COST REDUCTION EFFORTS

Betty L. Phillips, Instrument Research Division, receives a check for $25 from William E. Craig, Assistant to the Chief of IRD, for her suggestion concerning a master work order file. This was Betty's second cash award this year under the NASA Incentive Awards Program.

Dr. Floyd L. Thompson, Director, this week congratulated staff members for their cooperation and support which are helping to assure the success of Langley's efforts in complying with the requirement of economy in Government.

President Johnson recently called for a "competition for greater economy and efficiency in Government operations," expressing the conviction that "every member of our working team should play a part."

In a report to NASA Headquarters following the Chief Executive's message, Dr. Thompson stated that compliance with the President's Economy Program is being emphasized by management and line supervisors, and the challenge to bring about further improvements in the operation of Langley Research Center has been accepted by each member of the staff.

"The focus and direction of the program are consistent with past improvement efforts," Dr. Thompson said, "and it has been possible to quickly implement this stepped-up program because these previous efforts had been made. Responsibilities placed on this Center have for years required a continuing and critical analysis of the research and supporting work programs, to insure that individual activities are geared to overall NASA objectives and are carried out with maximum effectiveness."

Dr. Thompson pointed out in his report that an evaluation of expenditures during the past 12 months indicated that substantial savings could be documented, providing evidence that Langley has been and will continue to be cost-conscious.

Some of the cost reduction practices implemented by Langley to provide significant savings include inventory control, manpower utilization, and procurement contracting techniques.

Langley's inventory control system permits maintenance of materials at the lowest possible level consistent with efficient operation. By utilizing surplus equipment and service available at other Government facilities, the Center has avoided the cost which would be incurred if this equipment and service were not utilized.

Manpower Utilization Boards continually review Langley positions to assure that good manpower utilization practices are being employed.

In establishing the major program offices at Langley, such as Scout, Fire, and Lunar Orbiter, minimum staffs were assigned on a full-time basis. Only where the need was established were full-time assignments made. This use of line organization specialists on a part-time basis, as needed, has permitted effective utilization of manpower, leaving these staff members available to serve other Center requirements.

Langley has long recognized that in addition to recruiting the best available technical and management talent, the importance of in-house training cannot be overlooked. The training programs currently underway cover the apprentice-

(Continued on page 3)

LANGLEY CENTER TAKES PART IN FOURTEEN SCIENCE FAIRS

Langley Research Center will present awards in 14 regional and state science fairs in Virginia, North Carolina, South Carolina, and West Virginia as part of the annual participation of the NASA in the National Science Fair-International.

NASA certificates of outstanding achievement in the senior high school section will be presented in six categories--including aerodynamics and space flight, space vehicles, space flight systems, space life sciences, space physical sciences, and space electronics and communications.

Langley will present certificates in the six awards categories at fairs at Portsmouth, Hopewell, and Roanoke, Virginia; Durham and Charlotte, North Carolina; Orangeburg, Columbia, Florence, Aiken, and Greenville, South Carolina; and West Liberty, Bluefield, Salem, and Institute, West Virginia. Other NASA centers will take part in regional fairs in their areas.

NASA also participates each year in the National Science Fair-International, which this year will be held in Baltimore May 6-9. NASA will select two finalists for the six NASA awards, with each winner receiving a NASA certificate of merit and an invitation to spend about a week at an NASA research center selected on the basis of the interests of the awards recipients. Each student winner will be per-

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDINGS. . .Harriett Short, Stenographic Section, took her final vows with Charles Talbert, Hampton, on March 7. . .A Center romance was climaxed when Martha Panter, Analysis and Computation Division, and Charles Miller, Aero-Physics Division, were married on March 14 at Aldersgate Methodist Church, Hampton. . .Koleen DeHart, Stenographic Section, changed the Miss to Mrs. when she said "I do" to Nicholas Cimmento, Yorktown, on February 22.

BABY DERBY. . .Barbara Peck, Space Mechanics Division, became the mother of a daughter on March 6. . . Announcing the arrival of an eight pound, eleven ounce son, Marshall Christian, on March 16 is Patricia Stowe, Program Schedules and Analyses Unit.

BOOK SALE. . .The Hampton Branch of the American Association of University Women will hold its annual used book sale at Brittingham's Furniture Store, 55 W. Queen Street, Hampton, on Friday, April 3 from 8 a.m. to 9 p.m. and on Saturday, April 4 from 8 a.m. to 3 p.m. Prices will range from 5 cents to 60 cents and proceeds will go to the AAUW Fellowship Fund.

ENGAGEMENT. . .Making plans to join the ranks of newly weds is Etha Deem, Technical Editing Section. She is engaged to Larry Milfred Cook, Hampton, and plans call for a June 20 wedding.

FALSE REPORTS. . .A NASA employee was charged on February 5 with violation of Title 18, Section 35, U.S. Code, for "the making of a false report concerning a bomb aboard an aircraft." While seated on board a commercial aircraft, he observed an acquaintance approaching and jokingly commented to the stewardess something to the effect, "you better watch that fellow, he's got a bomb in his bag." That statement was not considered funny by the airline; and, as a result, a charge was placed against the employee. Staff members are requested to refrain from becoming involved in similar embarrassing situations.

GOLF LEAGUE NOTICE: All persons who expressed an interest in forming a Golf League are requested to attend a meeting on Tuesday, March 31 at 7:30 p.m. at the Activities Building. The purpose of the meeting will be to elect officers, appoint committees, and draw up by-laws. Anyone having a copy of the by-laws used by the league a couple of years ago is requested to bring it to the meeting.

"THERE'S A GAL WHO'S GOT EVERYTHING!! WIDOW'S PENSION, SOCIAL SECURITY, AND **U.S. SAVINGS BONDS!!**"

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 30:

Monday - Puree of bean soup, half-pound chopped sirloin steak, corned beef and cabbage, baked ham, beef ravioli.

Tuesday - Split green pea soup, roast veal with dressing, barbecued beef chunks on steamed rice, Salisbury steak, grilled cheese and bacon sandwich.

Wednesday - Vegetable-beef soup, grilled rib eye steak, shrimp Newburg, spaghetti with meat sauce, baked hash.

Thursday - Chicken-noodle soup, roast beef, pork chop suey with rice or crisp noodles, fried chicken, western omelette.

Friday - Clam chowder, Swiss steak, breaded veal cutlet, broiled fillet of flounder, tuna-noodle supreme.

The menu for the week of April 6 is as follows:

Monday - French onion soup with croutons and cheese, pot roast of beef, chuckwagon steak with gravy, stuffed pepper, cheese omelette.

Tuesday - Cream of tomato soup, country style chopped steak with onion gravy, crab meat casserole, beef stew, hot dog.

Wednesday - Minestrone soup, roast ribs of beef, chicken and dumplings, grilled liver and onions, fish cakes with cole slaw.

Thursday - Vegetable-beef soup, grilled steak, meat pot pie, fried chicken, macaroni and wieners.

Friday - Clam chowder, Spanish pot roast, stuffed flounder, broiled halibut steak, barbecued sandwich.

COST REDUCTION EFFORTS

(Continued from page 1)

ship program, graduate study, procurement, and other administrative management courses and have resulted in significant contributions to more effective management and improvement of operations.

Langley is intensifying its efforts to shift cost-plus-fixed-fee contracts to incentive-type contracts. As one important example, the spacecraft contract for the Lunar Orbiter Project will contain unique incentive provisions on cost, schedule and technical performance. Langley continues to employ competitive procurement methods wherever possible.

In technical monitoring and administration of contracts extensive use is made of resident Defense Department personnel wherever possible. This has reduced the need for travel and assignment of Center personnel to these projects.

The Center has completely converted to use of the GSA Government-wide communications contractual arrangements, taking advantage of the reduced per unit cost for lines and long distance telephone calls.

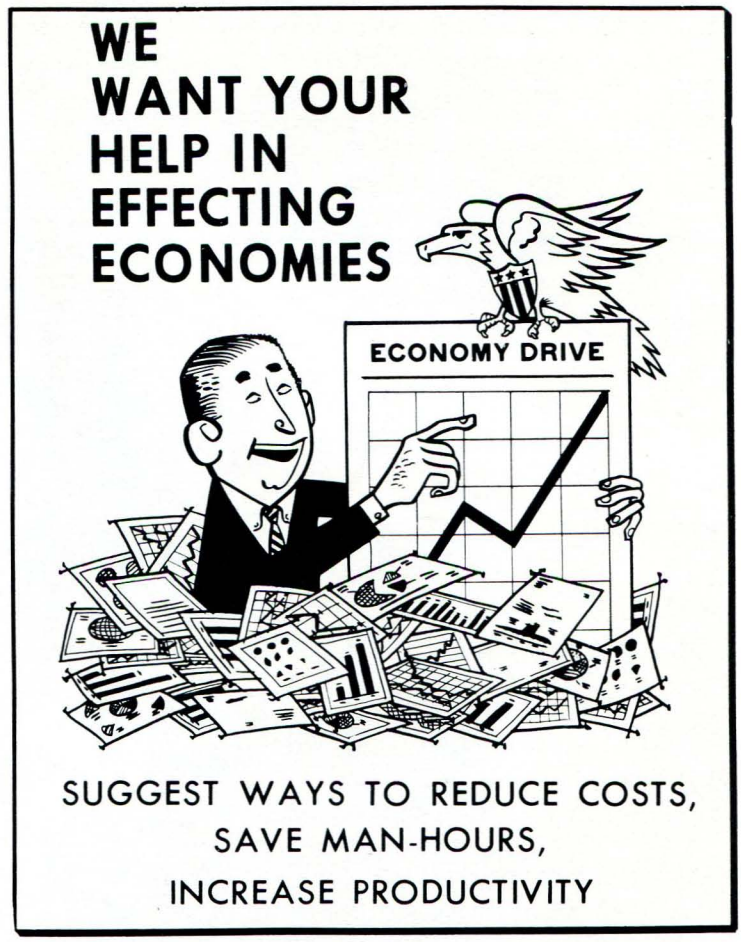
In recognizing employees for their cooperation and support, Dr. Thompson cited the importance of continued efforts in the cost reduction program. "While the initial cost reduction report to NASA Headquarters was impressive in terms of dollars saved," he said, "it should really serve to impress upon each of us the fact that we must never assume we have reduced our operating cost to a minimum. Even without the present emphasis on cost reduction, we should always be alert to the possibility of doing our daily jobs in a more effective manner. This is a responsibility we have assumed as public servants."

Dr. Thompson provided several ideas for thought in a special comment to supervisory personnel, suggesting that their responsibility includes "creation of an environment that encourages employees to search for and come up with better ways of doing their individual jobs. In this connection, I request each division chief to appoint a Cost Reduction Coordinator who will assume the responsibility of providing a coordinated effort within the division, and from whom all division personnel may seek guidance concerning the program." Dr. Thompson emphasized to all employees the importance of using the NASA Incentive Awards Plan as a forum for gaining an impartial review of their suggestions.

"I am very appreciative of the efforts made by the Langley staff toward the objectives of this program, and again commend the current program of the President to each of you as an opportunity for the present and a promise for the future," Dr. Thompson stated. He added that supervisors and employees working together toward the objective of cost reduction, consistent with maintenance of high quality work standards, will result in further improvements.

WANTED: Two alternate drivers from Norfolk to W.A. on 8 shift. Childs, 4591.

SOFTBALL MEETING: An organizational meeting of the NASA Softball League will be held on Monday, March 30 at 7 p.m. at the Activities Building. All teams planning to enter the league are requested to have a team representative present. For further information call Tom Moore, 2221.



EASTER EGG HUNT TOMORROW

Staff members are reminded that the Activities Association's Annual Easter Egg Hunt for children of Center employees will be held tomorrow at 2 p.m. in the Activities area.

The annual event is free for NASA children and a special area will be roped off for the very young tots.

Parents are requested to stay our of the hunting vicinity and let the children have the pleasure of finding the eggs.

The hunt will continue until the supply of eggs has been exhausted. Prizes will be awarded in various catagories.

FOURTEEN SCIENCE FAIRS

(Continued from page 1)

mitted to select a teacher to make the visit with him.

Four Langley scientists will serve as judges in one of the regional fairs-- the Tidewater Science Congress to be held April 4 at the Woodrow Wilson High School in Portsmouth. They include Robert O. Schade, Gerald D. Walberg, Howard B. Edwards, and Dr. George D. Sands.

They will represent Langley as judges for the six NASA awards in the senior high school section. As representatives of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics, they will also assist officials of the Tidewater Science Congress in selecting winners of other science awards in both the junior and senior sections.

WANTED: Co-op student and wife would like to alternate living quarters with another Co-op couple at VPI and in Hampton. Call 826-5329.

LANGLEY LUNAR WALKER TRAVELS OVER UNITED STATES VIA NATION'S PRESS

MONROE, LA.
WORLD

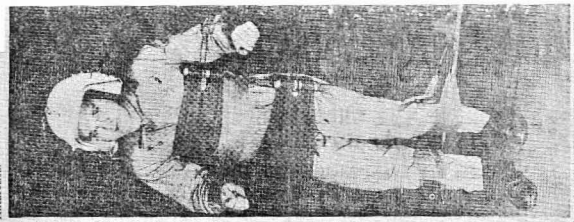
Living On The Moon

U.S. space scientists want to teach astronauts how to function and stay alive on the moon long before they venture there.

Two new National Aeronautics and Space Administration projects are at NASA's Langley, Va., Research Center scientists are "walking on the moon." They have de-

search device to determine man's physical capabilities on the moon and to investigate his ability to adapt to environment at the lunar surface, where the gravity is only one-sixth that of the earth.

Paul J. deFries, a bespectacled, scholarly-looking specialist in lunar operations, will make the trek to Antarctica.



WALKS ON MOON—A NASA scientist, suspended almost parallel to the floor, is "walking on the moon" at Langley Research Center. The scientist, held by a system of slings, walks on a plywood center while tilted 80.5 degrees away from vertical.

Scientists Walk On Moon At NASA's Langley Center

HAMPTON, Va.—Scientists at NASA's Langley Research Center are walking on the Moon—thanks to an inexpensive but effective apparatus [illegible] to study the problems an astronaut might face in doing his job on the lunar surface.

[illegible] it might be difficult to stand upright on the lunar surface. In the Langley tests, the scientists are suspended almost parallel to the floor.

Langley designed the tilted [illegible] only five-sixths of his weight.

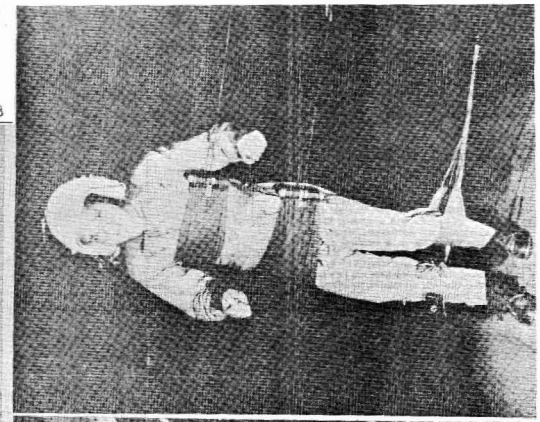
With extremely low gravitational pull, a man on the Moon would not be anchored as securely as he is on Earth.

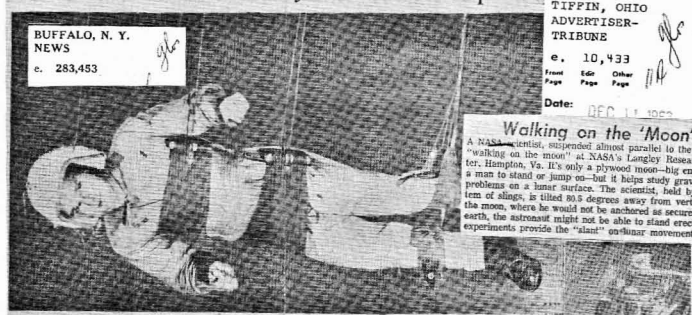
[illegible] to move only in parallel planes, he can still perform his tasks in a more or less normal manner in these planes.

[illegible] desired gravity level by supporting the properly constrained test subject at an angle—depending on the gravity level desired. In the Langley lunar simulator, the subject is tilted 80.5 degrees away from the

He Walks This Way—For Lunar Trip

NORMAN, OKLAHOMA
TRANSCRIPT
e. 8,139
S. 8,312
Front Page Edit Page Other Page 18
Date: DEC 24 1963





BUFFALO, N. Y.
NEWS
e. 283,453

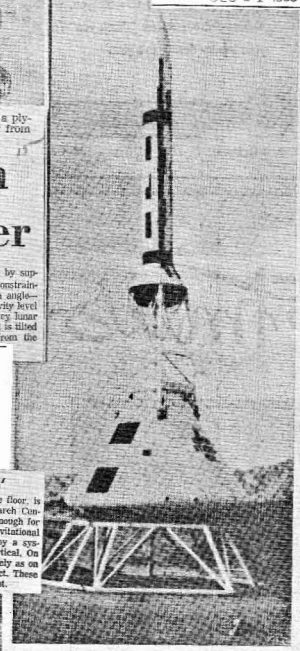
TIFFIN, OHIO
ADVERTISER-TRIBUNE
e. 10,433
Front Page Edit Page Other Page 14
Date: DEC 14 1963

Walking on the 'Moon'

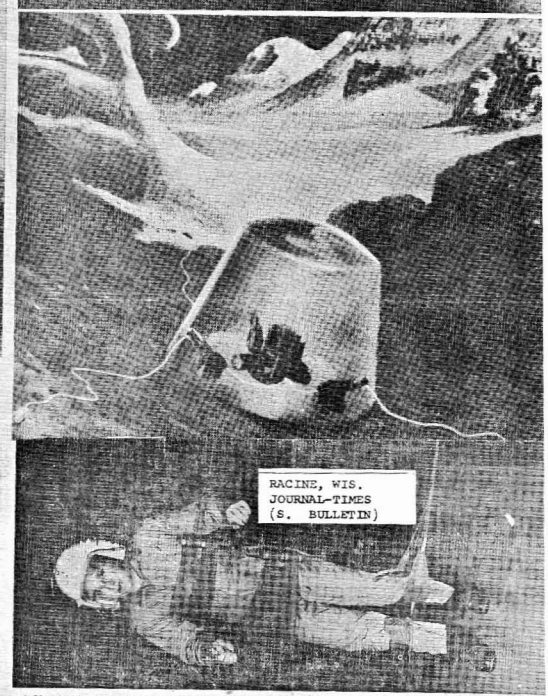
A NASA scientist, suspended almost parallel to the floor, is "walking on the moon" at NASA's Langley Research Center, Hampton, Va. It's only a plywood moon—big enough for a man to stand or jump on—but it helps study gravitational problems on a lunar surface. The scientist, held by a system of slings, is tilted 80.5 degrees away from vertical. On the moon, where he would not be anchored as securely as on earth, the astronaut might not be able to stand erect. These experiments provide the "slant" on lunar movement.

—National Aeronautics & Space Administration Photo

A scientist, suspended almost parallel to floor, "walks on moon" at NASA Langley Research Center.



SPACE TESTING—U.S. space scientists are busy with tests on many projects. An Apollo dummy with its escape system sits serenely in place (above) awaiting a pad abort test at White Sands (N.M.) Missile Range. The test is to determine the stability and operational characteristics of the escape system. The NASA scientist suspended almost parallel to the floor (top right) is "walking on the moon" at Langley Research Center, Hampton, Va. It's only a plywood moon, but it helps study gravitational problems on a lunar surface. The scientist, held by a system of slings, is tilted 80 degrees [illegible] extending from an



RACINE, WIS.
JOURNAL-TIMES
(S. BULLETIN)

A NASA scientist, suspended almost parallel to the floor, is "walking on the Moon" at NASA's Langley Research Center, Hampton, Va. It's only a plywood moon—big enough for a man to stand or jump on—but it helps study gravitational problems on a lunar surface.

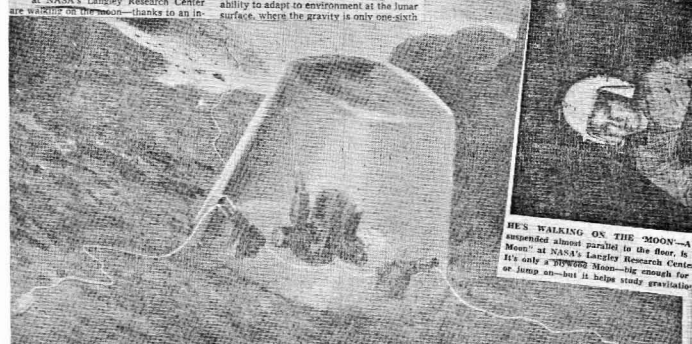
The scientist, held by a system of slings, is tilted 80 degrees away from vertical. On the moon, where h would not be anchored as securely as on earth, th astronaut might not be able to stand erect. These ex periments provide the "slant" on lunar movement.

It's Only a Plywood Moon, With New Slant on Walking

Journal to Buffalo Evening News

HAMPTON, VA., Dec. 14 — Scientists at NASA's Langley Research Center are walking on the moon—thanks to an in-

vice to determine man's physical capabilities on the moon and to investigate his ability to adapt to environment at the lunar surface, where the gravity is only one-sixth



HE'S WALKING ON THE 'MOON'—A NASA scientist, suspended almost parallel to the floor, is "walking on the Moon" at NASA's Langley Research Center, Hampton, Va. It's only a plywood Moon—big enough for a man to stand or jump on—but it helps study gravitational [illegible] a lunar surface. The scientist, held by a [illegible] is tilted [illegible] where [illegible]

KINGSPORT, TENN.
TIMES
(Sun: TIMES-NEWS)

Just 'Walkin' on the Moon

HAMPTON, Va.—Scientists at NASA's Langley Research Center are walking on the moon — thanks to an inexpensive but effective apparatus they devised to study the [illegible]

With extremely low gravitational pull, a man on the moon would not be anchored as securely as he is on earth. It might be difficult to stand [illegible]

Such studies are important since moon explorers will be required to check out their vehicle in preparation for the return flight, collect lunar samples, photograph the area, [illegible]

realized that if the body m bers of an experimenter constrained so they are free to move only in par planes, he can still perform tasks in a more or less

Scientists Study Walking on Moon

HAMPTON, Va. — —Scientists at NASA's Langley Research Center are walking on the Moon — thanks to an inexpensive but effective appara-

[illegible] in designing the device, a suspension system on an overhead trolley, NASA scientists realized that if the body members of an experimenter are constrained so they are free to move only in parallel planes, he can still perform his tasks in a more or less normal manner in these planes.

They also observed that it is possible to study the movement of a person under any desired gravity level by supporting the properly constrained test subject at an angle—depending on the gravity level desired. In the Langley lunar simulator, the subject is tilted 80.5 degrees away from the vertical.

Gulliver's 'gone fishing' on Mars in this artist's sketch of the interplanetary probe at work. Strings shot from Gulliver after landing are covered with sticky substance which catches organisms. Life activity recorded by geiger counter is radioed to Earth.

Device Teaches Man How to Walk on Moon

Hampton, Va.—Scientists at NASA's Langley Research Center are walking on the moon—thanks to an inexpensive but effective apparatus they devised to study the problems an astronaut might face in doing his job on the lunar surface.

In this case, it's only a plywood moon, an inclined walkway 4 feet wide and 24 feet long. On it, a NASA scientist can stand, walk, jump and climb under simulated lunar gravity achieved by a system of slings which support only five-sixths of his weight.

With extremely low gravitational pull, a man on the moon would not be anchored as securely as he is on earth. It might be difficult to stand upright on the lunar surface. In the Langley tests, the scientists are suspended almost parallel to the floor.

Langley designed the tilted research device to determine man's physical capabilities on the moon and to investigate his ability to adapt to environment at the lunar surface, where the gravity is only one-sixth that of the earth.

Such studies are important since moon explorers will be required to check out their vehicle in preparation for the return flight, collect lunar samples, photograph the area and perform other tasks.

The simulator is providing basic information on some of the adjustments explorers must make in their accustomed methods of walking, climbing and jumping while on the moon.

In designing the device, a suspension system on an overhead trolley, NASA scientists realized that if the body members of an experimenter are constrained so they are free to move only in parallel planes, he can still perform his tasks in a more or less normal manner in these planes.

They also observed that it is possible to study the movement of a person under any desired gravity level by supporting the properly constrained test subject at an angle—depending on the gravity level desired. In the Langley lunar simulator, the subject is tilted 80.5 degrees away from the vertical.

PROVIDENCE, R. I.
JOURNAL
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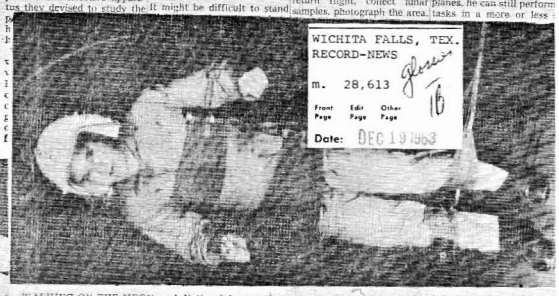
S. 193,108
Front Page Edit Page Other Page 16

[illegible]etting the slant on lunar movement, a NASA scientist suspended [illegible]ton, Va. An astronaut on Moon would not be anchored as securely

ROCHESTER, MINN.
POST-BULLETIN



WICHITA FALLS, TEX.
RECORD-NEWS
m. 28,613
Front Page Edit Page Other Page 16
Date: DEC 19 1963

WALKING ON THE MOON — A National Aeronautics and Space Administration scientist, suspended almost parallel to the floor, is "taking a walk on the moon" at NASA's Langley Research Center, Hampton, Va. It's only a plywood moon — big enough for a man to stand or jump on — but it helps study gravitationa problems on a lunar surface. The scientist, held by system of slings, is tilted more than 80 degrees awa from vertical.

RICHMOND, VA.
TIMES-DISPATCH
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S. 188,901
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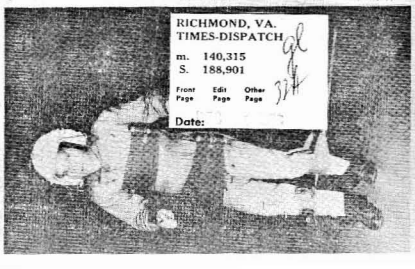
Date:



Scientists at Langley Study Man's Capabilities on Moon

By Beverly Orndorff
T-D Science Writer

It's only a plywood moon, inclined 80.5 degrees. It may be make-believe, but it simulates .167 G's.

This is probably horrible poetry, but the subject—a piece of plywood that's been tilted—involves one of the more Ingenious tricks of the space age.

apart. In lunar ladders than are needed for earthly ladders.

In jumping, a lunar astronaut would go soaring lazily, as if he were in a dream world, upwards to a height equal to several times his own height.

Walking is almost a matter of bounding along freely, like some of the characters in animated movie and television cartoons. A given distance is traversed with fewer steps, and with less effort, on the moon than on the earth.

ing under normal gravity conditions with a person doing the same things on Langley's lunar simulator were shown before the Sigma Xi chapter of the Medical College of Virginia recently. Showing the movies, as part of his lecture, was Dr. Floyd Thompson, Langley's director.

Perhaps the fact that man can get the "feel" of the moon's gravity conditions from such a simple, inexpensive device in a field where equipment is generally complex and costly is nearly as significant as what's being

[MOVIES COMPARING a two-

NASA MOON GRAVITY SIMULATOR ATTRACTS NATIONAL ATTENTION

Langley Research Center's lunar walker-- a unique simulator for studying the problems an astronaut might have in doing his job on the moon's surface-- has attracted considerable attention from the journalistic as well as the scientific world.

On the adjoining page is a selection of clippings of a photograph and articles on Langley's lunar gravity simulator located in the Flight Hangar. The clippings are from newspapers representing many sections of the United States.

Among the published comments on the simulator was this one by Beverly Orndorff, science writer for the Richmond Times-Dispatch, who said: "Perhaps the fact that man can get the 'feel' of the moon's gravity conditions from such a simple, inexpensive device-- in a field where equipment is generally complex and costly-- is nearly as significant as what's being learned from the Langley studies."

The apparatus is characterized by simplicity. The moon is an inclined plywood walkway four feet wide and 24 feet long. On it, a NASA scientist can stand, walk, jump, and climb under simulated lunar gravity achieved by a system of slings which support only five-sixths of his weight.

With extremely low gravitational pull, a man on the moon would not be anchored as securely as he is on earth. It might be difficult to stand upright on the lunar surface. In the Langley studies, the scientists are suspended almost parallel to the floor.

Langley designed the tilted research device to determine man's physical capabilities on the Moon and to investigate his ability to adapt to enrivonment at the lunar surface, where the gravity is only one-sixth that of the Earth.

Such studies are important since Moon explorers will be required to check out their vehicle in preparation for the return flight, collect lunar samples, photograph the area, and perform other tasks.

The simulator is providing basic information on some of the adjustments explorers must make in their accustomed methods of walking, climbing, and jumping while on the Moon. Several NASA astronauts have tried out the research device.

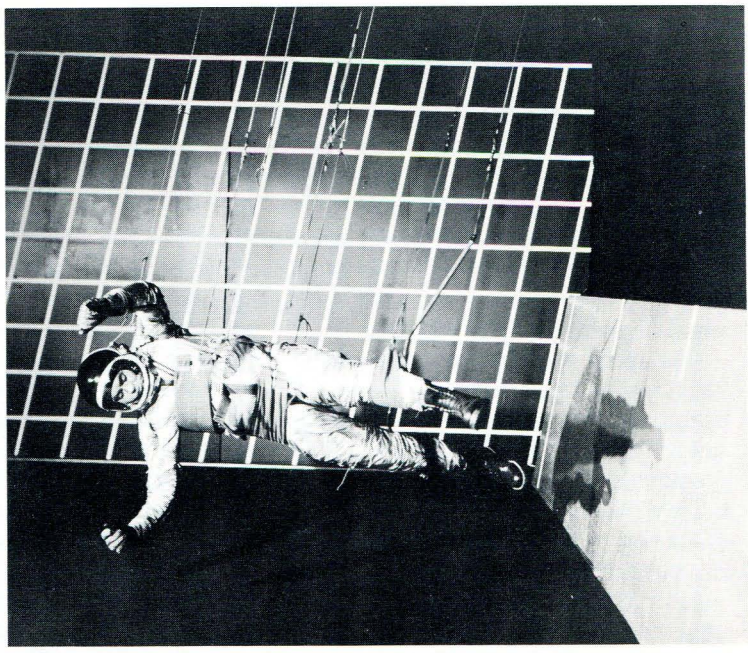
In designing the simulator, a suspension system on an overhead trolley, NASA scientists realized that if the body members of an experimenter are constrained so they are free to move only in parallel planes, he can still perform his tasks in a more or less normal manner in these planes.

They also observed that it is possible to study the movement of a person under any desired gravity level by supporting the properly constrained test subject at an angle-- depending on the gravity level desired. In the Langley lunar simulator, the subject is tilted 80.5 degrees away from the vertical.

In the pictures on the opposite page, the lunar walker who traveled throughout the United States on his plywood moon is scientist Amos Spady. The scientist in a space suit in the picture on this page is Don E. Hewes, Head of the Spacecraft Research Branch of the Space Mechanics Division. He and Spady of the same branch teamed to develop the lunar gravity simulation technique.

WANTED: Ride from Grand View to W.A. on 7:30 shift. Wagner, 4641.

FOR RENT: Furnished apartment. Goodwin, LY 6-3783.



Langley Research Center's lunar walker

AIAA MEETING APRIL 1

The Hampton Roads Chapter of the American Institute of Aeronautics and Astronautics will hear a discussion of free ballooning by Dr. Kurt Stehling at a meeting on Wednesday, April 1 at the Warwick Yacht and Country Club. The evening activities will start at 6 p.m. with a social hour, followed by dinner at 7 and Dr. Stehling's talk at 8.

Dr. Stehling will discuss modern free ballooning, both scientific and sport. Included will be his past experiences and current plans for transcontinental free balloon flights and the use of balloons for astronomical observations.

Dr. Stehling is Director of Electro-Optical Systems' operational activity in Washington, D.C. He is well known as a author and speaker on aerospace matters. Prior to his present activity he was senior staff scientists in the Plans and Programs Evaluation Office at NASA Headquarters from 1959 to 1963. He has a long background in rocket propulsion and is currently one of the leading proponents of sport ballooning.

Reservations may be made by calling Carl Sandahl, LY 6-2392; John Ward, LY 5-0869, or Emanuel Boxer CH5-6212, before Monday evening, March 30. Only the first one hundred reservations will be honored due to space limitations.

BOOKS FOR SALE: "Sheet-Metal Pattern Drafting and Shop Problems" by James S. Daugherty; "Learning Electricity Fundamentals" by Leonard R. Crow; "Patternmaker's Manual" by the American Foundrymen's Society; "Cartesian Tensors" by Jeffreys; "Continuum Mechanics" by Frederick and Chang; "Introduction to Quantum Mechanics" by Dicke and Wittke; "Oral Communications for the Layman" by Vaughan; "Iliad" by Homer, and "Mathematics of Physics and Modern Engineering" by Sokolnikoff and Redheffer. NASA Exchange, Building 586, 2326.

WANTED: Driving combination from Norfolk to W.A. on 8 shift. Deaton, 3372.

WANTED: Ride or driving combination from North Holly section to W.A. on 7 shift. Joyner, PA 2-6029.

HEALTH HINTS FOR TRAVELERS

Travel - including travel in the tropics - can be perfectly healthful and pleasant, if you follow a few precautions not customary at home.

The United States is free of such diseases as yellow fever, cholera, smallpox, urban plague, louse-borne typhus, and relapsing fever. These and other diseases little known to Americans are still present in varying degree in many places, particularly in the tropical and subtropical regions of the world. Vaccination helps prevent their movement in international traffic.

Smallpox vaccination is required by many countries including the United States. Yellow fever and cholera vaccinations are required when travelers arrive from infected areas; under certain circumstances they are recommended for international travel, and at times may be required before leaving a country. Vaccination against some other diseases, although not required, is strongly recommended for your protection.

It is of utmost importance that you follow immunization requirements and recommendations. They protect you, the countries you visit, and the American people when you return. You may also avoid delays and interruptions in your trip.

Some immunizations take effect in a few days. Others require months to become effective. Be sure you start your vaccinations well in advance of your trip, to allow for reasonable spacing and for time to build up body resistance.

Those immunizations required by governments must be recorded in the International Certificates of Vaccination form, the only acceptable immunization document for international travel. You receive this form with your passport application. If your travel will be by tourist card, you can obtain the certificate form from the Superintendent of Documents, Government Printing Office, Washington, D.C. for 10 cents. Many travel agents and transportation companies furnish this certificate form.

The required immunization certificates must bear the approved stamp of the local or State health department of the area where the physician who gave the vaccinations practices. You may mail the certificate form to the health officer, with self-addressed stamped envelope for return.

Detailed vaccination requirements for all areas of the world are contained in the booklet "Immunization Information for International Travel," for sale by the Superintendent of Documents, Government Printing Office, Washington, D.C., for 35 cents. Also available from the same source, for 5 cents a copy, are the following Public Health Service folders in this series: Health Information For Travel (1) in Europe, (2) in Mexico, Central and South America, and the Caribbean, (3) in Asia, Australia, and New Zealand, (4) in Africa.

See your physician for your immunizations and have a physical checkup. Ask for medications needed in an emergency for motion sickness or for dysentery. If you are going into areas where malaria is present, the doctor may prescribe antimalarial drugs. If you are under medication for a physical condition, an extra supply of the medicine, or a prescription, may be needed.

Inform yourself on climate and living conditions before your departure. Choose your clothing carefully for comfort and convenience, taking the minimum necessary. Be sure to have good walking shoes.

Take it easy in unaccustomed heat, humidity, and high altitudes.

Water and food contaminated by insanitary handling expose you to dysentery, diarrhea, typhoid fever - occasionally even to cholera and certain so-called tropical diseases. Be cautious in the use of unboiled drinking water, ice, raw fruits and vegetables, raw milk, dairy products, and unchlorinated swimming pools. These may all be reasonably safe in larger cities and at first-class hotels. But their safety should not be taken for granted. Travelers are urged to ask travel agencies, consular officers, and local health officers for specific information.

When in doubt, follow this rule: Eat no raw fruit or vegetable if its skin is broken, or if you yourself have not washed and peeled it just before eating. Cook all others. Drink bottled water and use bottled water in brushing your teeth.

Take with you your glasses prescription or an extra pair, a supply of hand-washing packets, and if you are diabetic, or allergic to penicillin or have any physical condition that may require emergency care, have some identification on your person at all times indicating this.

If you need a physician abroad, your travel agent or the American consul can give you the names of physicians or hospitals in the vicinity.

"Faster, John, we're going to be late!"

"And now I'll read the will of the late Mr. and Mrs. John Smith."

FOR SALE: 1962 Cadillac coupe. Michael, 838-150.

FOR SALE: Oscilloscope, 5-inch D.C. wireband, Model 460, EICO with R.F. probe - $50. McClelland, 868-9151.

FOR SALE: Model TC-2 Heathkit tube tester - $20. Sleeper, 244-4537.

PROGRAM FOR EQUAL EMPLOYMENT AND OPPORTUNITIES FOR WOMEN

In accordance with Executive Order 10980 to "assure non-discrimination on the basis of sex and to enhance constructive employment opportunities for women", NASA is supporting a program for equal employment and advancement opportunities for women.

An abstract of the program covering activities in process and those proposed has been submitted to the Chairman of the Interdepartmental Committee on the Status of Women. Covered in the program were the following points:

A survey has been conducted to determine occupational areas where vacancies exist for scientific, technical and other professional people.

Plans are being developed to include in employment advertising a statement to encourage qualified female applicants to apply, and special recruiting efforts are being directed at women's colleges and toward women in co-educational institutions.

All NASA Boards of Civil Service Examiners have been asked to review the numerous options of established registers and provide the Director of Personnel with a list of qualified female candidates at all grade levels.

A policy statement, signed by the Deputy Administrator, has been directed to all subordinate organizational levels to encourage appointment, promotion, and opportunity for career development and training for women at all levels in the organization.

A reporting form and instructions are being developed for use by field installations which will provide Headquarters, on a weekly basis, with information on the number of women hired by grades, the number promoted, and the number and grades of women granted incentive awards including quality increases and sustained superior performance awards.

Consideration is being given to conducting a survey to ascertain which program areas could but do not now include women employees.

A vigorous public information program is also contemplated, employing a variety of mass media techniques, designed to attract highly qualified women to the space program.

JOINT DRIVE SEEKS DONATIONS

The Center's annual joint fund raising campaign for the National Health Agencies and the Federal Service Joint Crusade will be conducted here through April 10. Joyce Anthony, Office of Chief of Personnel Division, and Jean Elliott, Head of Special Files Section, Administrative Services Division, are serving as co-chairmen of the effort.

Contribution envelopes have been distributed to all employees. All donations to both efforts should be turned in to the attendance clerks who will send them to division secretaries. It is not necessary for the donor to sign his name to the contribution envelope.

Included in the campaign are eight health agencies and four crusade agencies.

WANTED: Alternate drivers from Williamsburg to E.A. or W.A. on 8 shift. Jane Swartzwelder, 2381.

WANTED: Alternate drivers from Buckroe Shopping Center to W.A. on 8 shift. Orr, 4505.

FOR SALE: 1948 Oldsmobile 98, $75. Crate, LY 6-5136.

NASA BOWLING LEAGUES

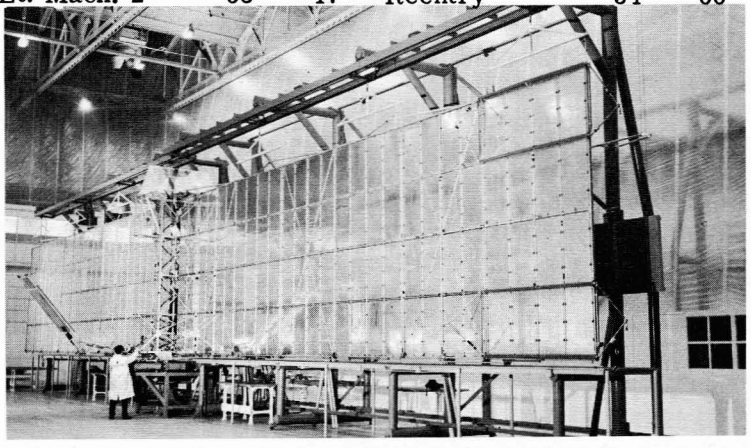
Tom Cats lead Group A in the NASA Tenpin League with 66 wins and 34 losses. Top scores for the week were rolled by Fred Kerns with a 265 game and 683 set.

Misfits continue to lead Group B with 71 wins and 29 losses. Top individual scores were rolled by Mary Jane King with a 188 game and Jane Oehman with a 485 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	66	34	Misfits	71	29
Unitary	61	39	Ten Benders	65	35
Hornets	61	39	Dynamos	59	41
Phantoms	58.5	41.5	Latecomers	58.5	41.5
Short Circuits	57.5	42.5	Ranch House	57.5	42.5
Devious	56	44	Cee Pees	55	45
Crusaders	55	45	Barristers	54.5	45.5
Alley Cats	54	46	Spare Parts	53.5	46.5
Electronic Shop	53	47	Alley Oops	53	47
Flight Eng.	53	47	Lunar-Tics	52	48
Frame Ups	51	49	Hucksters	51	49
Johnnie's	49.5	50.5	Sudz	51	49
Payloads	49	51	Gliders	45.5	54.5
Pinwigglers	43	57	Question Marks	45	55
Flyers	41.5	58.5	Dillys	44	56
Oddballs	41	59	Greenhorns	40.5	59.5
Spare Oops	39.5	60.5	Analogs	40.5	59.5
A1OK's	39	61	Bowling Belles	40	60
Malfunctions	37	63	Mets	32.5	67.5
Galaxies	34.5	65.5	Moonlighters	29	71

Ten Spots lead in the NASA Duckpin League with 59 wins and 41 losses. Strike Outs follow in a close second with 58 wins and 42 losses. High scores were rolled by Al Insley with a 147 game, John Moore with a 356 set, Alene McCann with a 111 game and Helen Dupere with a 299 set.

Team	W	L	Team	W	L
Ten Spots	59	41	Pinpoppers	51	49
Strike Outs	58	42	Rebel Bombers	48	52
AMC	53	47	Doodle Bugs	47	53
Lt. Mach. 1	53	47	ACD	44	56
Lt. Mach. 2	53	47	Reentry	34	66



This is a dynamic test model of a meteoroid detection satellite being developed for the Marshall Space Flight Center by Fairchild Stratos, Hagerstown, Maryland, for launch on Saturn I vehicles (SA-8 and SA-9). The panels will unfold in space to form a wing measuring 15 by 96 feet. Electronic detectors will detect the size and frequency of meteoroids, gaining information to be used in the design of spacecraft.

MORE TASKS GIVEN TO X-15

NASA and the U.S. Air Force have added nine new experiments to the research tasks of the X-15 hypersonic "service" airplane. The new duties extend the research aircraft's planned missions through 1968.

The new missions include advanced technological studies in support of U.S. aeronautical and space science programs in such areas as stellar photography, advanced structures and materials, aerodynamics and data systems, and ramjet propulsion.

The studies and tests will take advantage of the airplane's unique capabilities for flight at high altitudes through the edge of the earth's atmosphere into nearby space, and at hypersonic speeds.

The tasks increase the useful life of the three X-15 airplanes far beyond original plans when the program was approved 10 years ago as a joint project of the Air Force, Navy, and NASA.

The X-15 was designed for a speed of more than 4,000 mph and altitudes up to 250,000 feet. It has been flown above 350,000 feet and attained 4,100 mph and is expected to attain more than 5,000 mph when a modified version is flown later this year.

Some of the new studies will be carried out simultaneously with the basic work in aerodynamic heating, operational, and control problems, life sciences and hypersonic aerodynamics and structures.

All of the added experiments are sponsored and financed by the Air Force and NASA. Some of the more complex equipment needed for the work will not be ready for many months but modifications to the airplanes are underway.

Dr. Raymond L. Bisplinghoff, NASA Associate Administrator for Advanced Research and Technology, whose office has charge of the X-15 research program said, "The new studies could provide major contributions in the use of improved systems and instrumentation, newly developed techniques and more detailed analyses. It is evident that the X-15 can perform urgently needed studies in the upper atmosphere and nearby space far better, more efficiently and at lower cost than any other method we have today."

TAX SUPPLEMENT DISTRIBUTED

Distributed with this issue of Langley Researcher is a facsimile copy of Form 1040-ES (Supplement), a form which has been prepared by the Internal Revenue Service to assist taxpayers in estimating their income for 1964 in accordance with changes made by the Revenue Act of 1964. Even though many employees do not file a Form 1040-ES (Declaration of Estimated Income Tax) it is felt that the information contained in this supplemental form is of sufficient general interest to warrant distribution to each employee.

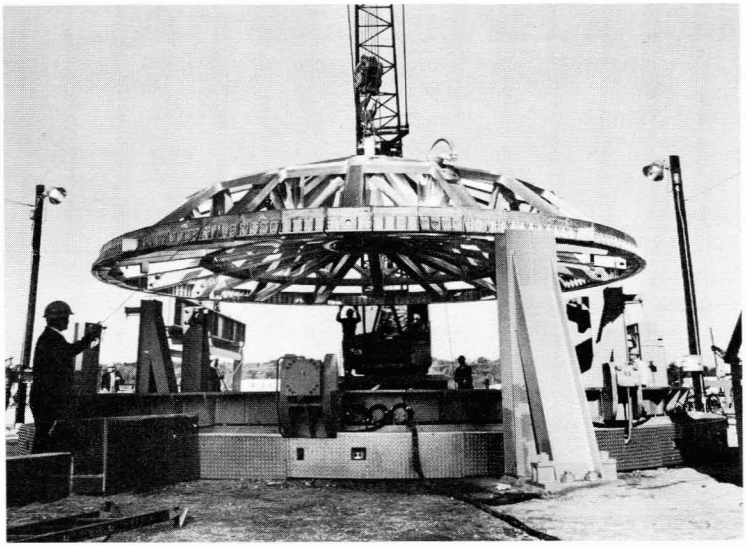
WANTED: Driving combination from Virginia Heights, near Briarfield Rd. and Briarwood Dr., to W.A. on 8 shift. Rew, 3257.

WANTED: Driving combination from Bruton Park to W.A. on 7:30 shift. Smith, 3271.

WANTED: Ride from Deep Creek Rd. area to W.A. on 8 shift. Lerche, 3362.

WANTED: Passengers to New York City leaving at 6 p.m. today and returning March 30. Raparelli, 3300.

WANTED: Driving combination from Norfolk to W.A. on 7:30 shift. Ed Hudgins, 4851 or 589-9023.



A giant handling ring, to be used in assembling and transporting first stages (S-IC) for NASA's Saturn V space vehicle, is lowered onto a load-test fixture at NASA's Michoud Operations in New Orleans. The aluminum space age "eye bolt," measuring 33 feet in diameter and weighing more than 30,000 pounds, is one of five such rings to be built at Michoud for the manufacture and test of 10 S-IC boosters. The 7.5 million pound thrust S-IC will be 33 feet in diameter and 138 feet in height. It will be the first of three stages comprising the manned lunar landing Saturn V.

WORLD'S FAIR PLANS SPACE PARK

The Department of Defense and the NASA will participate jointly in the U.S. Space Park at the New York World's Fair which opens April 22.

The park, sponsored jointly by DOD, NASA and the World's Fair, will be one of the major outdoor features of the fair. It will include the most imposing array of full-scale Air Force and NASA rockets and spacecraft ever assembled outside of Cape Kennedy.

Highlighting the park will be a full-scale "boattail" section of the massive Saturn V rocket which will carry American astronauts to the Moon. The model will stand 85 feet tall and measures 33 feet in diameter.

Towering over the two-acre exhibit will be a Titan II-Gemini launch vehicle and spacecraft. The Titan II booster, 110 feet high, will stand vertically with the Gemini capsule mated on top just as it would be on the launch pad at Cape Kennedy.

Surrounding the Titan II-Gemini will be full-scale models of the Apollo Command and Service Modules, the Lunar Excursion Module, Gemini spacecraft and the actual Mercury capsule which carried Astronaut Scott Carpenter during the second U.S. manned orbital flight.

Other full-scale exhibits in the park will be the Atlas-Mercury and Thor Delta launch vehicles, an X-15 rocket-powered research aircraft and the Agena space vehicle.

Space and utilities for DOD-NASA participation in the Fair are being provided at no cost to the government, and no separate admission charge will be made for the Space Park exhibits.

The 1964 period of the New York World's Fair is from April 21 through October 18, 1964. The second period extends from April 21 through October 17, 1965.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 8 LANGLEY RESEARCH CENTER APRIL 10, 1964

CENTER HOST TO NATIONAL MEETING ON EDUCATIONAL GUIDANCE IN SPACE AGE

A four-day national conference on educational guidance in the space age will be conducted on the Peninsula April 13-16 for guidance directors for Virginia and the other 49 states, with Langley Research Center serving as host.

Participating in the space age educational forum, sponsored by NASA in cooperation with the U.S. Office of Education, will be officials of NASA Headquarters, other NASA centers, the U.S. Office of Education (USOE), and educators from throughout the United States.

One purpose of the conference is to provide state guidance directors with an understanding of NASA-- its scientific objectives, programs, and educational services-- and to give educational officials an opportunity to learn how they can facilitate mutual assistance in space education.

Another objective is to determine what action can be appropriately taken to increase the awareness of space-related vocational opportunities among elementary and secondary school guidance specialists; to establish closer relationships among guidance directors and NASA educational personnel; and to explain the purpose and progress of NASA activities.

The conference will enable educational personnel to explore with NASA scientists-- at the scene of their extensive aerospace research activities-- recent significant developments in the programs of Langley and other centers.

Business sessions get under way at 9 a.m. April 13 in NASA's east area projection room in Building 587, with Dr. Floyd L. Thompson, Langley Director, welcoming the group to the Center. Dr. Woodrow W. Wilkerson, supervisor of public instruction for Virginia, will welcome the delegates to the state.

Speaking at the morning session, which will be presided over by S. Walter Hixon Jr., Langley's supervisory employee development officer, will be Julian Scheer, NASA assistant administrator for public affairs; Dr. Ralph J. Becker, USOE's director of the division of state grants; and Dr. Arthur A. Hitchcock, executive director of the American Personnel and Guidance Association, Washington, D.C. Introductions will be by Dr. Aaron P. Seamster, NASA director of education programs.

Charles J. Donlan, Langley Associate Director, will conclude the morning session with a discussion of the Langley Center's program objectives and implementation.

After lunch, the visitors will tour the Langley Center to see illustrations of various types of research, including space rendezvous docking and lunar landing studies through use of unique simulators; environmental investigations to provide an understanding of unfamiliar hazards man will encounter in space; and high-speed aircraft tests in wind tunnels and laboratories, in support of the national effort to develop a supersonic commercial air transport and in the development of other flight vehicles.

The April 14 program will begin at the Hotel Chamberlin

(Continued on page 8)

SYNCHROCYCLOTRON COMPONENTS TO BEGIN ARRIVING THIS MONTH

Shipments of nearly six million pounds of large components for the $12.4 million Space Radiation Effects Laboratory being established on the Peninsula by the Langley Research Center are scheduled to begin arriving in the area this month.

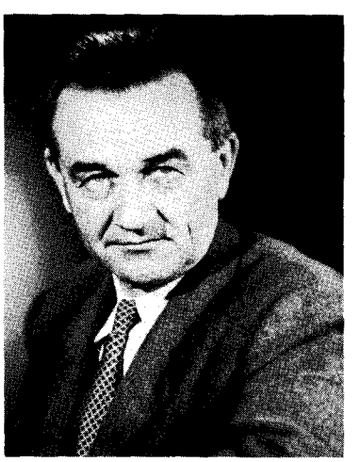
There will be two large shipments of material for use in the construction of the 600 million electron volt synchrocyclotron-- a space research facility which will be the heart of the NASA radiation laboratory. One shipment will be by rail, the other by barge.

The largest shipment-- 54 steel plates averaging 50 tons apiece-- is scheduled to begin arriving about the middle of this month. Each of the approximately 14-inch thick plates, which range in length from 21 to 36 feet, will be transported on an individual railway car.

The steel plates will be assembled at the site of the laboratory to form the core of the cyclotron's 2,900-ton magnet, which will be 36 feet long, 24 feet wide, and 20 feet high. The steel was produced and the plates were forged and machined to very close tolerances by the Bethlehem Steel Company at Bethlehem, Pa. Contractual cost of the magnet core delivered at the laboratory site is $1.4 million.

(Continued on page 6)

JOHN STACK TO ADDRESS LOCAL ENGINEERS' CLUB



John Stack

John Stack, former Langley Associate Director, will speak at the meeting of the Engineers' Club of the Virginia Peninsula on April 23 at 8 p.m. at Jefferson Davis Junior High School, Todds Lane, Hampton.

Stack, who now holds the position of Vice-President, Research and Engineering, Republic Aviation Corporation, will speak on "The Transportation Dilemna." He will discuss the overall transportation problem in this country today with its jet age coast to coast or continent to continent travel and its frustrating city to airport traffic situation at both ends of the journey.

Stack began his career at the Langley Research Center following his graduation from Massachusetts Institute of Technology in 1928. He rose to the position of Assistant Director and is recognized as one of the world's top authorities on high speed flight.

While at Langley he received many awards. He delivered

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDINGS. . .A Center romance will be climaxed when Mary Holloway, Personnel Records, and Ramon Barr, Hotshot Tunnel, take their final vows tonight at Trinity Methodist Church in Poquoson. Peggy Harris, 7 x 10-foot Wind Tunnels, will be matron-of-honor, and ushers will be Eugene Barr, Fabrication Shop and Charles Miller, Hotshot Tunnel. Nancy Powell and George Sykes Jr., both of Structures Research Division, were married on March 7 at Aldersgate Methodist Church. . .John Wayne Oakley, Dynamic Model Shop, will desert the bachelor ranks when he takes his final vows with Yolanda Maria Ulisse on April 18 at St. Mary's Star of the Sea Catholic Church, Fort Monroe.

NEW HEIRS. . .George Summerfield, Research Models and Facilities Division, became the father of a son on March 20. . .Penny Faison, Heavy Machine Shop, became the mother of a son, Robert E. Jr., on March 19. The proud grandfather is Harry Lishman, Electrical Systems Division.

ENGAGEMENT. . .Making plans for a June wedding is Carolyn Christenbury, Procurement Division. She is engaged to Marlin Eby, Newport News.

BLOODMOBILE. . .The Red Cross Bloodmobile will visit the Center on April 29. 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.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on April 14 from 3 p.m. until 4. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on April 22 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

PROFESSOR PLANS VISIT. . .Dr. James B. Eades, Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Center on April 30. Persons wishing to have interviews with Dr. Eades may call the Training Office, telephone 2326, for an appointment.

WANTED: Two alternate drivers from Southampton to W.A. on 7 shift. Bainbridge, 4483.
WANTED: Driving combination from Ivy Farms to E.A. on 8 shift. Betty Downing. 2243.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 13:

Monday - Tomato-barley soup, roast beef, grilled pork chops, chicken chow mein, chili con carne.

Tuesday - Puree of bean soup, sauerbraten, breaded veal cutlet, baked ham, Welsh rabbit on toast.

Wednesday - Vegetable-beef soup, grilled rib eye steak, fried scallops, meat loaf, cheese omelette.

Thursday - Split green pea soup, Swiss steak, spaghetti with meat sauce, fried chicken, tamale pie.

Friday - Clam chowder, Spanish pot roast, broiled perch, fried fillet of flounder, western omelette.

The menu for the week of April 20 is as follows:

Monday - Chicken-noodle soup, chicken and dumplings, roast fresh ham, creamed dried beef on toast, foot-long hot dog.

Tuesday - French onion soup, half-pound chopped steak with gravy, corned beef and cabbage, ham loaf, fish cakes.

Wednesday - Minestrone soup, roast beef, Salisbury steak, fried chicken, macaroni and wieners.

Thursday - Vegetable-beef soup, grilled rib eye steak, barbecued beef chunks on steamed rice, tuna patties.

Friday - Clam chowder, Swiss steak, broiled halibut, fried fillet of flounder, barbecued sandwich.

LOST: "Differentialgleichungen" by Kamke. Frisch, 4597.
FOR SALE: 6-meter transceiver and microphone with antenna - $50. Aldridge, 723-9209.
WANTED: Home for puppies. Barfoot, PA 3-3135.
FOR SALE: Lionel electric train, King, 722-1011.
FOR SALE: Old RCA table model TV - needs picture tube. Price $15. Youngblood, 245-3347.
FOR SALE: 1951 10 X 50 Troy mobile home, furnished, 2 bedrooms. Lindsay, 595-0643.

Dr. Floyd L. Thompson, Director, recently presented the Shop Safety Award to four groups for having a record of no lost-time accidents during calendar year. Top left - Dr. Thompson (left) presents the award to Robert F. Goodness, head of the Machine Branch. Looking on are Raymond M. Hulcher, head of Instrument Construction Shop; Herbert C. Roehm, head of Heavy Machine Shop; J. Elvin Freeman, head of Light Machine Shop, and William B. Mayo, Chief of Mechanical Service Division. Top right - Dr. Thompson presents the award to Frank L. Plotz, head of Electronic Shop. Looking on are C. J. Vincke (left), head of Electrical Sytems Applications Branch, and Joseph Getsug, Chief of Electrical Systems Division. Lower left - Getsug holds the award presented to the Electrical Systems Applications Branch. Shown in the group are (from left):John H. Haverstock, head of General Electrical Service Section; August V. Sansone, head of Electrical Shop; Martin J. Menges, head of Electrical Distribution and Drive Section, and Dr. Thompson. Missing from the picture is Aubrey L. O'Kelly, head of Electrical Equipment Utilization Section. Lower right - James Hamilton (right), head of Research and Development Support Branch, holds the plaque presented to his group. Shown in the photograph are (from left): Arthur K. Grow, head of Research Equipment Service Section; George L. Meidinger, head of Environmental Testing Support Section; Marion B. Seyffert, Assistant Chief of Mechanical Service Division; John T. Turlington, head of Research Projects Support Section; Mayo; Ernest W. Johnson, head of Quality Assurance Support Section, and Dr. Thompson. --Photos by Nye and Kenney

SUMMER EMPLOYMENT POLICY

The Civil Service Commission has made a number of significant changes in summer employment procedures for 1964.

According to the Commission, an agency (including a military department) may not appoint the son or daughter of a civilian employee of that agency, or the son or daughter of a member of its uniformed service, under a temporary limited appointment for part-time, seasonal, intermittent, or other temporary employment in the United States, between May 1, 1964 and September 30, 1964.

The regulations on nepotism apply regardless of where the parent is employed or where the son or daughter seeks employment in the United States. It also applies without regard to the age of the children and whether or not they are part of the parent's household.

WANTED: Driving combination from area of Bowditch Ford to W.A. on 7 shift. Hubbard, 4422.

FOR SALE: 3-bedroom house in Northampton. Pay equity and assume loan. 826-4742.

ARIEL II LAUNCHED AT WALLOPS

The second British scientific satellite, Ariel II, was launched recently by NASA from Wallops Island. The launch vehicle was a four-stage solid propellant Scout.

Ariel II is the second in a series of three British satellites designed to make investigations in and above the ionosphere. The first, Ariel I, was launched April 26, 1962, from Cape Kennedy and has contributed much to knowledge of the upper atmosphere.

The United Kingdom designed and built the three experiments on board the spacecraft. These measure galactic radio noise (radiation emission from distant stars); vertical distribution of ozone in the upper atmosphere (ozone is a gas created by chemical interaction of ultraviolet radiation from the Sun with oxygen in the Earth's atmosphere, a process which robs the radiation of its lethal effects); and micrometeoroids encountered by the satellite.

The experiments were chosen by the British National Committee on Space Research in consultation with NASA. The British Office of the Minister for Science has overall administrative responsibility for the Ariel portion of the program.

The spacecraft is in the shape of a cylinder about 23 inches in diameter and 35 inches long, closed at each end by a hemisphere. Weight is about 150 pounds. Solar panels and antennas, which are extended after orbit is achieved, are attached to this structure.

Robert T. Duffy, Assistant Chief of Wallop Station's Flight Test Division, was Test Director and Tom W. Perry was the Wallops Project Engineer, responsible for coordinating preflight, launch, and tracking operations.

APPRENTICE EXAM OPENED

The Board of U.S. Civil Service Examiners at Langley Research Center announced the opening of an examination for Apprentice, first year, WB-2, $1.88 per hour.

Competitors will be required to pass a written test of aptitude for apprenticeship training. The written test will be given at Langley Air Force Base. Applicants will be notified of the exact time and place to report for the test.

The list of eligibles resulting from this examination will be combined with the register established in 1963. Persons rated eligible under Announcement No. 3-131-5(1963) need not apply under the new announcement, but they may do so if they wish to try to raise the numerical rating obtained under the previous announcement.

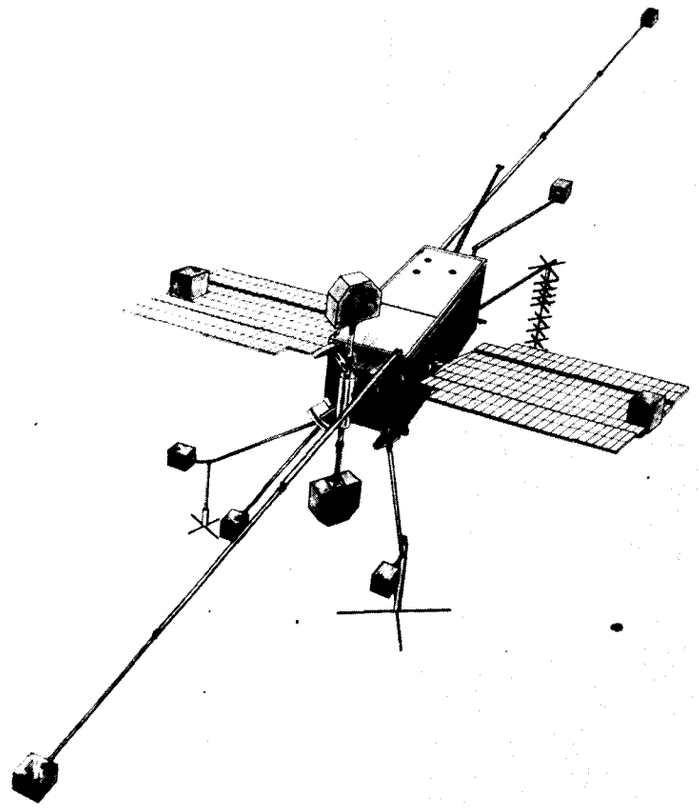
Apprentices will be appointed in the following trades and applicants will have an opportunity to express trade preference at the time of the appointment: aircraft mechanic, electrician, electronic instrument maker, machinist, sheet-metal worker, test facility mechanic, and wood modelmaker.

Applications must be filed with the Executive Secretary, Board of U.S. Civil Service Examiners, NASA, Langley Research Center, Langley Station, Hampton, Va. 23365, not later than April 30. Applications received after that date will not be accepted unless they are received by mail and bear a postmark on or before the above date.

WANTED: Driving combination from Newmarket area to W.A. on 8 shift. Robertson, 4895.

LOST: Prescription glasses in red case - lost in East Area. George R. Bjustrom, 4671.

FOR SALE: 1961 Morris Oxford. Sanders, 723-3048.



The Orbiting Geophysical Observatory is due to begin its run into space this year. It will carry from 20 to 50 different scientific experiments.

OGO NAMED STREETCAR SATELLITE

The streetcar has all but disappeared from American streets, but "streetcar satellite" will begin making runs into space this year.

The Orbiting Geophysical Observatory has been nicknamed the streetcar satellite because it will make a number of trips into space carrying a large number of different passengers each time.

The passengers will be experiments built by scientists at universities, in industrial plants and in government laboratories. Each Orbiting Geophysical Observatory-- or OGO for short-- will carry from 20 to 50 scientific passengers. Because many of its experiments must be isolated from conditions on the spacecraft itself, they are attached to the ends of long booms which project from the body of the satellite.

This and OGO's wing-like solar panels give it a shape so odd that when an OGO scientist showed a picture to his wife she said, "If I had a fly-swatter, I'd kill it."

Up to now, most of the U.S. space ventures have been with smaller satellites- the Explorer series- which weigh under 150 pounds and carry three or four instruments to study a single scientific space problem such as micrometeorites, or cosmic rays or solar flares.

But the more answers the Explorers returned from their investigations of space, the more questions they raised.

NASA conceived the OGO program to make a great many measurements of space phenomena at one time.

The first OGO will range 70,000 miles into space and then return to within 170 miles of Earth on each orbit.

NASA TO EVALUATE SITES FOR ELECTRONICS CENTER

Appointment of a committee to evaluate potential sites in the Greater Boston area for the recently approved Electronics Research Center has been announced by Dr. Hugh L. Dryden, Deputy Administrator of NASA.

The Center is being formed to give NASA the technical competence needed to establish within industry and universities an electronics research program needed for preeminence in space, and to provide project managers with technical support similar to that now available in other areas such as propulsion, aerodynamics and vehicle systems.

First task of the six-man Site Evaluation Committee will be to draw up a proposed plan for criteria and procedures to be used in carrying out the evaluation. Some of the factors to be considered by the Committee in developing criteria for the site include:

Proximity to educational institutions offering graduate courses at the doctorate level in electrical engineering and physics, and which have an environment of successful electronics research; proximity to industrial firms engaged in electronics research; engineering considerations affecting construction costs; and problems relating to electronics interference.

After the criteria have been formulated, the Committee will begin an evaluation of proposed sites leading to the preparation of a final report.

Members of the committee represent specialties in electronics research, administration and facilities planning. Col. R. P. Young, Executive Officer, NASA Headquarters, has been appointed Chairman of the group.

Other members are: Ralph E. Ulmer, Director, Review and Analysis, Office of Construction; Anthony Minichiello, Electronics Research Task Group, Office of Advanced Research and Technology; and Dr. John M. Walker, Chief, Communications and Tracking, OART, all from NASA Headquarters; Harold Crate, Head of Facilities and Models Branch, Langley Research Center, and James B. Cahalane, Assistant Director for Regional Development, NASA North Eastern Office, Cambridge, Mass., Secretary.

The committee will consider those potential sites in the Greater Boston area which have been proposed to NASA as well as any other sites in that area which, in its judgment, merit attention.

NASA GOLF LEAGUE

A meeting of the NASA Golf League will be held at 7:30 p.m. on April 13 in the Activities Building. All persons planning to play in the league are urged to attend. Those who are not members of a team will be placed on one. Golfers are also urged to keep their score cards for handicap purposes.

NASA also has a golf tournament running for the entire month of April. Players may play as often as they like. The one dollar fee should be given to Charlie Rayle and the score cards turned in to him at the end of each round. Prizes will be awarded for low gross, blind bogey and low number of putts.

WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4581 or 587-9023.

FOR SALE: 1963 Triumph TR-4. Miller, 838-2521.

JOINT DRIVE ENDS TODAY

The Center's Joint Fund Raising Campaign for the National Health Agencies and the Federal Service Joint Crusade ends today.

Joyce Anthony and Jean Elliott, co-chairmen of the drive, urge that employees give their contributions to the attendance clerks who in turn will send them to the division secretaries.

Included in the campaign are eight health agencies and four crusade agencies.

The health agencies include The Peninsula Heart Association, The Lower Peninsula Association for Mental Health, Inc., Muscular Dystrophy Association of America, Inc., The National Multiple Sclerosis Society, National Society for Crippled Children and Adults, The National Cystic Fibrosis Research Foundation, The National Society for the Prevention of Blindness, and The American Cancer Society.

The crusade 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.

Last year Center employees contributed a total of $3,576 to the health agencies and $1,444 to the joint crusades.

FOR SALE: By Credit Union. 1958 Oldsmobile 88, 2-door hardtop, power brakes and steering. Bids start at $450. Must sell by April 15. See Col. Pickens at West Area Credit Union Office.

SPRING CLEANING CAMPAIGN

Center officials have requested that all employees put forth a special effort to clean up their offices and facilities, both inside and out, before the 1964 NASA Field Inspection of Advanced Research and Technology which will be held at the Center during the week of May 18.

This spring cleaning campaign is in the interest of safer working conditions as well as improved appearance.

A group of Langley headquarters personnel inspected a number of facilities on April 3 and another general inspection will be conducted on May 1.

For removal of extra trash, employees may call M. E. Cook, 4772, or Murray Edwards, 4578.

Letters have also been sent to all construction contractors requesting their cooperation in this clean up campaign.

LOCAL ENGINEERS' CLUB

(Continued from page 1)

the 8th Annual Wright Brothers Lecture in Washington, D.C. in 1944. He shared the Collier Trophy for 1947 with then Major Charles E. Yeager, pilot of the X-1 on her historic first flight through the sound barrier, and Lawrence D. Bell, the builder of the X-1. Stack and his Langley associates were awarded the Collier Trophy again in 1951. Stack was only the third person in 41 years to win or share more than one Collier Trophy, which is awarded annually for the greatest achievement in aviation in America.

In October 1951 he was awarded the annual medal of the Swedish Society of Engineers at Stockholm and he won the Sylvanus Albert Reed Award for 1952 "for his leadership in the design, development, and practical operation of transonic wind tunnels."

On November 1, 1961, Stack was appointed Director of Aeronautical Research in the Office of Advanced Research and Technology at NASA Headquarters. On June 1, 1962 he accepted his present position with Republic Aviation.

The meeting will be preceded by a social hour at 6 p.m. and dinner at 6:30 at Holiday Inn on Mercury Boulevard. Those planning to attend should make reservations by calling D. J. Ball, CH 5-2014, or A. W. Carter, CH 5-6887, before noon on April 20.

ANNUAL EUROPEAN TOUR PLANS

The NASA Employees Association's Eighth Annual 30-day Tour of Europe will leave New York Kennedy International Airport on Monday August 31 for London and return from Paris on Tuesday, September 29.

The round trip economy jet air transportation is based on the new group airfare of a minimum of 25 travelling together, at the rate of $356 per person. All NASA employees, spouses, dependent children and parents are eligible.

The all-expense land tour will cover nine countries and cost $564 per person. The total fee for the air trip and land tour will be $920. Countries to be visited include England, Holland, Germany, Switzerland, Liechtenstein, Austria, Italy, Monaco and France.

There are extra special features included in the land tour price-- a theatre party in London, the Folies Bergeres in Paris, a steamer trip up the Rhine, and a visit to the enchanting Isle of Marken in Holland.

Persons planning to go on the tour need a valid passport (allow two weeks) and a smallpox vaccination within the past three years certified by the individual's local Board of Health.

A deposit of $100 is required with reservation. Application forms are available at the Langley Researcher Office, Building 587, telephone 2375.

SYNCHROCYCLOTRON PARTS

(Continued from page 1)

The second shipment includes the cyclotron's two main magnet coils, each of which are 24 feet in diameter and weigh 60 tons. Each coil contains nearly four miles of "wire"-- extruded rectangular aluminum tube 1-1/2 by 2 inches in cross-section with a three-quarter-inch hole through its center for circulation of cooling water.

The magnet coils are due to arrive in Newport News by barge later this month from the General Electric Company plant in Schenectady, N.Y., where they were fabricated, and be transferred to the laboratory by truck. Cost of the coils delivered to the NASA construction site is $617,000.

Catalytic Construction Company of Philadelphia, Pa., has a contract to assemble and put into operation the 600 million electron volt proton accelerator, two electron accelerators, proton and electron beam transport systems, and general controls and instrumentation. The Catalytic contract is for $5.8 million, which includes the cost of the magnet core and the two main magnet coils.

William M. Brobeck and Associates of Berkeley, California, a firm which specializes in the design of high-energy accelerators, is the engineering consultant to NASA to provide technical assistance in the establishment of the research facility. The firm has a contract for the engineering design of the cyclotron and associated laboratory equipment.

The Space Radiation Effects Laboratory building to house the synchrocyclotron, the laboratory and working areas, space for scientific and engineering offices, and areas for the two smaller particle accelerators is being built by the Basic Construction Company of Newport News.

The laboratory facility, located about ten miles north of the Langley Research Center, is scheduled to go into operation in mid-1965 to provide the NASA the means by which tests and fundamental studies can be made of the effect on spacecraft and their systems of the particle radiation streaming from the sun or trapped in the earth's magnetic field.

Plans call for the laboratory to be operated under contract to NASA by the Virginia Associated Research Center. This is a state organization established by the general assembly and comprised of representatives of the College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute, each of which conducts aerospace graduate study programs in cooperation with the Langley Center.

Langley and other organizations will utilize the laboratory to conduct research in basic problems associated with the space environment, and in engineering applications. The facility is expected to be a focal point for the expansion of graduate education programs in the high-energy physics and related fields.

WANTED: Passengers from Newmarket and Forest Park area to W.A. on 7:30 shift. King, 4691.

FOR SALE: 1964 Volkswagon, $1750. Bond, 868-9290.

NASA BOWLING LEAGUES

Tom Cats lead in Group A of the NASA Tenpin League with 70 wins and 38 losses. Top scores for the week were rolled by Paul Geiger with a 261 game and Harold Crane with a 683 set.

Misfits lead Group B with 77 wins and 31 losses. High scores were rolled by Pat Poslik with a 497 set and Aubrey Cary with a 567 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	70	39	Misfits	77	31
Unitary	67	41	Ten-Benders	69.5	38.5
Hornets	66	42	Dynamos	64	44
Alley Cats	62	46	Ranch House	63.5	44.5
Short Circuits	61.5	46.5	Latecomers	61.5	46.5
Phantoms	60.5	47.5	Cee Pees	59	49
Electronic Shop	59	49	Alley Oops	58	50
Crusaders	59	49	Hucksters	56	52
Johnnie's	56.5	51.5	Lunar Tics	56	52
Flight Eng.	56	52	Spare Parts	55.5	52.5
Devious	56	52	Barristers	55.5	52.5
Frame Ups	55	53	Sudz	55	53
Payloads	51	57	Gliders	51.5	56.5
Flyers	46.5	61.5	Greenhorns	46.5	61.5
Oddballs	46	62	Dillys	46	62
Pinwigglers	46	62	Question Marks	46	62
Malfunctions	44	64	Bowling Belles	44	64
A-OK's	42	66	Analogs	43.5	64.5
Spare Oops	41.5	66.5	Mets	37	71

Ten Spots lead the Duckpin League with 64 wins and 44 losses and Strike Outs trail in a close second with 63 wins and 45 losses. Top bowlers were Mary Carmines with a 112 game and 312 set and Al Insley with a 136 game and a 355 set.

Team	W	L	Team	W	L
Ten Spots	64	44	Pinpoppers	52	56
Strike Outs	63	45	Rebel Bombers	51	57
Lt. Mach. 1	60	48	Doodle Bugs	49	59
AMC	58	50	ACD	46	62
Lt. Mach. 2	57	51	Reentry	40	68

VACANCIES AT WALLOPS

Applications are being accepted for the positions of Aerospace Vehicle Systems Mechanic, WB-10, and Aerospace Ordnance Mechanic, WB-10, $2.94 per hour, at the NASA Wallops Station. No written test is required. Applicants will be rated on the quality of their experience and training. Full information and application forms may be obtained from the Langley Board of Examiners, telephone 4681.

WANTED: Fifth driver from Southampton area to W.A. on 8 shift. Maddalon, 4705.

WANTED: Alternate driver from Buckroe Shopping Center to W.A. on 8 shift. Ott, 4505.

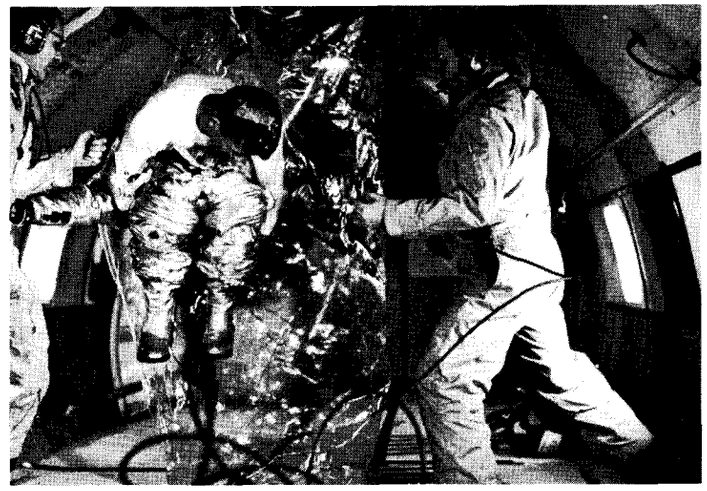
FOR SALE: 1957 Cadillac. Peterson, 851-3039.

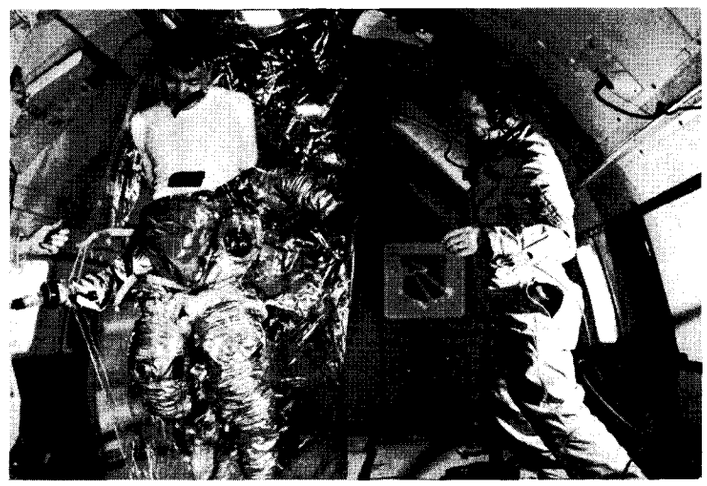
FOR SALE: 14-foot boat, twin cockpit, marine plywood-fiberglas construction, 35 hp motor - complete with factory trailer. Price $350. Hudgens, LY 6-1997.

FOR SALE: German Shephard pups. Stroup, 826-3018.

FOR SALE: 1957 Thunderbird. Wintcofski, Williamsburg 229-2031.

FOR SALE: 3-bedroom brick rancher located in Chesapeake Heights. Wikstrom, 40 Reynolds Dr.





The doff-and-don bag shown here is designed to protect Apollo astronauts in depressurization emergencies. It is being tested under airborne weightlessness by NASA and Air Force researchers at Wright-Patterson Air Force Base, Dayton, Ohio. Aim of the experiment is to develop a bag in which astronauts can move around and which can be pressurized even if the spacecraft loses pressurization. Fighting weightlessness in the plane and working in the tight confines of the bag, Lt. Edwin H. Sasaki dons the suit in two minutes. Test director keeps feet by pressuring downward from plane's ceiling. Plane achieves absence of gravity by flying in parabolic arcs.

CENTER HOST TO NATIONAL MEETING

(Continued from page 1)

at 9 a.m. with an NASA-USOE briefing presided over by James V. Bernardo, deputy director of NASA's division of educational programs and services.

Shelby Thompson, director of the NASA division of educational programs and services, will discuss the activities of his organization. USOE guidance services will be explained by Dr. Dolph Camp, chief of USOE's occupational career guidance section, and Dr. Don D. Twiford, chief of the guidance program development section of USOE. John E. Sims, NASA education programs manager, will preside at an NASA spacemobile lecture demonstration to be given by Lloyd E. Jones Jr., representing the Langley spacemobile office.

At a session at 1:30 p.m., a talk on "The Role of the State Guidance Director in the Space Age" will be given by Dr. Frank L. Sievers, director of USOE's guidance and counseling programs branch. This will be followed by a discussion by Bernardo of "The Relationship Between State Guidance Directors and NASA Center Educational Directors." Dr. Seamster will preside.

These talks will be followed from 2:45 to 5 with nine group sessions between NASA education directors from the Washington Headquarters, Langley, Northeastern Operations Office, Goddard Space Flight Center, Marshall Space Flight Center, Kennedy Space Flight Center, Lewis Research Center, Manned Spacecraft Center, Ames Research Center, and the Western Operations Office meeting with guidance directors from states in their areas. Langley educational specialists will meet with state guidance chiefs from Virginia, North Carolina, South Carolina, and Kentucky. Dr. Paul L. Gardner, NASA education programs manager, will direct the sessions.

The April 15 schedule will begin at the Chamberlin at 9 a.m. with a panel discussion on "Aerospace Manpower Needs and Projections." Panelists include Dr. Frank E. Wellman, specialist in USOE guidance and counseling programs, who will preside; Robert J. Lacklen, NASA director of personnel; Dr. T. Marshall Hahn Jr., president of Virginia Polytechnic Institute; and Welcome W. Bender, corporate director of research for The Martin Company, Baltimore.

There will be a second panel on the same subject at 11 a.m., with T. Melvin Butler, Langley assistant director for administration, serving as discussion leader. Panelists will be William H. McCreary, chief of the bureau of personnel services, state department of education, Sacramento, California; Dr. William B. Royster, coordinator of guidance services with the state department of education, Columbia, South Carolina; and Dr. William R. Van Zandt, director of guidance services with the state department of education, Jefferson, Missouri.

At 1:30 p.m., there will be a general meeting on "The Dimensions of Guidance Services in the Space Age." Moderator will be Dr. Frederick B. Tuttle, deputy director of NASA educational programs. Discussion leaders will include Dr. Stuart L. Seaton, aerospace technologist in Langley's instrument research division; Dr. Harold J. Reed, USOE specialist in career development; Dr. Carl McDaniels, American Personnel and Guidance Association, Washington, D.C.; and Bruce S. Shear, director of the division of pupil personnel services, state education department, Albany, New York. Dr. Mattison L. Story, NASA education programs manager, will be recorder for the session.

FROM MERCURY TO GEMINI-The first American in space, Alan B. Shepard, is being briefed on preparations for Project Gemini at Goddard Space Flight Center. Shepard, whose flight was part of Project Mercury, is training for Project Gemini. The equipment that sifted the Mercury tracking data will do the same for the Gemini flights. Briefing Shepard are Dr. Harry Goett (left), Director of Goddard, and James Donegan, head of the Center's manned space flight tracking data operations.

Special meetings between NASA Headquarters and center educational directors and between USOE personnel and state guidance directors beginning at 3 p.m. and to be coordinated by Hixon will round out the afternoon session.

At a dinner at Langley's activities building to be presided over by Dr. Floyd L. Thompson, there will be a talk on "Education and Manpower Needs in the Space Age," by Dr. Arthur L. Harris, USOE associate commissioner of education.

The concluding session April 16 will begin at 9 a.m. at the Chamberlin. Everett E. Collin, NASA education programs manager, will preside over a discussion by three Langley officials of "some ideas for elementary and secondary school educators concerned with the preparation of youth for careers in space science and technology." A question and answer period will follow the discussions.

Speaking on the subject from a scientist's view will be Dr. John E. Duberg, technical assistant to the associate director. The engineer's view will be given by Edwin C. Kilgore, chief of the flight vehicles and systems division; and the technician's view will be presented by William B. Mayo, chief of the mechanical services division.

"Langley's Employee Development Programs," which include graduate education, an advanced in-house training program, a cooperative college education program, and an apprentice training plan-- all designed to increase the NASA staff's capacity for service in the rapidly-advancing science of aeronautics and space-- will be discussed by Hixon, who heads these activities.

Following a summary of the conference by Bernardo and Dr. Sievers, the conference will adjourn.

Planning committee for the four-day meeting includes Dr. Seamster, conference chairman; Dr. Gardner, Hixon and Dr. Wellman, project directors; Dr. Camp, Collin, Dr. Tuttle, Dr. Sievers, and Richard C. Berne Jr., Langley spacemobile coordinator.

Langley Researcher

VOLUME 3, NUMBER 9 LANGLEY RESEARCH CENTER APRIL 24, 1964

NASA APPOINTS RAY W. HOOKER REPRESENTATIVE TO AUSTRALIA

Ray W. Hooker

Ray W. Hooker, Chief of Research Models and Facilities Division, has been appointed NASA's senior scientific representative in Australia. He will replace Edwin P. Hartman, who will return from Australia in June for a new assignment at NASA Headquarters in Washington, D.C.

Hooker's primary function in Australia will be liaison with the Department of Supply of the Commonwealth of Australia, the cooperating space agency which constructs, staffs and operates the NASA facilities.

Prior to his leaving for Melbourne in June, Hooker will have an orientation assignment in the Office of Tracking and Data Acquisition at NASA Headquarters.

Born January 3, 1906, in Boswell, Indiana, Hooker was graduated from Pine Village High School in Pine Village, Indiana, in 1924, and received his B.S. degree in Mechanical Engineering (Aeronautics) from Purdue University in 1929.

Hooker joined the Langley staff in February 1930 after working briefly as a design engineer at the Philadelphia Naval Shipyard. He has been engaged in the engineering design and construction of research equipment and facilities during his more than 34 years of Langley service.

In 1942, Hooker was placed in charge of Langley's Construction Section, heading the design and construction activities during the expansion of Langley's newest and largest research complex, the West Area. He became Assistant Chief of the Engineering Division in 1943.

He participated in the site selection and development from 1945 to 1947 of the Pilotless Aircraft Research Station, now NASA's Wallops Station.

He was in part responsible for planning the original Project Mercury station in Australia. As Langley co-manager of the Mercury network project in 1959, he helped develop the chain of manned space flight stations around the world.

In 1960 he was appointed Associate Chief of the Engineering Division and was named to his present position as Chief of the Research Models and Facilities Division in April 1962.

Hooker is a member of the American Institute of Aeronautics and Astronautics, the Engineers' Club of the Virginia Peninsula, the Langley Research Center Supervisors' Club, and the Hampton Roads German Club.

He has been active in civic affairs in Hampton and other

(Continued on page 3)

PROJECT FIRE SPACECRAFT LAUNCHED SUCCESSFULLY

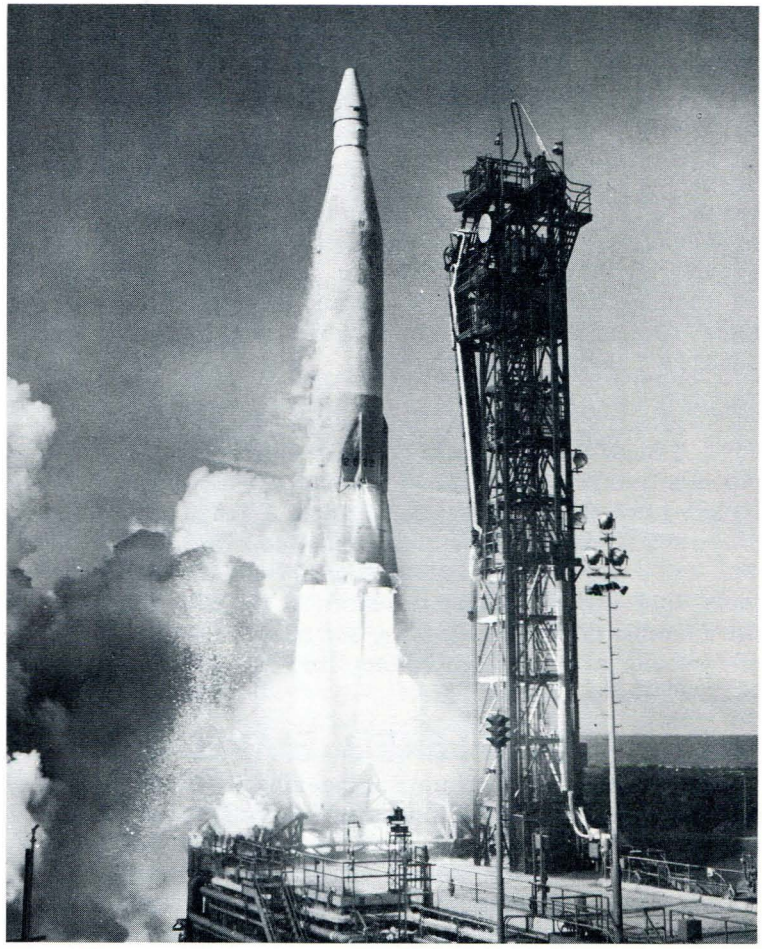
NASA launched a heavily-instrumented 200-pound Project FIRE spacecraft on a ballistic trajectory to gather scientific information on reentry heating from Cape Kennedy on April 14. The Atlas-D rocket blazed away at 4:42 p.m. to propel the Project FIRE payload on a high-arching path more than 500 miles in space.

Project FIRE is a project of Langley Research Center under over-all direction of NASA's Office of Advanced Research and Technology. Primary purpose was to obtain direct measurements of reentry heating at a speed of 25,000 mph, somewhat in excess of the velocity at which a vehicle enters the Earth's atmosphere after a journey to the Moon.

These measurements will form guideposts for the correct interpretation of research results obtained in laboratory facilities and in flight experiments at lower speeds.

The reentry spacecraft was a blunt-faced vehicle with a conical afterbody. It is similar to the shapes of manned

(Continued on page 3)



Thee 200-pound Project FIRE Spacecraft began its journey into space from Launch Complex 12, Cape Kennedy, Florida, at 4:42 p.m. EST, on Wednesday, April 14.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Making plans for a September wedding are Maryanne Routten, Security Section, and Reginald M. Holloway, Electrical Systems Division. . .Dan Cupid scored a victory when Patricia Anne Harrison, Analysis and Computation Division, and William Albert Corlett, Full-Scale Research Division, announced their plans to wed on May 31.

SYMPOSIUM. . .A Symposium on Gas Chromatography will be held tomorrow from 10 a.m. until 5 p.m. at the College of William and Mary. All interested persons are invited to attend. For further information contact George Sands, 4420.

ROD AND GUN CLUB. . .The Langley Rod and Gun Club will hold its monthly meeting on April 29 at 8 p.m. at the Base Small Arms Range Clubhouse. A film will be shown. All members are requested to attend.

SCRAP PAPER DRIVE. . .The Hampton Roads Jr. Chamber of Commerce will conduct its annual scrap paper drive on Sunday, May 3. Hampton and Newport News will be covered during the drive. Residents of both cities are requested to place bundled newspapers and magazines in front of their homes. For further information call Royce A. Toni, 2283, or Charles Woerner, 4840.

TENNIS NOTICE. . .The Activities Association has appointed a Tennis Committee to compile a directory of all employees interested in playing tennis. The directory will include the individual's name, NASA extension, home address and home telephone number. A copy of the directory will be sent to each contributing person. The committee feels that enough interest exists at the Center to merit the forming of a tennis ladder. Persons interested in tennis should contact, Arnold Mueller, 4521; John Gregory, 4671; or Dave Braski, 3439.

COURSE OFFERED EMPLOYEES

The University of Virginia Engineering Extension has approved a graduate credit course in AM 513, Energy Principles in Mechanics, to begin at the Langley Center on May 19. Dr. Robert E. Fulton will be the instructor.

Employees interested in enrolling in this course should call the Training Office, telephone 2326.

FOR SALE: 3-bedroom house in Todds Lane area. Rainey, 826-4118.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 27:

Monday - Puree of bean soup, pot roast of beef, grilled pork chops, stuffed pepper, franks and beans.

Tuesday - Cream of chicken soup, chopped steak with gravy, baked ham, chicken chow mein with rice or crisp noodles, chili dog, hot dog.

Wednesday - Vegetable-beef soup, roast ribs of beef, deep fried shrimp, grilled liver and onions, chili con carne.

Thursday - Cream of tomato soup, breaded veal cutlet, meat loaf, ham and macaroni casserole, cheese omelette.

Friday - Clam chowder, baked Smithfield ham, fried chicken, broiled halibut steak, seafood croquettes.

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

Monday - French onion soup with croutons and cheese, roast beef, chicken and dumplings, grilled ham slice, grilled cheese sandwich.

Tuesday - Tomato soup, chuckwagon steak with gravy, Polish sausage with corn fritters, liver and onions, barbecued sandwich.

Wednesday - Chicken-noodle soup, Spanish pot roast, Salisbury steak, fried chicken, baked hash.

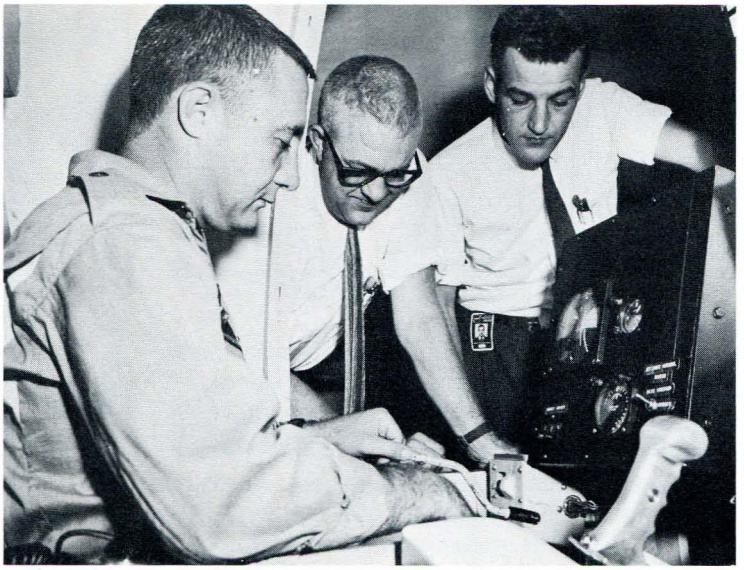
Thursday - Vegetable-beef soup, grilled rib eye steak, meat pot pie, spaghetti with meat sauce, fish cakes with cole slaw.

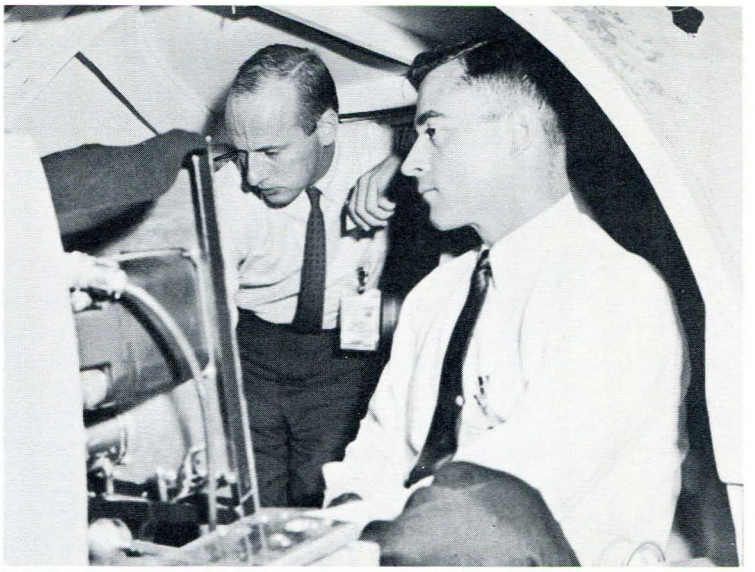
Friday - Clam chowder, roast beef, broiled halibut steak, fried fillet of flounder, hamburger.

APPRENTICE HONOR ROLL

Twenty apprentices completed the mid-term semester with an average of 97 or better. Members of the honor roll are:

William H. Clarke, Ira Q. Collier Jr., Billy G. Hughes, Warner W. Smith Jr., Charles A. Sweet, and Bobby G. Watson, all of General Electrical Service; Charles E. Cockrell, Research Projects and Models; Thomas G. Dudley, Thomas K. Lusby Jr., Cecil G. Phillips Jr., Wayne W. Rohrbach, and Frederick J. Rosensteel, all of Electronic Shop; Robert M. Ely, Unitary Tunnel; James F. Garvin, Light Machine Shop; Stephen Irick, Dynamic Model Shop; Thomas Pressley, Cyanogen Burner; John H. Soule and Leonard T. Twigg, Instrument Research Division; Charles M. Southall, Electrical Experiments and Development Section, and Dallas G. Summerfield, Model and Pliant Structures.





Virgil I. Grissom, the second American in space, and John W. Young, a former Navy test pilot, have been selected as the first crew to fly a Gemini spacecraft into orbit later this year. Grissom is shown in the photograph on the left during one of his visits to the Center. Explaining the Visual Docking Simulator to him are Byron Jaquet (center) and Donald Riley (left), both of Space Mechanics Division. In the photograph on the right Young (right) inspects the Visual Docking Simulator with Astronaut Charles Conrad. Backup pilots are Walter M. Schirra Jr. and Thomas P. Stafford.

PROJECT FIRE SPACECRAFT

(Continued from page 1)

spacecraft for which flight data at lower orbital reentry speeds (about 17,500 mph) have been gathered. In addition, large amounts of laboratory data has been collected on similar shapes.

A velocity package using the solid propellant Antares II rocket motor (also used as the third stage of the Scout launch vehicle) added the speed needed to drive the reentry payload back into the atmosphere at 25,000 mph. It was the first time a space payload had reentered at about the speed that will be encountered by a manned vehicle returning from the Moon.

As heat estimated at 20,000 degrees charred the vehicle, instruments in its interior radioed information to Ascension Island and to ships and planes stationed in the South Atlantic Ocean impact area off the west coast of Africa. Cameras and other optical devices recorded the meteor-like dive.

The maximum surface temperatures recorded during reentry on four Project Mercury manned orbital missions was about 11,000 degrees.

GODDARD ESSAY CONTEST

The opening of the Robert H. Goddard Historical Essay Award competition for 1964 has been announced by the National Rocket Club of Washington, D.C.

This annual nationwide competition, with a $200 prize, is open to any U.S. citizen and the entry deadline is November 1.

Essays may treat with any significant aspects of the historical development of rocketry and astronautics, and will be judged on their originality and scholarship.

Information on how to submit essays may be obtained from the Awards Program Office, telephone 2384.

FOR SALE: 1957 8 x 58 Marlette Mobile home. Block, 244-2991.

FOR SALE: 8-foot fiberglas dinghy. Hubbard, LY 6-7041.

AUSTRALIAN REPRESENTATIVE

(Continued from page 1)

communities in the Virginia Peninsula community. His favorite hobby is sailing, and in addition to being a member of numerous sailing societies, he is a member and former Commodore of the Hampton Yacht Club.

Hartman was the first senior scientific representative in Australia. He arrived there in March 1960 and is now completing his second 2-year tour.

He has represented NASA during the development of modern space communications, tracking and telemetry as exemplified by the scientific satellite, manned space flight, deep space and optical network ground stations in Australia, and during the construction of tracking and data acquisition facilities soon to become operational at Carnarvon and Canberra.

Hartman holds a degree of Master of Science in Mechanical Engineering from the California Institute of Technology. He is completing 34 years of NACA-NASA service.

ELECTION PLANNED APRIL 28

The Activities Association's annual election for District Representatives to the General Assembly will be held at the Center on Tuesday, April 28. No primary election will be held and representatives elected to the General Assembly will serve from July 1, 1964 to June 30, 1965.

The Center is divided into districts of approximately 70 to 100 employees and representatives will be elected by and from each district.

Voting shall be by secret ballot. Each employee may vote for one candidate from his district. In the larger districts where two representatives are to be elected, employees will vote for two candidates. Ballots will be placed in sealed ballot boxes and each employee shall sign a register upon casting his ballot.

There will be no voting by proxy and persons on leave lose their opportunity to vote.

HEALTH BENEFITS AMENDED

This is the first of two articles on questions and answers on the amendments to the Federal Employees Health Benefits Act of 1959 as approved by President Johnson on March 17, 1964.

Q. How will the recently enacted changes in the Federal Employees Health Benefits Act of 1959 affect Federal employees?

A. In general, the changes affect groups of employees rather than providing across-the-board liberalizations that affect all employees. Specifically the most important changes increase the Government contribution to family enrollments of women with nondependent husbands so that it is the same as for males; continue the health benefits coverage of unmarried children under family enrollments until age 21 instead of age 19; include unmarried foster children in family enrollments; consider all employees enrolled in the health benefits program by December 31, 1964, as having enrolled at their first opportunity, and permit enrolled employee to continue his coverage while receiving compensation from the Bureau of Employment Compensation regardless of when the illness of injury entitling him to such payment occurred.

Q. When are these changes effective?

A. Except for the increased Government contribution to women workers, they became effective on March 17, 1964, when they were signed into law by the President.

Q. What is the effective date for the increased Government contribution to women workers with nondependent husbands enrolled for self-and-family?

A. The first day of the pay period beginning on or after June 15, 1964.

Q. What do employees need to do to take advantage of these changes?

A. Generally speaking, enrolled employees need not take any action. However, unenrolled employees would have to enroll in a plan participating in the Federal Employees Health Benefits program. Also, employees enrolled for self-only might have to change to self-and-family enrollments.

Q. When will such an enrollment or change in enrollment be permitted?

A. Until June 30, 1964, eligible unenrolled employees have an opportunity to enroll in the program. Also, until June 30, all employees now enrolled for self-only may change to self-and-family enrollment, but only in the same plan and option. Any employee who wishes to enroll or change his enrollment should contact his employing office.

Q. Where do employees go to obtain information on enrolling or changing their enrollment?

A. To the Employee Services Section, Building 587.

Q. What effect does increasing the Government's contribution to the family enrollment of a woman with a nondependent husband have?

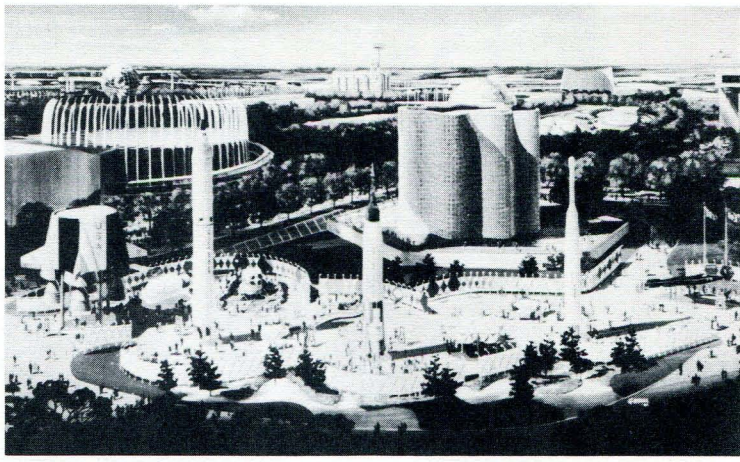
A. The amount withheld from the woman's salary for health benefits will, in most cases, be reduced from $6.76 to $3.94, or $2.82 a month ($1.30 biweekly).

Q. A woman employee with a nondependent husband is now enrolled for self-and-family. Does she need to take any action to obtain the increase in the Government contribution?

A. No. The adjustment in salary withholdings will be made automatically.

A. A woman employee with children and a nondependent husband is now enrolled for self-only. Would she need to change her enrollment to self-and-family in order to cover her husband and children?

A. Yes. Self-only enrollments cover only the employee. There is no change in the Government contribution to self-only enrollments.



The United States Space Park, sponsored jointly by NASA, the Department of Defense and the New York World's Fair, will include the most imposing array of full-scale Air Force and NASA rockets and spacecraft ever assembled outside of Cape Kennedy. Highlighting the Park will be a full-scale "boattail" section of the massive Saturn V rocket which will carry American astronauts to the Moon. The model will be 85 feet tall and 33 feet in diameter. Towering over the two-acre exhibit will be a Titan II-Gemini launch vehicle and spacecraft. The Titan II booster, 110 feet high, will stand vertically with the Gemini capsule mated on top just as it would be on the launch pad at Cape Kennedy. Surrounding Titan II-Gemini will be full-scale models of the Apollo Command and Service Modules, the Lunar Excursion Module, Gemini spacecraft and the actual Mercury capsule which carried Astronaut Scott Carpenter during the second U.S. manned orbital flight. Other full-scale exhibits in the Park will be the Atlas-Mercury and Thor Delta launch vehicles, an X-15 rocket-powered research airplace and the Agena space vehicle.

NATIONAL SPACE MEETING

A two-day National Space Meeting, sponsored by the Institute of Navigation, will be held at the Port-O-Call Inn, St. Petersburg, Florida, April 30 and May 1. Thursday, April 30 has been designated as Manned Space Flight Day and Friday, May 1 as Unmanned Space Flight Day.

Dr. Robert C. Seamans Jr., Associate Administrator, NASA, will be the banquet speaker on Thursday evening. His subject will be "The NASA Program."

The Institute of Navigation was founded in 1945 in order to establish a common meeting ground for all those who are professionally concerned with or who are otherwise interested in the science and art of navigation or related sciences, operations, or business.

WANTED: Ride from Pine Chapel Village to W.A. on 8 shift. Deel, 4687.

WANTED: Ride or driving combination from Holly Court to W.A. on 7:30 shift. Krodel, 4515.

WANTED: Softball players to form team for NASA League. Jim Mullins, 4840.

EXPLORER IX REENTERS ATMOSPHERE AND BURNS

NASA reports that Explorer IX reentered the dense lower atmosphere and burned up April 9 after more than three years in space.

Explorer IX was developed under direction of the Langley Research Center with William J. O'Sullivan Jr., as project ject scientist and Claude W. Coffee Jr. as project engineer.

Explorer IX was NASA's most effective satellite for measuring atmosphere density and temperature. These measurements were made by noting the effects of atmospheric drag on its orbit.

The lightweight, 12-foot-diameter balloon paid scientists an extra dividend starting December 19, 1963 when a similar inflated sphere, Explorer XIX, was put in orbit to determine sources of atmospheric heating by comparing measurements between the two satellites.

Explorer IX, launched February 16, 1961 from Wallops Station, traveled more than 340 million miles during its 14,000 orbits of the Earth. It was the first satellite put in orbit by a solid-fuel launch vehicle - the four-stage Scout- and the first satellite launched at Wallops.

Orbited as an air density experiment, the satellite has given scientists a better understanding of upper atmosphere characteristics by providing information that confirmed and refined earlier theories. It determined more precisely the relationships between air density and solar radiations. Information obtained also may be used for predicting more accurately the orbital life of future satellites and spacecraft.

The 14.6 pound balloon itself, served as the measuring instrument as it responded to the drag of the rarified atmosphere at altitudes of several hundred miles. It was about 100 times more sensitive to this resistance than all other satellites except Echo.

Atmospheric density is computed from drag effects on satellites mainly at perigee, the orbital point nearest the Earth.

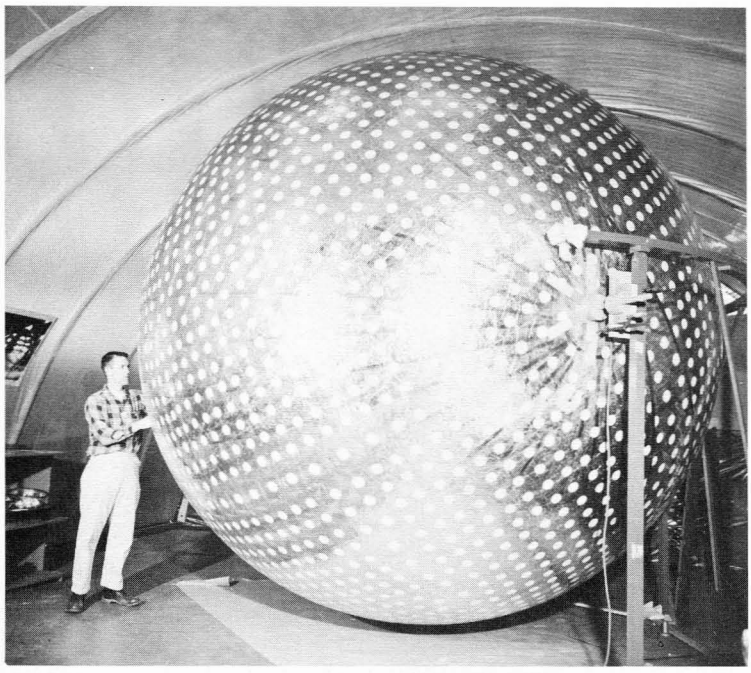
Solar radiation is the major heating source of the Earth's upper atmosphere. However, charged energetic particles-protons and electrons-also contribute to this heating. They mainly enter the auroral and polar regions of the atmosphere because of the way the Earth's magnetic field channels them.

Explorer XIX's eccentric orbit is inclined to the equator at an angle of 79.5 degrees. During the polar winter its perigee traversed the polar region and reached North Latitude 78.6 degrees by the end of January. While Explorer XIX's perigee moved through the North Pole region, density measurements in the equatorial region were obtained at the same time by tracking Explorer IX.

By correlating the simultaneous data from the two satellites, scientists were able to evaluate the effects of heating in high northern latitudes that was due to the energetic particles and other phenomena.

Scientists at the Langley Center and the Smithsonian Astrophysical Observatory analyzed the orbital changes. These were calculated from optical tracking data obtained by a worldwide network of SAO-operated Baker-Nunn satellite tracking cameras and volunteer Moonwatch teams.

FOR SALE: Six meter transceiver. Aldridge, 723-9209.



A 12-foot-diameter inflatable spherical satellite, similar to Explorer IX which reentered the atmosphere and burned up April 9, is inspected by a technician at Langley, where the vehicle was designed and fabricated.

DR. DEFRANCE HONORED

Dr. Smith J. DeFrance, former Langley employee and now director of the Ames Research Center, has been named to receive the 1964 Career Service Award of the National Civil Service League, a non-government organization dedicated to improving public administration.

Dr. DeFrance, a combat pilot and flight commander in the first World War, was recommended for the award on the basis of his 43-year career as an outstanding administrator and leader of aeronautical and space research. He has been director of the Ames Center since 1940.

The career of the Battle Creek, Michigan, native has ranged from directing studies of airflow on dirigibles to managing scientific teams that have placed solar wind experiments aboard scientific satellites. He is an internationally-known authority on the design and operation of certain aerodynamic testing facilities.

In 1947 Dr. DeFrance received the Presidential Medal of Merit for his success in organizing and directing the work of the Ames Center.

Prior to his assignment to Ames, he was engaged in aeronautical research at the Langley Research Center where he designed and supervised construction of a 30-by-60-foot, full-scale wind tunnel, the largest ever attempted up to that time.

Dr. DeFrance received his award at the League's 10th annual presentation dinner at Washington's Sheraton Park Hotel. The League, founded in 1881, makes the awards to encourage and recognize "quality in the public service."

LOST: G.E. Fluxmeter, Inventory No. 42183. Veryzer, 4691.

WANTED: Ride or driving combination from 51st St. and Huntington Ave. to W.A. on 7:30 shift. Ficklen, 4845.

LOST: "Molecular Series of Gases and Liquids" by Hirschfelder, Curtiss, and Bird, Bertram, 4861.

MAY 1 PROCLAIMED LAW DAY

President Lyndon B. Johnson has issued the following proclamation declaring May 1 as Law Day, U.S.A.-1964.

"In setting aside the first day of May in each year as Law Day, U.S.A., the Congress of the United States called upon the American people to rededicate themselves to the ideals of equality and justice under law in their relations with each other and with other nations, and to cultivate 'that respect for law that is so vital to the democratic way of life.'

"The educational objectives of Law Day, U.S.A., are of fundamental importance to our Nation. Respect for law is the condition upon which our whole social order depends. Observance of the law is essential to public order and to the strengthening of the individual rights of our citizens. A viable democracy requires understanding of the nature and basis of our freedoms and recognition of the individual responsibilities which those freedoms impose.

"Bringing a fuller awareness of these truths to all citizens, and particularly to young Americans, is the central purpose of the seventh annual Law Day, U.S.A., on May 1, 1964. The theme of 'Observe the Law - Key to Order, Justice, Freedom,' will serve as a timely reminder that the basic values of our system can be maintained only through voluntary adherence to the rule of law in our daily lives.

"NOW, THEREFORE, I, LYNDON B. JOHNSON, President of the United States of America, do hereby request the people of our country to give recognition and support to the nationwide observance of Law Day, U.S.A., on the first day of May 1964. I urge that our schools, courts, churches, bar associations, service organizations, and the media of public information join in this constructive educational effort. Further, I call upon all public officials to display the Nation's flag on public buildings on that day as requested by the Congress."

MEDICAL PANEL PLANS VISIT

A panel from the Medical College of Virginia will visit the Center on April 29 and will talk with interested employees at 9:30 a.m. in Room 219, Building 587.

Members of the panel will include Dr. Ebbe C. Hoff, Dean of the Graduate School; Dr. Charles H. Hockman, Assistant Professor, Division of Psychology Research; Dr. Robert H. Brownson, Associate Professor, Department of Anatomy; Dr. Fearghus O'Foghludha, Associate Professor, Radiation Physics; Dr. Don Ridgeway, Associate Professor, Department of Biophysics; Dr. Richard G. Lester, Chairman, Department of Radiology; Dr. Ernst G. Huf, Resident Professor of Physiology, and Dr. Joseph F. Borzelleca, Assistant Professor, Department of Pharmacology.

Dr. Hockman will discuss the roll of the engineer in biomedical science and will outline a graduate program in bio-medical engineering which would be under the auspices of a graduate committee made up of members of NASA and the Medical College of Virginia.

All interested employees are invited to attend the meeting.

FOR SALE: 26-inch deluxe bicycle - $25, guitar and base $25, boy's shoe skates, size 5 - $4. Howell, CH 5-6698.

FOR SALE: 1950 Chevrolet, 4-door sedan - $125, also 3/4 acre waterfront property on Chickahominy River - $2950. Lindsay, 596-0280.

NASA BOWLING LEAGUES

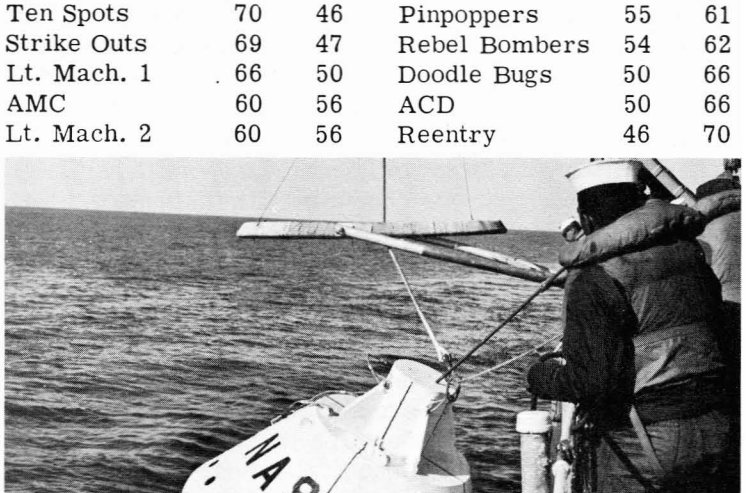
Tom Cats lead Group A in the NASA Tenpin League with 74 wins and 42 losses. Top scores were rolled by Jerry Miertschin with a 265 game and Lyles Adair with a 659 set.

Misfits lead Group B with 80 wins and 32 losses. Top bowlers for the week were Richard Wilmuth with a 259 game and 715 set, Annabelle Watts with a 235 game, and Peggy Mayo with a 235 game and 648 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	74	42	Misfits	80	32
Unitary	70	46	Ten-Benders	73.5	38.5
Hornets	69	47	Ranch House	64.5	47.5
Phantoms	67.5	48.5	Dynamos	64	48
Short Circuits	67.5	48.5	Latecomers	62.5	49.5
Electronic Shop	67	49	Cee Pees	60	52
Alley Cats	64	52	Alley Oops	59	53
Flight Eng.	62	54	Barristers	58.5	53.5
Devious	61	55	Lunar-Tics	58	54
Crusaders	61	55	Sudz	57	55
Johnnie's	60.5	55.5	Hucksters	56	56
Frame Ups	58	58	Spare Parts	55.5	56.5
Payloads	56	60	Gliders	55.5	56.5
Flyers	51.5	64.5	Greenhorns	49.5	62.5
Malfunctions	50	66	Dillys	49	63
Pinwigglers	49	67	Bowling Belles	48	64
Oddballs	48	68	Question Marks	47	65
A-OK's	45	71	Analogs	46.5	65.5
Spare Oops	42.5	73.5	Mets	38	74
Galaxies	36.5	79.5	Moonlighters	36	76

Ten Spots still lead in the NASA Duckpin League with 70 wins and 46 losses and Strike Outs trail in second by a one-game margin. High scores were rolled by John Moore with a 149 game, John Dupere with a 365 set and Helen Dupere with a 132 game and 361 set.

Ten Spots	70	46	Pinpoppers	55	61
Strike Outs	69	47	Rebel Bombers	54	62
Lt. Mach. 1	66	50	Doodle Bugs	50	66
AMC	60	56	ACD	50	66
Lt. Mach. 2	60	56	Reentry	46	70



Sailor on a destroyer prepares to haul aboard a model of the Apollo spacecraft in a retrieval exercise off the Virginia coast. Being tested is one of two new cranes developed by NASA for picking up Apollo capsules as they land in the sea upon return from space.

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.

RAM SPACECRAFT LAUNCHED

NASA recently launched a 250-pound instrumented RAM (Radio Attenuation Measurement) spacecraft on a suborbital flight from Wallops Island.

The payload, which was built at Langley Research Center, was flown on a three-stage solid fuel rocket system. The experiment is one of a series being carried out under the direction of the Langley Center for NASA's Office of Advanced Research and Technology to investigate the radio blackout which occurs when a spacecraft reenters the Earth's atmosphere at high velocity.

Preliminary data indicate that the vehicle and payload performed satisfactorily. The flight lasted about 10 minutes and impact occurred approximately 650 miles east of Bermuda.

Flight measurements were telemetered to ground receiving stations at Wallops, Langley Center, Bermuda, Coquina Beach, N.C., and a downrange ship. These data will be reduced and analyzed at Langley.

The Langley Project Manager is Theo E. Sims. Robert J. Keynton is the Langley Project Engineer and William L. Grantham is Experiment Engineer. Robert T. Duffy, Assistant Chief of Wallops Station's Flight Test Division, was Test Director for the flight. Joseph R. Duke was the Wallops Project Engineer, responsible for coordinating prelaunch, launch, and tracking operations.

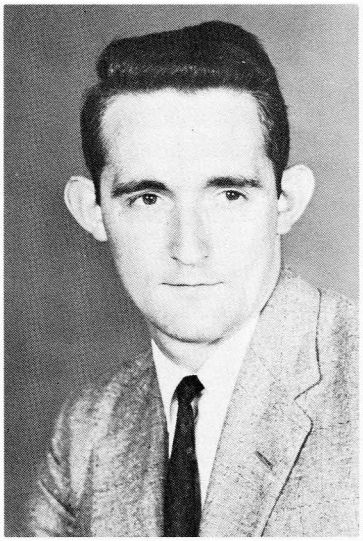
NASA GOLF LEAGUE

The NASA Golf Tournament for the month of April is still in progress and five prizes will be awarded for low scores, five for blind bogeys, and five for low putts.

Frank Lawrence, West Fabrication Shop, has been elected president of the NASA Golf League. Anyone desiring to play in the league may contact Lawrence at 4489 or Mail Stop 216.

FOR SALE: Girl's 20-inch bicycle and large doll carriage. Lichtenstein, 596-8484.

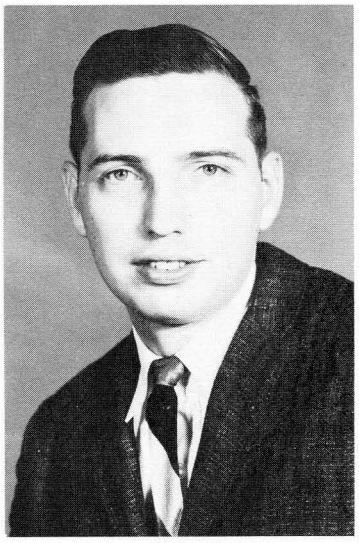
FOR SALE: 3-bedroom house near Langley. Deveikis, 723-0315.



John F. Newcomb

John C. Spence

Margaret N. Mills



Larry D. Pinson

FOUR RECEIVE CASH AWARDS

Four staff members recently received letters of commendation and cash awards from the Langley Incentive Awards Committee.

John F. Newcomb, Applied Materials and Physics Division, received a Special Service Award and Sustained Superior Performance Awards were presented to John C. Spence, Electrical Systems Division, Margaret N. Mills, MORL Section, and Larry D. Pinson, Dynamic Loads Division.

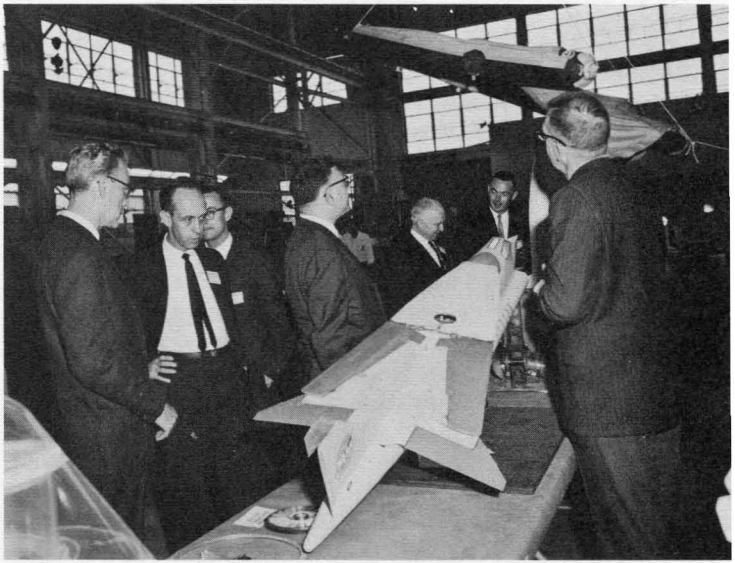
The citations read as follows:

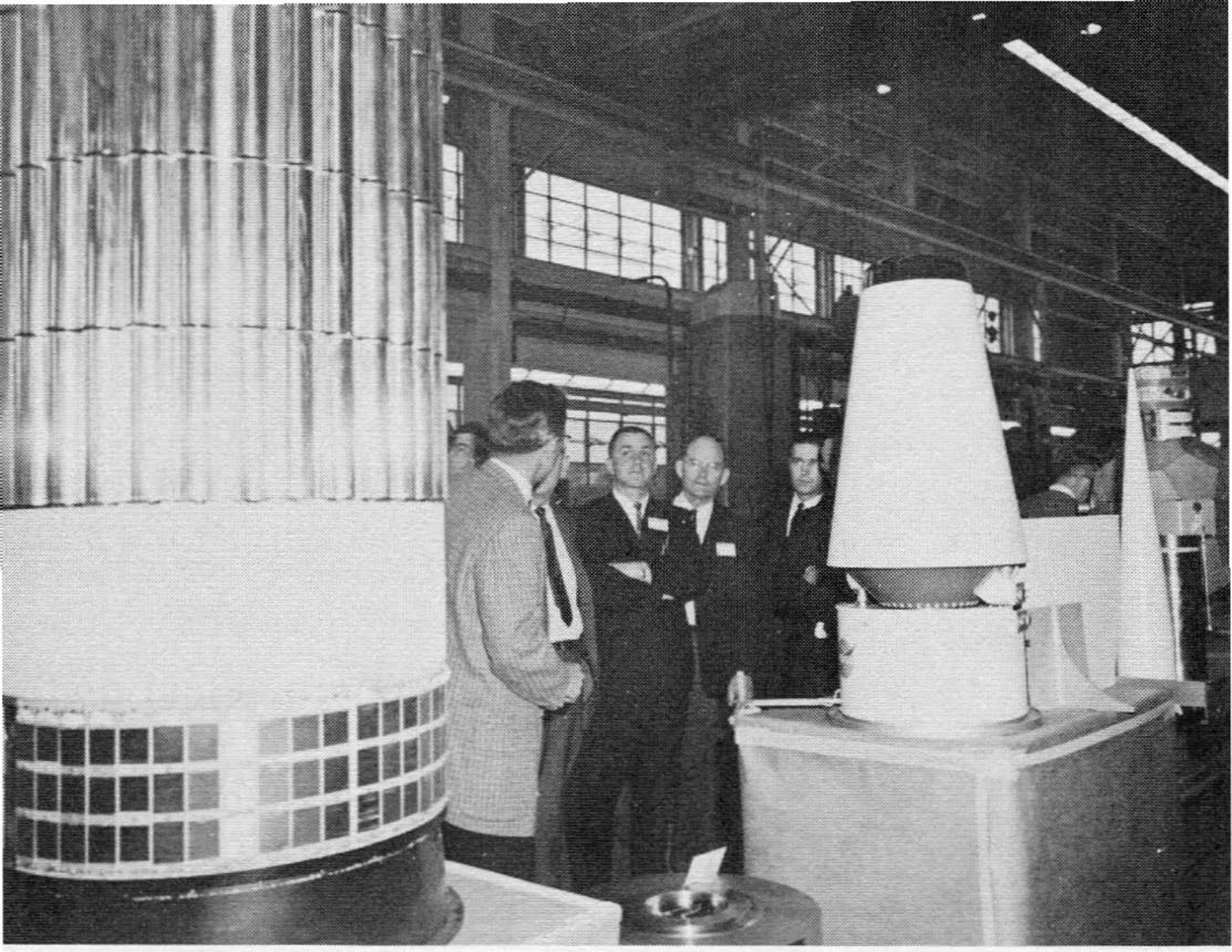
Newcomb - "For the outstanding and highly original method of a spinning lunar orbital vehicle."

Spence - "For the high-quality and high-quantity performance of his assigned duties in the maintenance of facilities lighting systems and for his conscientious and cooperative attitude."

Mrs. Mills - "For her outstanding performance in executing administrative duties, both assigned and assumed, throughout the inception and operation of the Manned Orbital Laboratory Studies Office."

Pinson - "For outstanding initiative and performance while carrying out analyses of launch vehicle structural dynamic problems."





Upper left photo - Dr. Floyd L. Thompson, Director, wel-
comes visitors to the Center for a four-day national con-
ference on educational guidance in the space age. The con-
ference was held April 13-16. Upper right photo - William
B. Mayo (left), Chief of Mechanical Service Division, ex-
plains a model in the West Machine Shop to a group o
visitors. Center left photo - The group toured the Luna

Landing Research Facility and also viewed the Lunar Lan
ing Research Vehicle shown in the center right photograp
Lower left - Included on the tour was a display of a nun
ber of research vehicles. Lower right - Assisting visit

Langley Researcher

VOLUME 3, NUMBER 10 LANGLEY RESEARCH CENTER MAY 8, 1964

LANGLEY BEGINNING RESEARCH PROGRAM ON LOW LANDING SPEED JET TRANSPORT

A large jet transport typical of modern high speed commercial airliners will soon begin a flight research program at the Langley Research Center to find ways to lower the landing and take-off distances required by modern jets. A specially-equipped Boeing 707 recently flew from its Renton Airport, Seattle, home base to Langley Center.

The slow-landing airplane, the prototype of the current 707 series of Boeing jetliners, once set a Seattle-to-Baltimore transcontinental speed record. Now it has been specially equipped and modified for slow flying experiments below its normal stalling speed. It will be used in NASA's aeronautical research program to determine ways to solve problems of landing and approach with very large, heavy aircraft of the jet transport class.

Boeing at its own expense has equipped the airplane with special large wing flaps, a boundary layer control (BLC) system, a thrust modulating system, and a mass of instruments to measure its flight capabilities.

Langley research pilots and engineers, working in a program with NASA's Office of Advanced Research and Technology, will study the performance and handling characteristics of the slow-flying aircraft in a systematic research program expected to take about three months. In preliminary tests, the airplane has been flown at speeds well below 100 mph on approach to landing and has touched down on the runway at 90 mph. In one experimental flight, Boeing engineers report, flying speed was reduced to 75 mph before the airplane stalled. Normal speeds for the 707 are 150 mph on approach and 135 mph at touchdown.

Information gained from the slow-flight studies can be applied to designs and improvements in other aircraft of

(Continued on page 6)

This specially-equipped Boeing 707 jet transport, which will be used in an NASA flight research program, arrived at the Langley Research Center April 26. Shown in the foreground are Robert W. Sommer (left), Project Pilot, and Robert O. Schade, Project Manager. --Photo by Nye

HOWE APPOINTED CHAIRMAN OF SAVINGS BOND CAMPAIGN

Edward A. Howe

Edward A. Howe, Chief of Fiscal Division, has been appointed Chairman of the Center's 1964 U.S. Savings Bond Campaign. Using the theme- Operation Security- the drive has the full support of Center officials and each division chief has appointed a division representative who in turn will designate solicitors. The solicitors will concentrate their efforts on signing up non-participants.

The Activities Association is also backing this drive. The Executive Board will purchase a $25 bond to give to some lucky person who either signs up or increases his allotment during the two-week campaign period which starts today and ends May 22. Employees may sign up now and defer the making of deductions for as long as four pay periods and still be eligible for participation in the Activities Association's Sweepstakes.

In supporting the bond effort, Dr. Floyd L. Thompson, Director, stated:

"Operation Security is the title assigned to the 1964 U.S. Savings Bond Campaign which is being conducted on a Government-Wide basis during the month of May.

"For a number of years, Langley has led the other NASA installations in percentage of participation. It is my sincere hope that we will maintain this leadership. It would be a source of great pride if we were able to attain the 90 per cent participation required for the Treasury Department's coveted Treasury E Flag.

"I would like to encourage all employees who are not currently participants in the Savings Bond program to sign up during this drive and thereby help yourself while you help your country."

Howe declared, "Yes, I am enthusiastic about the payroll savings plan. It is a source of real satisfaction that by participating we are helping the Langley Center to be a leader, are helping our country and obtaining all the other benefits which bonds offer.

"I accepted the appointment as campaign chairman for Operation Security with real pleasure because I am a firm believer in the many benefits of this systematic savings plan. I have been a participant of the plan from my first day on duty and know from personal experience how beneficial it has been for my family. I have used bonds for many of the suggested purposes such as paying large insurance

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDING. . .Wedding bells rang on April 25 when Walter L. Head Jr., Structures Research Division, and Elizabeth Ann Violette, formerly of Structures Research, took their final vows. Jean Drummond, Security Section, was matron-of-honor and Jean Morris, Analysis and Computation Division, was a bridesmaid. Ushers were Thomas Campbell, Instrument Research, and Jerry Deaton and Phillip Shore, Structures Research. Kay Koontz, Analysis and Computation, was organist.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on May 12 from 3 p.m. until 4. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on May 20 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

GUIDE BOOKS. . .The Activities Association has a limited number of Guide Books to the World's Fair on sale for one dollar each. The books may be purchased at the Activities Building.

ENGAGEMENTS. . .Craig Collins, Flight Vehicles and Systems Division, is engaged to Mary Elizabeth Sherman of Augusta, Georgia. The wedding will take place this month. . .Making plans to desert the bachelor ranks is Grover Clark Collie, Mechanical Service Division. He is engaged to June Carolyn Veneris of Hampton. No definite date has been announced for the wedding.

INVENTORY NOTICE

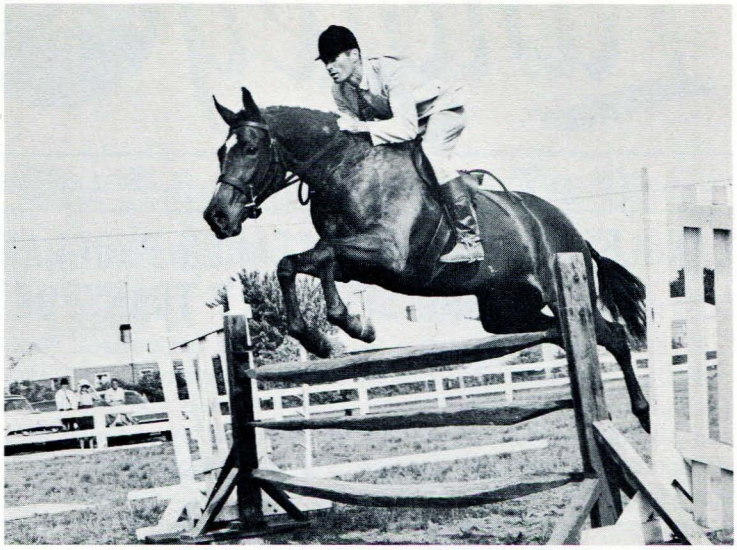
Procurement Division personnel will conduct the annual inventory of all stores stock starting on May 19 through May 22. The stock issuing rooms in the Warehouse Building and Instrument Research Laboratory will be closed on these days.

Supervisors are requested to procure in advance such materials as will be required for their work operations during this period.

Should emergencies arise, additional supply items may be procured during the period the stockrooms are closed by applying directly to the Head of the Stores Branch.

FOR SALE: 1958 Ford Fairlane 500 - $550. Synder, 826-0083.

FOR RENT: Unfurnished apartment in Blacksburg for summer. Lamar, 410-F Harding Ave., Blacksburg.



Pete Stack, Instrument Research Division, is shown riding Perehelion. Pete and his horse will take part in the annual Spring Horse and Pony Show sponsored by the James River Hunt, Inc., on May 16 and 17 at the Hunt Grounds on Todds Lane. There will be classes for green and working hunter horses and green, novice and working ponies. There will also be some pleasure horse and pony classes. Performances will be held throughout Saturday, including Saturday evening. The show on Sunday will start at noon. Christopher Wadsworth of Holicong, Pa., will be judge for the show. Admission is one dollar for adults, 50 cents for children over 12, and children under 12 will be admitted free. Employees who will participate in the show are Ray Kenney, Planning; Connie Parker, IRD: L. T. Parker, Unitary; Payne Parker, Dynamic Vehicles; Charlotte Phillips, Office of Patent Counsel, and Ernest Phillips, Schedules and Analysis.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 11:

Monday - Puree of bean soup, roast veal with dressing, grilled pork chops, fried chicken livers, beef ravioli.

Tuesday - Vegetable-beef soup, Spanish pot roast, deep-fried scallops with tartar sauce, stuffed pepper, Welch rabbit on toast.

Wednesday - Cream of chicken soup, Swiss steak, corned beef and cabbage, fried chicken, Austrian ravioli.

Thursday - Cream of tomato soup, grilled rib eye steak, shrimp Newburg, smoked pork sausage with applesauce, baked hash.

Friday - Clam chowder, roast ribs of beef, broiled fish fillet, fried fillet of flounder, foot-long hot dog with chili or cole slaw.

The menu for the week of May 18 is as follows:

Monday - Vegetable-beef soup, pot roast of beef, breaded veal cutlet, baked ham, barbecued sandwich.

Tuesday - Tomato-rice soup, half-pound chopped steak, meat pot pie, spaghetti with meat sauce, chili con carne,

Wednesday - Minestrone soup, roast beef, stuffed flounder, liver and onions, meatless ravioli.

Thursday - Chicken-noodle soup, grilled rib eye steak, Polish sausage with sauerkraut, fried chicken, macaroni and wieners.

Friday - Clam chowder, baked Smithfield ham, chopped steak with gravy, broiled fillet of flounder, fish cakes.

DR. THOMPSON MEETS WITH COST REDUCTION MONITORS

The Center's Cost Reduction Committee and Division Cost Reduction Monitors met with Dr. Floyd L. Thompson on April 24. Dr. Thompson discussed Langley's current economy practices and asked the Division Monitors to continue reviewing expenditures and operating procedures in their work areas to meet President Johnson's economy directives." The Director warned, however, that "we must not lose sight of the Center's objectives in saving, but we should be astute in the ways in which we save and should not sacrifice quality for dollar savings. We should have as a goal the expenditure of funds in a manner which assists us in meeting our objectives in the most effective and economic manner."

In response to comments concerning the insignificant value of some cost reduction efforts recently published by government, Dr. Thompson said "the appearance of cost consciousness by even small acts established and maintains an atmosphere which encourages economy."

Following Dr. Thompson's comments, T. Melvin Butler, Assistant Director for Administration, reviewed both NASA's and Langley's cost reduction programs. Butler discussed the responses to letters originated by NASA to contractors asking for their suggestions for reducing cost both in their own operations and in ways in which NASA in contractual work with them could effect greater economies. Butler also reported on action taken by Langley's Cost Reduction Committee to review specific types of expenditures at the Center such as taxi service, automobile rentals, electric power consumption, property utilization, etc.

Elizabeth Johnston, Classification Section, presented the value of manpower utilization in reducing costs and introduced types of personnel utilization currently employed at Langley which can be effectively documented in support of cost reduction.

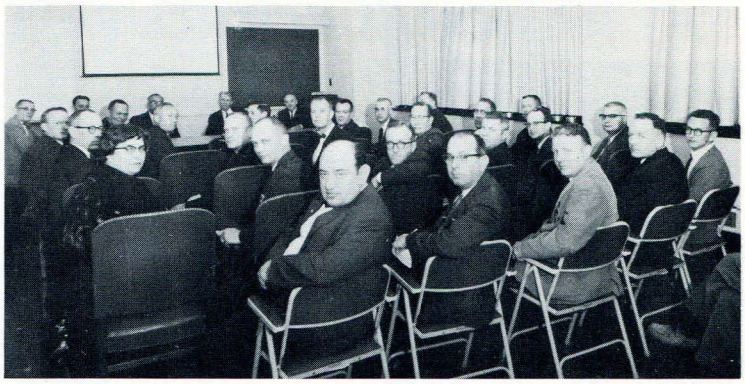
Jess G. Ross, Awards Program Officer, presented remarks concerning Incentive Awards and their supporting role in encouraging suggestions and high quality job performance to effect greater economies.

Anshel Neihouse, Staff Assistant for the Center's Cost Control and Reduction Program, introduced the Division Monitors on Efficiency and Cost Reduction. Representatives appointed include:

Administrative Services - Edward T. Maher, Chairman; Glen Ford, Administrative Services; John Munick, Procurement; Sid Parker, Fiscal; Fred Rector, Photographic, and Jess Ross, Personnel.

Engineering and Technical Services - Marvin Forrest, Chairman; Baxter Carr, Flight Vehicles and Systems; Mark Cole, Electrical Systems; Harold Crate, Research Models and Facilities; Dale Emswiler, Plant Maintenance, and Roland Tully, Mechanical Service.

Research and Projects - Anshal Neihouse, Chairman; Blake Corson, Full-Scale Research; William Craig, Instrument Research; Frank Hoban, Applied Materials and Physics; Abe Leiss, Scout Project; Joe Martin, Dynamic Loads; Sid Pauls, MORL; Roger Peters, Structures Research; Elmer Smith, Analysis and Computation; Dave Spence, Lunar Orbiter Project; Dave Stone, Flight Reentry Programs; Irvin Turner, Aero-Physics; Tom Vogelwede, Flight Mechanics and Technology; Phil Weatherwax, Research Reports, and Jim Whitten, Space Mechanics.



Division Cost Reduction Monitors recently met with Dr. Floyd L. Thompson, Director, to discuss the Center's current economy practices.

LRC SCHEDULES ADVANCED RESEARCH FIELD INSPECTION AND OPEN HOUSE

A detailed review of recent accomplishments in advanced aeronautical and space research by NASA will be held at the Langley Research Center during the week of May 18 through 22.

Two thousand management leaders in the aerospace industry, representatives of the Congress and the Federal government, educators, civic officials, and others concerned with NASA activities will attend a Field Inspection of Advanced Research and Technology at the Center.

The 400 guests who will attend the Field Inspection on each of the five days, will receive first-hand accounts by NASA scientists of research being conducted by the Centers.

Among the research activities to be discussed will be low speed flight, aircraft operating problems, space flight simulation, innovations in instrumentation and data handling, specialized computing techniques, launch vehicle and spacecraft dynamics, structures and materials, hypersonic flight and reentry problems, magnetoplasmadynamics, and space environment investigations.

On Saturday, May 23, the Langley Research Center will hold an Open House for citizens of Virginia and nearby areas who have expressed a continuing and growing interest in NASA activities. Specially-prepared exhibits and other items of interest which will form part of the Field Inspection of Advanced Research and Technology, will be open to the general public on that day from 10 a.m. to 4 p.m.

FOR RENT: Room for gentleman. Brandt, LY 6-1835.

FOR SALE: 9 x 12 wool rug and pad. McLaughlin, PA - 25447.

FOR SALE: 1951 Plymouth station wagon, 2-door - $75. Singleton, PA 3-3735.

FOR SALE: 40-inch Westinghouse electric range - $35, 42-gallon glass lined hot water tank, $45. Wilson, LY50196.

FOR SALE: 1961 Volkswagon. Oliver, 642-4431.

FOR RENT: Room for gentleman. Wornham, 826-0128.

FOR SALE: House furniture including child's yard swing. Haynes, PA 2-4165.

FOR SALE: Girl's 26-inch bicycle with balloon tires, also G.E. floor waxer. Pierpont, 723-2121.

FOR SALE: 1957 Volkswagon. Miller, 826-5517.

FOR SALE: Set of left-hand golf clubs, 2-9 irons, 1-3 woods. Roach, 877-1531.

MATTSON REPRESENTS NASA AT NATIONAL SCIENCE FAIR

Axel T. Mattson

Axel T. Mattson, research assistant for manned spacecraft projects at Langley Center, is representing the NASA as a judge at the 15th National Science Fair-International in Baltimore. The fair opened May 6 and closes tomorrow.

Mattson a graduate of N.C. State College with a B.S. degree in Mechanical Engineering and an aerospace scientists on the Langley staff for 23 years, will select winners of NASA honors at the fair-- the goal of aspiring youth who develop and exhibit experiments, collections, and hobbies based on scientific principles.

NASA will select two finalists in each of six NASA awards categories, including aerodynamics and space flight, space vehicles, space flight systems, space life sciences, space physical sciences, and space electronics and communications.

The 12 winners will receive an NASA certificate of merit and an invitation to spend about a week at an NASA research center selected on the basis of the interests of the award recipients. Each of the student winners will be permitted to select a teacher to make the visit with him.

Students who compete in the National Science Fair-International include those who have won top awards in regional and state competitions in the United States and Canada. Langley is presenting NASA certificates of outstanding achievement in regional and state science fairs in Virginia, North Carolina, South Carolina, and West Virginia as a preliminary to NASA's participation in the finals at Baltimore.

CENTER RECEIVES PUF AWARD

At the seventh annual meeting of the Peninsula United Fund held last week at the Hotel Chamberlin, the Outstanding Citizenship Award for 1963-64 was presented to the Langley Center for their work and contributions to the United Fund effort last October. Accepting the award on behalf of the Center staff was Rufus O. House, chairman of the Center's campaign last fall.

Dr. John E. Duberg, Technical Assistant, was elected to a three-year term on the board of trustees. Karl F. Lanier, budget chairman for last year, was elected president.

Lanier pointed out that all agencies should carry on an educational program throughout the year on the needs of the community and not limit the program to just campaign time.

Guest speaker was Col. George Marshall, retired Salvation Army Officer from Atlanta, Georgia. He spoke on "United for What?"

WANTED: Ride from vicinity of Southampton Apartments to W.A. on 3:30 shift. Jessup, 4687.

TWO COMPLETE INTERN PROGRAM

William E. Rew

Francis C. Hoban

William E. Rew and Francis C. Hoban have completed one year of training as Administrative Interns to become the first Center employees to complete this program.

The Administrative Intern program is worked on the same basis as the Engineering Intern with quarterly progress reports, supervisor evaluation, and an oral presentation to a panel headed by T. Melvin Butler, Assistant Director for Administration. The trainees are assigned to different divisions and rotated in various jobs in that particular division.

Rew is a native of Baltimore, Maryland. He received his B. A. degree in 1961 from the College of William and Mary in Norfolk and is completing his work for his M.S. degree from George Washington University. He entered on duty March 25, 1963 and has been assigned to Procurement, Fiscal, Budget Office, and Instrument Research. He has been assigned to Procurement as a Procurement Analyst.

Hoban is a native of Minersville, Pa. He received his B.S. degree in 1960 from St. Louis University and will receive his M.S. degree in Personnel Administration from George Washington University in June. He entered on duty April 15, 1963 and has worked in Budget Office, Personnel, Applied Materials and Physics, and Procurement. He has been assigned to the Budget Office as a Budget Analysis.

EMPLOYEES PRESENT PAPERS

Three papers by Center employees were presented at the AGARD Specialists' Meeting of Fluid Dynamics Panel held April 20-22 in Marseille, France.

"An Investigation of Liquid Equilibrium Configurations and the Effects of Fuel Sloshing on Vehicle Orientation in an Area of Low Gravity Forces and Small Rates of Rotation" by D. G. Eide and W. T. Blackshear, Space Mechanics Division, and E. C. Foudriat, Instrument Research, was presented by Eide. "Recent Research on Rocket Plume Phenomena Applicable to Space Flight" by A. R. Vick, J. M. Cubbage, and E. H. Andrews, Aero-Physics Division, was presented by Vick, and Dr. Leonard Roberts, Dynamic Loads Division, presented a paper on "The Interaction of a Rocket Exhaust with the Lunar Surface."

Laurence W. Enderson Jr., Space Mechanics, presented a paper on "Trajectory and Rendezvous Aspects of Manned Lunar Landings" at the First Space Congress held at Cocoa Beach, Florida, April 20-22.

HEALTH BENEFITS AMENDED

This is the second of two articles on questions and answers on the amendments to the Federal Employees Health Benefits Act of 1959 as approved by President Johnson on March 17, 1964.

Q. In general, what do the changes concerning children do?

A. They liberalize the definition of "family member" as used in the Federal Employees Health Benefits Act of 1959 by extending from 19 to 21 the age limit at which an unmarried child loses coverage and by including unmarried foster children.

Q. What is a foster child?

A. For health benefits purposes, the employee must be rearing the child as his own and the child must be living with the employee in a regular parent-child relationship. The employee need not be related to the child nor have taken steps to adopt him legally. However, there must exist an expectation that the employee will continue to rear the child into adulthood.

Q. Do employees enrolled for self-only who have unmarried children ages 19 to 21 or foster children need to take any action to cover those children?

A. Yes. They must change their enrollment to self-and-family.

Q. What about an employee's child who has reached age 19 but not 21 and who is now covered under a conversion non-group contract which the employee purchased from his plan?

A. Since the child is now covered under the employee's family enrollment, the employee should immediately contact his plan and cancel the non-group contract. When the child reaches 21 or his group coverage as a family member terminates by marriage, a new right to convert to a non-group contract is given.

Q. What is the purpose of the change in the law which provides that all employees enrolled in the health benefits program on or before December 31, 1964, shall be considered as having enrolled at their first opportunity?

A. The Federal Employees Health Benefits Act required that to be eligible to continue coverage after retirement an enrolled employee must--

1. Retire on an immediate annuity after at least 12 years of service or for disability and

2. Have been continuously enrolled in a plan from his first opportunity to do so.

Some employees failed to enroll at their first opportunity and therefore could not have continued their coverage after retirement. With the change in the law, an employee who enrolls in a plan on or before December 31, 1964, is considered to have enrolled at his first opportunity.

Q. Will an eligible unenrolled employee who now enrolls in a participating plan be considered as having enrolled at his first opportunity?

A. Yes.

FOR SALE: German Sheperd Pups. Stroup, 826-3018.
FOR SALE: 4-bedroom, 1-1/2 bath house. Dunn, 596-1789.
FOR SALE: 24-foot Holiday Jr. auxiliary sloop with 60 hp Palmer inboard, sleeps 4. Barritt, PA 2-6428.
FOR RENT: Room with bath. Johnson, LY 6-6865.
FOR SALE: 4-bedroom, 2-bath house with attached garage in Riverdale - $25,900. Blount, 838 1191.

Six employees recently received cash awards for suggestions that might result in the granting of patents. Top photograph - Howard B. Edwards (right), Assistant Chief of Instrument Research Division, presents a joint award of $900 to (from left) Leonard T. Melfi Jr., George M. Wood Jr., and Paul R. Yeager for their suggestion entitled "Gas Analyzer for Bi-Gaseous Mixtures." Center photograph - Dr. Samuel Katzoff (left), Assistant Chief of Applied Materials and Physics Division, presents a check for $100 to William H. Kinard for his "Gas Actuated Bolt Disconnect." Bottom photograph - Arthur A. Regier, Assistant Chief of Dynamic Loads Division, presents a check for $400 to Walter B. Horne (center) for his "Aircraft Wheel Spray Drag Alleviator." Looking on is Upshur T. Joyner (right), Head of Landing and Impact Branch. Absent when the photographs were made was Franklin W. Booth, MORL Studies Office, who received $200 for his suggestion entitled "Separator."

LOW LANDING SPEED JET TRANSPORT

(Continued from page 1)

the same general size and weight. Engineers explain that the special high-lift devices, when fully developed for operational use, will serve to reduce the take-off, landing and approach speeds without affecting the cruising or top speeds of the airplane.

Major element in the slow-flight system is boundary layer control, which uses a supply of high speed air blown over the special wing trailing edge flaps. Speed is carefully controlled on approaches through a variable thrust reversing system.

The boundary layer control system is designed to maintain the largest possible amount of aerodynamic lift on the plane's wing and flap surfaces, even though the flaps are sharply deflected. High lift can be achieved only if the air adheres closely to the curved aerodynamic shape of the wing and flaps. A pilot's choice of flap angle is usually limited to about 50 degrees because at higher angles the airflow does not follow the curve of the wing-flap combination and stall occurs. The BLC system permits flap deflections of as much as 70 degrees without separated airflow and stall. The higher flap angles and BLC provide more lift and hence allow slower flight speeds.

The air supply for the BLC system is drawn from bleed ports in the high pressure sections of the Boeing's four large turbofan engines and routed through a collector ring at 100 pounds per square inch pressure and a temperature of 650 degrees F. From the collector, the air is piped inside the wing to ejection slots at the leading edges of the flaps.

The objective of the NASA program is to lower speeds in order to reduce runway lengths as well as to improve safety. It is possible that large jet transports of the future may be able to operate from unimproved air strips as well as modern airports.

NASA will use the slow-landing airplane under an $800,000 contract with Boeing. The airplane will be operated from the Langley Research Center in the flight research program. Fifty Boeing engineers, technicians and one company pilot will be based at Langley during the next 90 days to maintain the airplane and assist in the research program. Data measured during the research flights will be reduced by the Boeing Company and analyzed by Langley Center scientists and engineers.

The research project of Langley is a responsibility of the Flight Mechanics and Technology Division headed by Philip Donely. Project engineer for the 707 flights will be Robert O. Schade. Two Langley research pilots, Robert W. Sommer and Perry L. Deal, will fly the 707 program.

Other aspects of low-speed flight research sponsored by the NASA Office of Advanced Research and Technology include flight projects with a Lockheed C-130 turbo-propeller aircraft as well as extensive wind tunnel and laboratory work. The C-130 airplane, also equipped with BLC devices, is flown from NASA's Ames Research Center.

FOR SALE: 1955 Chevrolet - 6 cylinders - straight shift - $400. Dodds, PA 3-5118.

WANTED: Ride from vicinity of Peterson's Yacht Basin to E.A. on 8 shift. Young, 2201.

WANTED: Driving combination from vicinity of Shoe Lane to W.A. on 7:30 shift. Spears, 3446.

DONELY RECEIVES AWARD

Philip Donely

Philip Donely, Chief of the Flight Mechanics and Technology Division, has been selected as winner of the 1964 Laura Taber Barbour Air Safety Award.

Created in 1956, the award recognizes an outstanding contribution to safety in air transport. It was established by Dr. Clifford E. Barbour Sr. and his son, Clifford E. Barbour Jr., in memory of Mrs. Clifford E. Barbour Sr. and is administered by the Flight Safety Foundation, a 16-year-old independent, non-profit organization devoted exclusively to furthering aviation safety.

Donely received his award last week in New York during the annual meeting of the Society of Automotive Engineers.

He was cited for "diverse and unique contributions to air safety" during more than 30 years with NASA. Particular stress was put on Donely's work leading to development of safe rough-air flight techniques and "the counsel he has given to industry, operators and government agencies on matters such as airworthiness aspects of new aircraft, assessment of design criteria, and airworthiness problems related to aircraft accidents."

Described as an "internationally recognized authority in the areas of aircraft loads, operating problems and airworthiness requirements," Donely was born in Boston and educated at the Public Latin School and the Massachusetts Institute of Technology, which gave him a B.S. degree in aeronautical engineering in 1931.

He joined the Langley staff in June of that year. In November 1949, he became assistant chief of the dynamic loads division, and he was named associate chief in November 1957. He was appointed to his present post a year later.

A pioneer in gust research and related fields of meteorology, statistics and aircraft operational requirements, he directs research on vertical and short takeoff and landing rotary-wing type machines, including full-scale flight and wind tunnel studies.

FLOWERS NEEDED FOR INSPECTION

Kitty Joyner, who is in charge of decorations for the luncheons for the NASA Inspection in Advanced Aeronautical and Space Research which will be held at the Center on May 18, 19, 20, 21, and 22, is seeking the help of Center employees. She asks that persons having flowers of any kind please bring them on the morning of the days listed above. Flowers may be left in the East Area at the Receptionist's desk or with Helen Johnson at 8-foot Tunnel. West Area employees are requested to leave them at the Activities Building or call Mrs. Joyner, 4727, to have them picked up.

FOR SALE OR TRADE: 1962 Plymouth savoy, 2-door - $1400. Joyner, 826-1817.

FOR RENT: Two furnished rooms. Bradshaw, PA 3-4215.

FOR SALE: 1957 Ford Fairlane. Fulgham, TU 7-5504.

SAVINGS BOND CAMPAIGN

(Continued from page 1)

premiums, taking a vacation trip, making a down payment on a new home, and buying a new car.

Howe also pointed out that some employees when they go on a trip always carry along a couple of bonds which may be cashed at any bank in case of an emergency. These are as good as travelers checks because they are guaranteed by the government against loss or destruction.

Some people put money in a Christmas Savings Club which pays no interest at all. Bonds accrue interest at the end of six months so that bonds used for the same purpose may be a better plan.

Howe stated that there are other methods of saving but this is the only plan where the money is automatically deducted from your pay check.

"When we ask employees to subscribe, we are not asking them to give of their money or spend it," Howe said, "but to save it and invest it.

"Many employees find that money saved in U.S. Bonds accumulates faster than any other savings. First, because it is automatic and second, because the family is more reluctant to cash a bond than they are to write a check."

In 1952 Center employees won the coveted Treasury E Flag, formerly called the "Minute Man" Flag, for over 90 per cent participation.

Howe declared, "We did it before and we can do it again."

NOW—

A NEW DENOMINATION

A NEW REASON TO BUY

U.S. SAVINGS BONDS

Upper left - Dave Buchman and H. B. Bland prepare to raise the "Minute Man" Flag while Dr. Reid, Mrs. Clark, Dr. Victory, and Col. Jones look on. Upper right - The Treasury flag is raised by the color guard. Center left - A large number of employees attended the presentation despite threats of rain. Center right - Don Beals (right) shows a missile in the 4-foot Supersonic Tunnel to Kitty Joyner, Dr. Victory, and Mrs. Clark. Lower left - John Stack shakes hands with the Treasurer of the U.S. while C. A. Mead, Director of Federal Payroll Savings Division of the Treasury Department, and Dr. Reid look on. Lower right - Dr. Reid explains a calibration rig in the 7 x 10-Foot Wind Tunnel to B. W. Challen, Office of State Director of U.S. Savings Bonds Division, Dr. Victory, T. Aubrey Harris, and Mrs. Clark. -Photos by Teub

The above pictures were printed in the May 23, 1952 issue of Air Scoop when the Honorable Georgia Neese Clark, then Treasurer of the United States, visited the Center and presented the "Minute Man" Flag to employees for 90 per cent participation in the Payroll Savings Plan.

IEEE GROUP MEETS MAY 13

The Hampton Roads Chapter of the Institute of Electrical and Electronic Engineers will meet on May 13 at the Holiday Inn in Hampton.

Richard C. Newsome, Manager, Power Circuit Breaker Sales, Westinghouse Electrical Corporation, will be guest speaker.

Newsome will speak on the switching problems on today's power systems which are requiring improved performance leading towards the use of oilless equipment. Westinghouse's answer to this problem is the development of the sulfur hexafloride breaker. Newsome will discuss low voltage, high voltage and extra high voltage breakers with particular emphasis on the breakers used for VEPCO's 500 KV transmission line now under construction. A description of the latest developments in the field of gas-filled disconnect switches and high speed grounding switches will also be given.

A social period will be held at 6:30 p.m., followed by a roast beef dinner at 7:15, and the meeting at 8:15.

The cost of the dinner will be $3.50 and reservations may be made by calling Frank Senft, 3461.

FOR SALE: 3-bedroom and den brick rancher in Fairfield section - $1500 down. Brown, 851-0346.

FOR SALE: 1955 Chrysler Windsor and Tee Nee trailer. Fruchtman, 851-2200.

NASA BOWLING LEAGUES

Tom Cats continue to lead Group A in the NASA Tenpin League with 77 wins and 47 losses. Top scores were rolled by Bob Guillotte with a 267 game and 665 set.

Misfits lead Group B with 89 wins and 35 losses. Taking high scoring honors were Pat Poslik and Barbara Williams with a 223 game each and Jane Oehman with a 593 set. Tops for the men was W. Williams with a 257 game and 658 set.

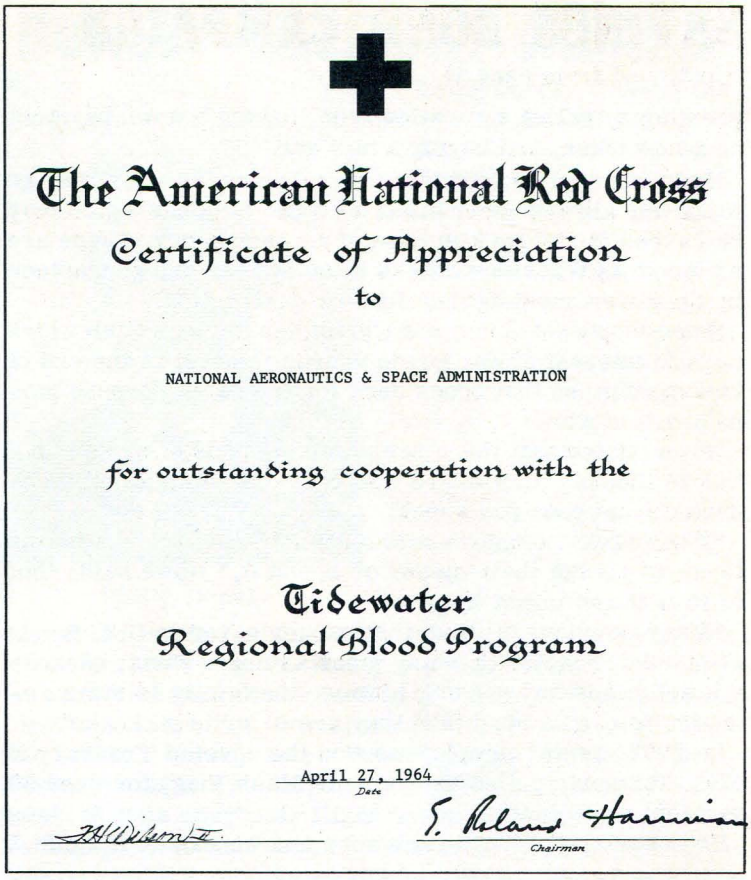
GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	77	47	Misfits	89	35
Phantoms	73.5	50.5	Ten-Benders	77.5	46.5
Electronic Shop	73	51	Ranch House	73	51
Hornets	72.5	51.5	Latecomers	69.5	54.5
Unitary	72	52	Cee Pees	66	58
Short Circuits	71.5	52.5	Dynamos	66	58
Flight Eng.	67.5	56.5	Lunar-Tics	66	58
Johnnie's	66.5	57.5	Alley Oops	66	58
Alley Cats	66	58	Spare Parts	65.5	38.5
Frame Ups	63	61	Hucksters	64	60
Devious	63	61	Gliders	61.5	62.5
Crusaders	63	61	Barristers	60.5	63.5
Pay Loads	60	64	Sudz	58	66
Flyers	57.5	66.5	Greenhorns	55	69
Malfunctions	54	70	Dillys	55	69
Pinwigglers	54	70	Analogs	54.4	69.5
Oddballs	51	73	Question Marks	54	70
A-OK's	49	75	Bowling Belles	50	74
Spare Oops	45.5	78.5	Mets	46	78
Galaxies	40.5	83.5	Moonlighters	41	83

Ten Spots increased their lead in the NASA Duckpin League to 74 wins and 50 losses and Strike Outs dropped to 72 wins and 52 losses. Top scores were rolled by Don Booth with a 145 game, Bill Suit with a 358 set, Mary Edwards with a 313 set, and Elizabeth Patterson with a 124 game and 313 set.

Ten Spots	74	50	Lt. Mach. 2	61	63
Strike Outs	72	52	Rebel Bombers	58	66
Light. Mach. 1	71	53	Doodle Bugs	56	68
AMC	64	60	ACD	54	70
Pinpoppers	62	62	Reentry	48	76

IDEAS COUNT

Send yours to INCENTIVE AWARDS COMMITTEE



The American National Red Cross

Certificate of Appreciation

to

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

for outstanding cooperation with the

Tidewater Regional Blood Program

April 27, 1964
Date

E. Roland Harriman
Chairman

At the annual meeting of the Hampton Chapter of the American Red Cross, the above Certificate of Appreciation was presented to Center employees for their outstanding contributions to the 1963 Blood Program.

201 EMPLOYEES DONATE BLOOD

During the visit of the Bloodmobile last week, Center employees donated a total of 201 pints of blood of which 113 pints were replacements for blood used by employees, members of their families, or friends.

James J. Fay completed his quota for five gallons and Andrew R. Wineman reached the four-gallon mark.

John E. Doyle received a three-gallon pin and two-gallon pins were presented to Gregory Hill, Arthur Henderson Jr., David Vohringer, John F. Crumpler, Richard Holt, and Harry T. Davis Jr. Receiving one-gallon pins were Robert Bruce, James G. Fowke, John S. Evans, and Joseph Burlock.

Assisting during the visit were Dr. W. H. Sipe, Dr. L. P. Bragg, and Dr. F. C. Wilson.

FOUND: The Security Office, Building 586, is holding the following items - 2 men's raincoats, man's top coat, man's scarf, pair lady's gloves, and man's wrist watch.

WANTED: Ride from Bethel Pk. to W.A. on 8 shift. Davidson, 4788.

WANTED: Driving combination from LaSalle Acres to W.A. on 8 shift. Goodman, 4626.

FOUND: Pair glasses in Apprentice Classroom in Building 586. Tingle, 2323.

WANTED: Ride from Waldon area to W.A. on 8 shift. Page, 3248.

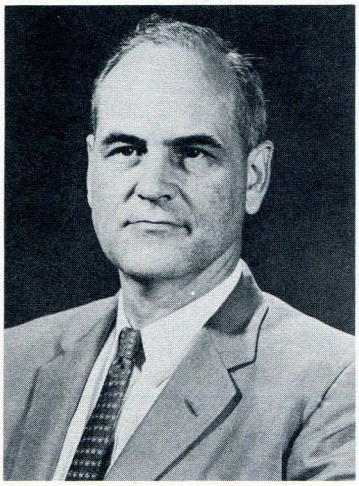
WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.

FOR SALE: 1964 Volkswagon - $1650. Bond, 868-9290.

Langley Researcher

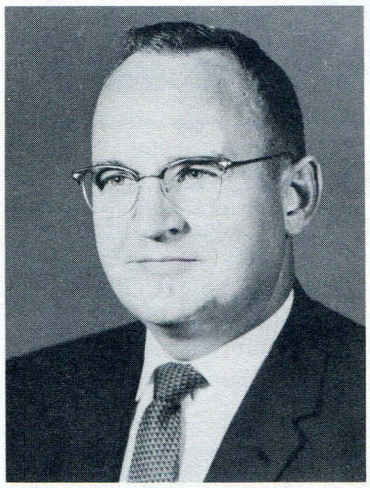
VOLUME 3, NUMBER 11 LANGLEY RESEARCH CENTER MAY 22, 1964

KEY MANAGEMENT APPOINTMENTS MADE AT CENTER



Eugene C. Draley

Dr. John E. Duberg



Francis B. Smith

Three key appointments in the management organization of the Langley Research Center were made last week by Dr. Floyd L. Thompson, Director.

Eugene C. Draley has been appointed Assistant Director for Flight Projects, a new position which brings flight project management under a single office. Draley has been an Assistant Director of the Center since 1959.

Dr. John E. Duberg has been named an Assistant Director, responsible for the research activities of two major divisions of the Center- the Dynamic Loads Division and the Structures Research Division. Dr. Duberg has been serving as Technical Assistant to the Associate Director.

Francis B. Smith has been appointed an Assistant Director in charge of the Analysis and Computation Division, the Instrument Research Division and the Space Mechanics Division. He has been serving as Chief of the Instrument Research Division. His appointment as Assistant Director fills a vacancy caused by the resignation of Clinton E. Brown.

Among the groups reporting to Draley in his new assignment will be the Flight Reentry Programs Office (Project FIRE); the Lunar Orbiter Project Office; the MORL Studies Office; the Scout Project Office; and the Langley Research Center-Pacific Missile Range Field Projects Office.

A Langley scientist, Andrew G. Swanson, currently away from the Center on a Sloan Fellowship at the Massachusetts Institute of Technology, will become Technical Assistant to Draley upon completing his studies.

As an Assistant Director, Dr. Duberg will continue to carry additional responsibilities concerned with Langley's relationships with the academic community and with the development of the Space Radiation Effects Laboratory.

Howard B. Edwards, former Assistant Chief of Instrument Research Division, will serve as Acting Chief following Smith's appointment as Assistant Director.

Draley was born January 25, 1916 in Washington, D.C. and received his B.S. degree in Aeronautical Engineering from Catholic University in 1938.

He joined the Langley research staff on October 3, 1938. In 1946 he was appointed head of the 8-foot High Speed Tunnel, where initial design studies and wind tunnel development programs from the X-1 and other research aircraft were conducted. The tunnel played an important role in the first successful breaking of the sound barrier by the X-1 in 1947. (Continued on page 3)

LANGLEY HOST FOR INSPECTION; OPEN HOUSE SET TOMORROW

The 1964 Field Inspection of recent accomplishments in advanced aeronautical and space research by NASA has been held this week at the Langley Research Center. A number of facilities will be open to the general public tomorrow from 10 a.m. until 4 p.m.

Approximately 2,000 management leaders in the aerospace industry, representatives of the Congress and the Federal government, educators, civic officials, and others concerned with NASA activities attended the five-day inspection which ends today.

On hand to greet the guests on Monday was James E. Webb, NASA Administrator. He pointed out, "It is most fitting that the revival of the annual field inspection trip takes place first at the Langley Research Center, for NASA was the first research center of the original NACA and is today as it was in 1917 working at the frontiers of scientific and technical knowledge."

Exhibit areas that will be open to the public tomorrow include the Hangar, Machine Shop, and 16-foot Transonic Wind Tunnel. Spacemobile exhibits will be shown at the Activities Building at 10:15, 11:45, 1:15, and 2:45. They will also be shown in the Cafeteria at 10:30, 12 noon, 1:30 and 3.

On display in the Hangar will be life sciences, space flight simulation, space vehicle systems, Scout, rocketry, Scout pay loads, aeronautics, wind tunnels, and flight research.

At the Machine Shop will be ceramics and exotic metal machining, electronics and miniaturized instrumentation, wood, plastic and metal models, automated milling machines.

The display at 16-foot Transonic Wind Tunnel will include air exchange tower, propeller drive, diffuser, control room, and the test section with Apollo model test.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW HEIRS. .Announcing the recent adoption of a son, Christopher Alan, are Wanda, formerly of Space Task Group, and David Carter, Lunar Orbiter Project Office. . . Celebrating the birth of a son on April 25 is Roy Mason, Electrical Systems Division. . .Ian O. MacConochie, Flight Vehicles and Systems Division, recently became the father of an adopted son, Ian Keith.

NOTE OF THANKS. . .Mrs. Winnie Osborne, wife of Hunter G. Osborne, Mechanical Service Division, wishes to express to the many employees who donated blood to her during her recent illness.

ENGAGEMENT. . .Making plans to desert the bachelor ranks is Ned Cooper, Analysis and Computation Division. He is engaged to Shirley Fields, Hampton, and plans call for a September wedding.

WANT TO LEARN TO FLY. . .Civil Service employees, in service or retired service personnel, are now eligible to fly with the Army Flying Club at Ft. Eustis. Interested persons may contact Willard M. Evans at Felker Army Air Field, Ft. Eustis, on Saturday or Sunday from 6 a.m. to 7 p.m.

THERAPIST NEEDED. . .Occupational physical therapists and pre-school teachers are needed by the Peninsula Cerebral Palsy Center. Persons interested are requested to call Thomas Wertz, CH 4-3702.

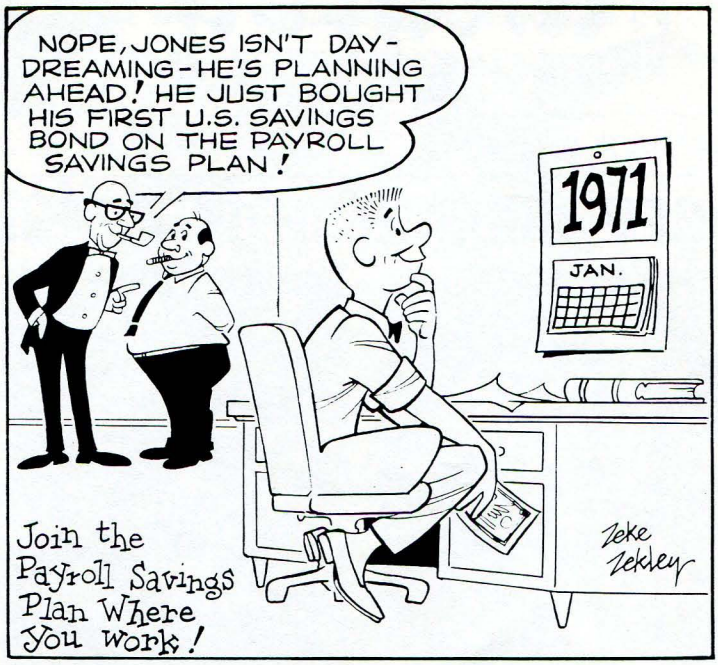
CENTER TO OPERATE ON DAYLIGHT TIME

Effective at 12:01 a.m. on Sunday, May 31, clocks will be moved forward one hour in those sections of Virginia which did not convert to Daylight Saving Time in April.

This includes the Peninsula area and consequently, the Langley Research Center will operate on Daylight Saving Time from May 31 to Labor Day (September 7).

A technicality arises for the few personnel who may be required to work on the third shift which begins at 11 p.m. on Saturday, May 30.

With the advance of the clocks one hour, supervisors and time and attendance clerks are requested to insure that each person working the third shift accounts for a full eight hours on duty or is charged with an hour's leave if he does not work the "extra" hour by the clock at the end of this one particular shift. In other words, the third shift on May 30 will report for duty at 11 p.m. EST and complete the eight-hour shift at 8 a.m. EDT.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 25:

Monday - Consomme julienne, Spanish pot roast, deep-fried shrimp, meat loaf, franks and beans.

Tuesday - Tomato soup, roast ribs of beef, chuckwagon steak with onion gravy, liver and onions, grilled cheese and bacon sandwich.

Wednesday - Cream of potato soup, sliced turkey with dressing, grilled pork steak, stuffed pepper, foot long hot dog with chili.

Thursday - Vegetable-beef soup, grilled rib eye steak, braised beef tips on noodles, fried chicken, baked hash.

The menu for the week of June 1 is as follows:

Monday - Chicken noodle soup, Swiss steak, chicken and dumplings, fried chicken livers, cheese omelette.

Tuesday - Puree of bean soup, fried clams, pot roast of beef, stuffed pepper, fish cakes with cole slaw.

Wednesday - Tomato-barley soup, roast ribs of beef, Salisbury steak, fried chicken, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, meat loaf, chicken chow mein with rice of crisp noodles, Austrian ravioli.

Friday - Clam chowder, pot roast of beef, broiled fish, fried fish, hot dog with chili.

FOR SALE: 3-bedroom brick rancher. Mann, 826-4013.

FOR SALE: 1958 10 x 50-foot mobile Travelo with 3 bedrooms, Dayton, 723-2788, Ordinary.

FOR SALE: 1955 Pontiac - $350. Sorrells, 838-0164.

FOR SALE: 12-14-foot boat trailer. Miller, PA 3-0925.

FOR SALE: Child's rocking horse. 838-0038.

FOR SALE: 1959 Chevrolet. Pratt, 595-1288.

FOR SALE: 1957 Chevrolet - $300. Hengeveld. 851-2253.

FOR SALE: G.E. vacuum cleaner - $15. Teichman, 596-0966.

WANTED: Small house or shed suitable for child's playhouse. Collinsworth, 826-2041.

FOR SALE: 1955 Willys jeep - 4-wheel drive. Tompkins, 826-0371.

KEY APPOINTMENTS MADE

(Continued from page 1)

In July 1947, Draley was named Assistant Chief of the Full-Scale Research Division and head of the Transonic Tunnels Branch where he directed research programs conducted in the 8-foot and 16-foot High-Speed Wind Tunnels and supervised the redesign and placing in operation of these two facilities as he world's first transonic wind tunnels.

He was appointed Chief of the Full-Scale Research Division in November 1950. In this position he directed scientific programs in the field of flutter, dynamic stability, and aircraft performance.

Draley became Assistant Director in February 1959. In this position he planned and directed the research activities of the Dynamic Loads Division, Structures Research Division, and Applied Materials and Physics Division. These divisions play an important role in aerospace research, including Echo I and the support of Project Mercury, Dyna-Soar, and other pioneering programs.

Dr. Duberg was born November 30, 1917 in New York City. He attended public schools and Manhattan College, graduating with highest honors in May 1938 with a B.S. degree in Civil Engineering. He received a fellowship to Virginia Polytechnic Institute in 1939-40 and received his M.S. degree with honors in 1940. He held a research assistantship at the University of Illinois 1940-43 as a graduate student.

Joining the Langley staff in March 1943, Dr. Duberg was assigned to the Structures Research Division. In 1946, he returned to the University of Illinois to complete requirements for his Ph.D., receiving his doctorate in engineering two years later. Resuming duties at Langley in 1948, he was appointed Chief of the Structures Research Division serving in that capacity until 1956. During the period he headed the Structures Research Division, this group developed the techniques of high-temperature structures research testing that are now standard throughout the country.

Resigning from the Langley staff in 1956, Dr. Duberg served about one year as Director of Aeromechanics, Aeronutronics Systems, Inc., Glendale, California, and two years as a professor at the University of Illinois where he conducted and reported original research.

Dr. Duberg returned to Langley in June 1959 and was named Assistant Chief of the Theoretical Mechanics Division. In addition he assisted the Associate Director in connection with a variety of aerospace research problems. He assumed his position as Technical Assistant to the Associate Director in December 1961.

Smith was born December 2, 1922 in Piedmont, South Carolina. He received his B.S. degree in Electrical Engineering in 1943 from the University of South Carolina. He remained as an instructor in Electrical Engineering at his alma mater until September 1944, then served in the Navy until April 1946.

Smith joined the Langley science staff in October 1947 and was soon given the responsibility for a group of engineers developing radio telemetering instruments for use in rocket-propelled models. In May 1956 he was named head of the Pilotless Aircraft Research Instrumentation Branch with responsibility for the entire airborne and range instrumentation system used in NASA's pilotless aircraft research programs. His responsibility also included research airplane instrumentation where radio telemetry or range tracking instrumentation was required.

In January 1959, when NASA Headquarters was staffing its space flight operations programs, Smith was selected as Chief of Tracking Programs with the responsibility for the planning and coordination of NASA ground-based tracking, data acquisition, and communications facilities used in support of NASA's space flight programs, including the Project Mercury Tracking System, Deep-Space Tracking System, and the Minitrack Tracking System. He became Chief of IRD on August 1960.

NASA officials and representatives of the Boeing Company met recently in Seattle to complete details of the NASA-Boeing Lunar Orbiter contract prior to submitting it to NASA Administrator James E. Webb for final approval. Present for the signing were (from left): Howard W. Neffner, Director of Boeing's Contract Administration Department; Sherwood L. Butler, Contracting Officer for Langley Research Center; Robert J. Helberg, Boeing's Program Manager - Lunar Orbiter; and Clifford H. Nelson, Lunar Orbiter Program Director for NASA. Nelson is holding a small scale model of the Lunar Orbiter. Globe is a small scale model of the moon. Contract signing took place at Boeing's Missile Production Center in Seattle.

NASA SIGNS CONTRACT WITH BOEING

NASA has signed a contract with the Boeing Company, Seattle, Washington, to build the Lunar Orbiter spacecraft.

Boeing was selected for negotiations on December 20, from among five firms bidding for the project.

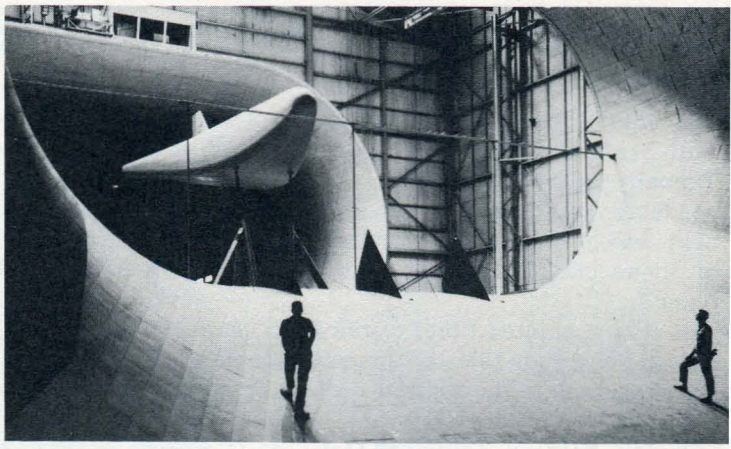
The contract is an incentive contract with a basic value of about $80 million. Under the incentive provisions, Boeing could receive up to an additional $5.3 million if all Lunar Orbiter missions are successful.

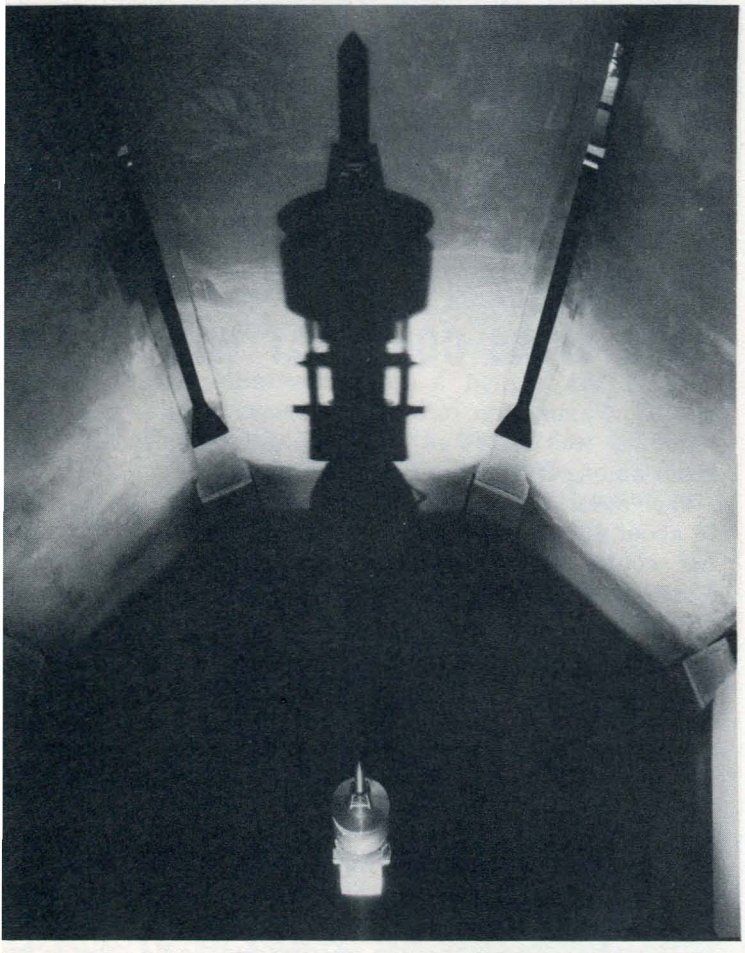
Boeing is required to make penalty payments for late delivery of the spacecraft. Also the company will retain 10 per cent of any savings below target costs and lose from their fee 10 per cent of costs above the target.

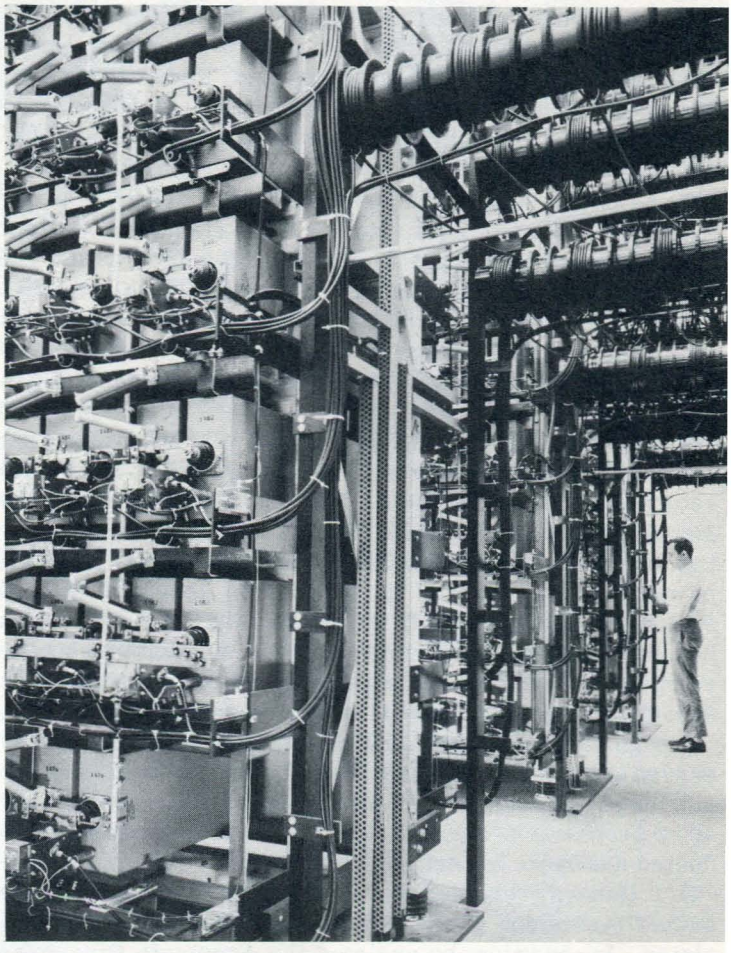
The Orbiter program, which includes five spacecraft, will take close range photographs of the lunar surface for scientific study and to help select landing sites for the manned lunar landing program.

The Lunar Orbiter will weigh about 800 pounds, will be three-axis stabilized, and will be launched from Cape Kennedy beginning in 1966 by the Atlas Agena. It will use an Eastman Kodak camera system and Radio Corporation of America will provide the power and communication subsystems.

The Lunar Orbiter program is managed by the Langley Research Center under the general direction of NASA's Office of Space Science and Applications.



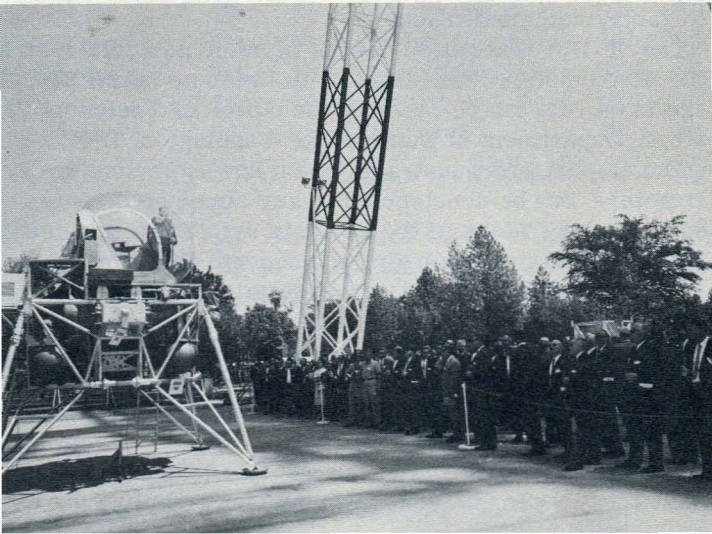




Some of the facilities and research projects shown to guests during the 1964 Field Inspection held at the Center this week are shown in the above photographs. Upper left - The 8-foot High Temperature Structures Tunnel is one of the newest research facilities nearing completion at Langley. It will be capable of producing a test environment at a temperature of 4,000 degrees F. and a Mach number of 7 or 4,500 miles per hour. Upper right - A 28-foot model of the HL-10 lifting-body reentry vehicle is mounted in the Full-Scale Wind Tunnel to determine its low-speed static stability and control characteristics. Although it has no wings, sufficient lift is generated by the body itself to pro-

escape system during the most critical period of flight NASA scientists have investigated a .085 scale Apollo launch escape vehicle model. Mounted in 16-foot Transonic Wind Tunnel, the Apollo launch escape vehicle model was investigated at transonic speeds to determine aerodynamic characteristics during separation from the service module. Lower right - To facilitate studies of high-temperature plasma, Langley scientists have constructed a magnetic plasma compression device for simulating the solar corona in the laboratory. The main capacitor bank shown here serves for the process of magnetic compression while two supporting capacitor banks are used for preionization and

TORES AND MATERIALS



SPACE
ENVIRONMENT

COMPUTERS IN AEROSPACE RESEARCH

7094-1401 COMPUTING SYSTEM

EXIT

COMMUNICATIONS SYSTEM

A new system of voice communications transmitted on a beam of light was revealed recently by NASA.

The system differs from previous ones in that the originating station requires no power other than the human voice. The NASA Retrometer is believed to be alone among light beam communications systems in offering a simple, convenient, and inexpensive device at one terminal.

The Retrometer-- so called because the light beam over which voice signals are sent is returned to its source by a simple reflector-- was devised at Langley Research Center.

Numa E. Thomas, Instrument Research Division, developed the Retrometer while investigating optical methods of communications between the ground and a reentry vehicle during the radio blackout period.

The discovery was revealed in a Technology Utilization Report issued by NASA's office of Technology Utilization. T-U reports are detailed descriptions of space technology innovations with high potential for non-space use.

T-U has set up and maintains a steady flow of technical information from the nation's space program to private industry.

In the new report, T-U points out that successful development of systems based upon the Retrometer principle might find use in many areas.

Among commercial applications are: surveying; use in construction work (particularly where radio transmissions are hampered by steelwork and tunnels or prevented by blasting); use in steel mills and other plants where high level noise is a problem; communications during special events, political conventions, and emergency situations, including forest fires, shipwreck and other diasters.

Other possible applications are air-sea rescue operations, air-to-sea, ship-to-ship, and ship-to-shore communications, air-refueling operations, and tactical communications.

Among its space applications are rendezvous and docking of spacecraft, emergency communications, and ground-to gantry communication.

The T-U report cites dozens of other possible uses for the Retrometer. The Report is listed as NASA SP-5005 and is on sale for 50 cents by the Office of Technical Services, Department of Commerce, Washington, D.C. 20230.

The Report gives instructions on how experimental Retrometers can be constructed in any small electronics and optical shop. Many of the device's details are noncritical and can be varied according to need and facilities.

The complete Retrometer system consists of a battery case, the source/receiver unit and the corner reflector. Five 1.35 mercury cells power the light source and a 9-volt battery powers the transistorized amplifier. A four wire cable and plug connect the power pack to the source/receiver unit.

Immediate commercial use of this invention, which is owned by NASA is encouraged under royalty-free, non-exclusive licenses.

Inquiries about license rights should be made to NASA, Code AGP, Washington, D.C. 20546.

FOR SALE: 19-foot cruiser with 35 hp electric starting outboard motor. Bunting, UN 8-9447.

FOR SALE: 1954 Chevrolet - $75. Lone-Star fiberglas 15-foot boat - $200. Verser, UN 8-4731.

FOR SALE: AKC register Collie pup. Gibson, 826-2678.

ENGINEERS' CLUB MEETS JUNE 3

Dr. George L. Simpson Jr.

The Engineers' Club of the Virginia Peninsula will hold its annual dinner meeting and ladies night on June 3 at the Activities Building.

The officers for the next club year will be installed and an honorary life membership will be presented to Dr. Floyd L. Thompson, Center Director.

Guest speaker will be Dr. George L. Simpson Jr., Assistant Deputy Administrator of NASA and Assistant Administrator for Technology Utilization and Policy Planning. Dr. Simpson served as Assistant Administrator for Public Affairs from September 1, 1962. On March 21, 1962 he assumed direction of Technology Utilization and eight months later assumed the additional duties of Assistant Deputy Administrator.

Dr. Simpson has specialized in regional development for a number of years and in 1956 he was named Executive Director of the Research Triangle Committee of North Carolina. The committee drew together the resources of the state government, industry and the research potential of the University of North Carolina, Duke University and North Carolina State College for the expansion of scientific activity in the South.

Prior to joining NASA, Dr. Simpson was a Professor of Sociology at the University of North Carolina, the institution from which he received an A.B. degree in 1941, a M.A. in Sociology in 1944 and a Ph.D. in Sociology in 1951.

A social period will be held at 6:15 p.m., followed by a roast beef dinner at 7.

AMERICAN VACUUM SOCIETY

The Mid-Atlantic States Section of the American Vacuum Society will hold its first meeting in the Hampton Roads area on Wednesday, June 3, at the Holiday Inn in Hampton.

Dr. Paul A. Redhead, Head of Electron Physics Section, National Research Council of Canada, will be guest speaker.

Dr. Redhead will speak on problems in production and measurement of extremely low pressures. Some proposed laboratory and extraterrestial experiments requiring pressures in the range 10^{-11} to 10^{-15} torr will be discussed. Some recent experiments in which pressures down to 7×10^{-15} torr were obtained will be described. The results of tests on various total and partial pressure measuring devices in the range 10^{-11} to 7×10^{-15} torr will also be discussed.

A social period sponsored by Hastings-Raydist will be held at 6 p.m., followed by a roast beef dinner at 7, and the meeting at 8.

Cost of the dinner will be $3.75 and reservations may be made by calling Paul Yeager, 3234.

FOR SALE: Camping trailer, sleeps 4, gas stove, water tank - $400. Call PA 2-7753 after 5 p.m.

FOR SALE: 1963 Chevrolet. Kern, 596-2912.

FOR RENT: Room for gentleman. Wornom, 826-0128.

AIAA PLANS ANNUAL MEETING

Gordon M. Bain

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will hold its annual dinner-dance at the Holiday Inn on May 28.

Gordon M. Bain, FAA Deputy Administrator for the Supersonic Transport Program, will be guest speaker. He heads the administrative and technical organization charged with the over-all responsibility for Government-industry development of a commercial supersonic transport aircraft to carry passengers at between two and three times the speed of sound by mid-1970.

Bain has held top level positions in the civil service and the airline industry. He was Executive Officer of the Civil Aeronautics Administration, forerunner to FAA, from 1946 to 1951. He served as Director, Bureau of Air Operations, Civil Aeronautics Board, from 1951 to 1953. Before joining CAA, he had been a principal budget examiner at the Bureau of Budget.

The meeting will start with a social hour at 6 p.m., dinner at 7, the address at 8 and dancing from 9 to 12. Reservations may be made by calling Carl Sandahl, LY 62392; John Ward, LY 5-0869, or Emanuel Boxer, CH 5-6212, before noon on May 26.

COST REDUCTION IDEAS INVITED

Employees sometimes fail to submit their suggestions for reducing costs because "the savings are not large."

But in some cases these modest cost-cutters can add up to important and sizable savings.

Obviously everyone cannot come up with a quarter-of-a-million-dollar idea, but everyone can contribute in his own way and within his own capabilities to reducing Government costs. How?

1. By challenging each operating practice with which you are familiar. Is the entire process necessary? Can it be cut off at the roots? Can it be streamlined?

2. By ferreting out waste wherever you find it. What is being done wrong that causes waste of manpower, of supplies and materials, of machinery and equipment, of space? How can such waste be avoided?

3. By detecting duplication of tasks. Can similar tasks being performed here or elsewhere be eliminated or combined?

In short, look for opportunities for reducing costs in the operations you observe around you - where you are the expert. Don't be reluctant to propose a savings of only $100. If one-half of the Federal work force can propose a good solid adoptable idea for saving $100, the total would be over $100 million.

We are always glad, of course, to get a quarter-million-dollar idea, if you have one. But we're mighty happy about the small "daily bread" type of suggestion that results in practical, down-to-earth cash savings.

Remember, every little bit helps. No cost reduction is too small to be overlooked. What may at first appear to be a small idea might turn out to be a surprisingly big one.

So let your ideas for cutting costs be known. Submit them through the suggestion program today to Jess Ross, Secretary, Incentive Awards Committee, Mail Stop 306.

NASA BOWLING LEAGUES

Phantoms lead Group A in the NASA Tenpin League with 80.5 wins and 51.5 losses and Electronic Shop and Tom Cats are tied for second with 79 wins and 53 losses each. Top scores were rolled by Cecil Burcher with a 258 game and 690 set.

Misfits continue to lead Group with 95 wins and 37 losses. Top bowlers for the week were Dale Holden with a 256 game and 715 set and Marna Harlow with a 227 game and 591 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Phantoms	80.5	51.5	Misfits	95	37
Electronic Shop	79	53	Ten-Benders	85.5	46.5
Tom Cats	79	53	Ranch House	79	53
Hornets	76.5	55.5	Latecomers	75.5	56.5
Short Circuits	75.5	56.5	Cee Pees	70	62
Flight Eng.	73.5	58.5	Spare Parts	69.5	62.5
Johnnie's	72.5	59.5	Lunar-Tics	69	63
Unitary	72	60	Dynamos	69	63
Alley Cats	71	61	Alley Oops	67	65
Devious	71	61	Barristers	66.5	65.5
Frame Ups	66	66	Hucksters	66	66
Payloads	66	66	Gliders	64.5	67.5
Crusaders	64	68	Sudz	63	69
Flyers	62.5	69.5	Greenhorns	63	69
Oddballs	59	73	Dillys	60	72
Pinwigglers	55	77	Analogs	58.5	73.5
Malfunctions	55	77	Question Marks	57	75
A-OK's	51	81	Bowling Belles	50	82
Spare Oops	46.5	85.5	Mets	49	83

Ten Spots increased their lead in the NASA Duckpin League to 77 wins and 51 losses and Strike Outs are in second with 74 wins and 54 losses. Top scores were rolled by Al Insley with a 174 game and 408 set, John Dupere with a 159 game and 412 set, Mary Carmines with a 117 game and 302 set and Elizabeth Patterson with a 115 game and 317 set.

Ten Spots	77	51	Lt. Mach. 2	62	68
Strike Outs	74	54	Rebel Bombers	60	68
Lt. Mach. 1	72	56	Doodle Bugs	59	69
AMC	66	62	ACD	56	72
Pinpoppers	66	62	Reentry	48	80

FOR SALE: Roto-broil 400 Capri with Bak-a-tray - $20. Thomson, 596-2832.

FOR SALE: 18-foot centerboard sloop with trailer, new dacron mainsail - $275. Weinstein, 595-1544.

FOR SALE: 1959 10 x 51-foot Pontiac mobile trailer. Gallagher, 868-2881.

FOR SALE OR TRADE: 1948 Studebaker. Feller, PA 3-8679.

FOR SALE: 8-foot overhead garage door. Schmitz, 851-0297.

FOR RENT: 3-bedroom furnished house near Buckroe. Rosser, 826-0285.

FOR SALE: 1954 Plymouth Savoy. Jones, PA 2-2272.

FOR SALE: Walnut dining room suite. Locke, LY 6-7532.

FOR SALE: Tru-cold air conditioner, 9300 btu. Hillebrand, 956-0454.

FOR SALE: 28-foot Hacker speed boat with Cadillac Crusader engine. Thomas, OX 3-6523, Gloucester.

ASTRONAUTS LOGGING HOURS FOR GEMINI FLIGHT

One of the most sophisticated, complex "flying machines" ever devised by man now is being checked out for "flight readiness" at NASA's Mission Control Center, Cape Kennedy.

It will be used in the final phases of preparing astronauts for Gemini missions. Although its paneling is bedecked with every sort of flashing light, switch, knob, and button, and there are a million feet of wiring in the floor underneath it, this advanced spacecraft, ironically enough, will never get off the ground.

It is a Gemini simulator that is outfitted with instrumentation identical to the spacecraft that will carry astronauts into Earth orbits for periods up to two weeks.

The simulator's purpose: to drill astronauts on every possible flight condition they might encounter in space, until controlling the craft becomes second nature to them.

"The only things we can't duplicate on the simulator," engineer John Mitchell said, "are the 'G' forces the astronauts will encounter, and weightlessness."

Mitchell, Chief of the Gemini Mission Simulator, works at Manned Spacecraft Center in Houston.

Mitchell said the astronauts assigned to the first manned Gemini flight, scheduled for late this year, will log about 100 hours each in the simulator, with the longest duration at one time being 24 hours.

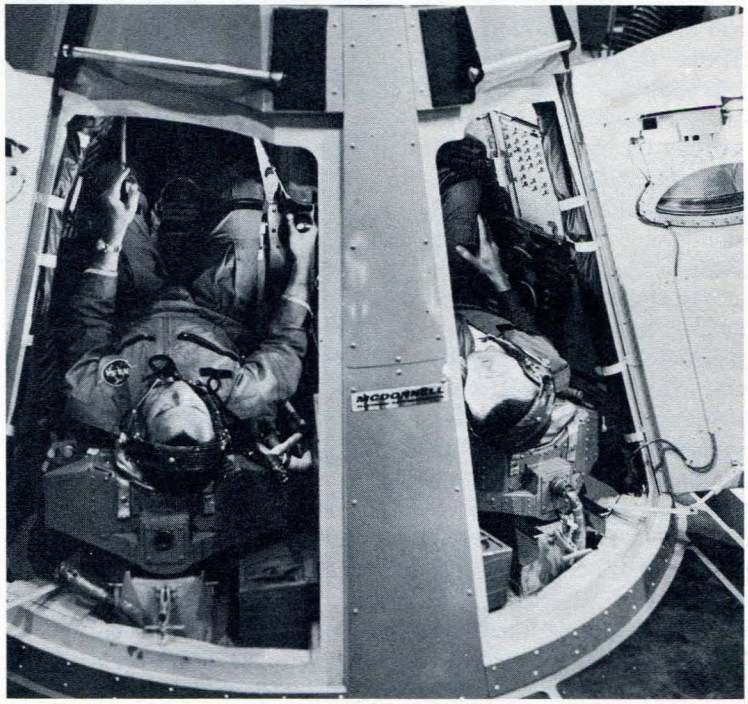
During the two or three weeks just prior to launch, the simulator's flights will be hooked into the Gemini worldwide tracking network, and data will be put out to stations for training purposes.

When flying missions are not tied into the network, pilots and instructors may work for an hour or so, stop and discuss problems and techniques, then rerun the flight.

On these test flights, spacecraft malfunctions can be inserted either manually or by computer.

"We may short a thruster which, in space, could cause the Gemini to pitch up and go into a vertical roll," Mitchell said. "It'll be up to the astronauts to correct any situations we throw at them."

Any one of 600 different malfunctions may be programmed into the flight or, if the astronauts handle everything too smoothly, a number of failures could be unleashed simultaneously, putting them to severe tests to correct them.



Astronauts Alan B. Shepard (left) and Frank Borman are shown in the Gemini Mission Simulator at Cape Kennedy. The astronauts are upside down while the spacecraft is on the ground. In flight they swing into an upright position. The simulator duplicates in exact detail the Gemini spacecraft that will orbit two men later this year.

HILBURN REPLACES LINGLE

Walter L. Lingle Jr., Deputy Associate Administrator, has resigned his position with NASA and returned to private industry.

He is succeeded by Earl D. Hilburn, Deputy Associate Administrator for Industry Affairs.

Lingle, who has been on leave of absence since February 1962 from the Procter and Gamble Co., Cincinnati, Ohio, where he was Executive Vice President, joined NASA in June 1962. He served briefly as Assistant Administrator for Public Affairs and in August 1962 became Assistant Administrator for Management Development. In March 1963 he was assigned additional responsibilities as Deputy Associate Administrator for Industry Affairs, and succeeded to his present position last November.

Prior to joining NASA he served as Deputy Administrator of the Agency for International Development.

Hilburn, who succeeds Lingle and has been his close associate in NASA industrial and management matters, joined the space agency in July 1963. He came to NASA from East Paterson, N. J., where he was General Manager of Curtiss-Wright's Electronics Division. Prior to that he was President of Burtek, Inc., Tulsa, Okla., manufacturers of aviation products. Earlier he held vice presidential positions with the Link Aviation Division of General Precision Corp. and with the Westinghouse Air Brake Co.

Until Hilburn's successor is named, he will act in both capacities.

FOR SALE: Craftsman leaf sweeper - $10, 20-inch convertible bicycle with training wheels - $15. Osborne, LY 6-7866.

FOR SALE: Boy's 26-inch bicycle. Fields, PA 3-6679.

FOR SALE: 1962 power mower - $25, 1962 8,000 btu window air conditioner - $90. Collins, 596-6533.

WANTED: Ride from Riverdale Apartments to E.A. on 8 shift. Collins, 2203.

WANTED: Ride or driving combination from Huntington Court Apts. to W.A. on 8 shift. Nichols, 3257.

WANTED: Passengers from Lynnhaven-Northampton area to W.A. on 8 shift. Hudgins, 4770.

LOST: Soundscriber and transcriber machine, inventory no. 101753. Finder call Security Office, 2297.

FOR SALE: Plastic aquarium, 2 gal. capacity, with pump and filter - $8. Miller, LY 6-9001.

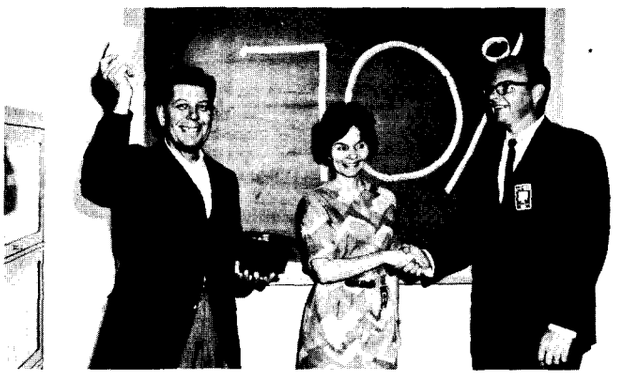
FOR SALE: 120 bass Moreshi accordion - $125. Miller, PA 3-4720.

FOR SALE: Motorola stereo, 70 watt amplifier, 4 speakers, mahogany. Kern, 595-2912.

DR. EUGENE M.

Langley Researcher

VOLUME 3, NUMBER 12 LANGLEY RESEARCH CENTER JUNE 5, 1964



Elizabeth G. Fisher, Stenographic Section, was the winner of the $25 bond which was donated by the Activities Association for the Center's bond drive which was held in May. A. J. Voltlein, Flight Mechanics and Technology Division and treasurer of the Activities Association, holds the winning number. Herbert J. Pelton, Procurement Division and president of the Association, congratulates the winner. All new subscribers and all employees who increased their allotments were eligible for the bond.

303 EMPLOYEES SUBSCRIBE FOR BONDS DURING DRIVE

Edward A. Howe, Chairman of the Center's bond drive which was held during May, reported that a total of 303 new subscribers signed up to purchase bonds through the payroll savings plan and 132 increased their present allotments. This brought the Center's percentage of participation up to 70 percent.

Twenty-nine sections reported 100 percent participation. They included the following: Model Finishing Shop, Construction Management Engineering Branch, Flight Vehicles and Systems Division Office, Dynamic Loads Division Office, Program Control Analysis and Budget Office, Research Staff Office, Office of Director, Chief of Administration and Technical Service, Impacting Structures, MORL Group, Purchase Branch, Personnel Division Office, Training Office, Personnel Records, Employee Services, Classification and Wage Administration, Employment, Office of Public Relations, Flight Mechanics and Technical Division Office, Planning Control Unit, Full-Scale Division Office, Applied Materials and Physics Division Computers, Applied Materials and Physics Division Operations, Aero-Physics Division Office, Assistant Chief of Technical Service, Research Records, Payroll, and Fiscal Division Office.

In the drawing for the winner of the Activities Association's $25 bond, the lucky number belonged to Elizabeth G. Fisher, Stenographic Section. All new subscribers and all persons who increased their allotments were eligible for the drawing.

Elizabeth was a new subscriber. She first joined the Center staff on June 9, 1942 and resigned January 20, 1943. She returned in 1951 and worked until 1954. She joined the staff again on March 20, 1964.

SIXTH SATURN SUCCESSFULLY LAUNCHED FROM CAPE KENNEDY

NASA successfully launched the sixth Saturn I flight vehicle (SA-6) from Cape Kennedy on May 28.

The main purpose of the sixth Saturn flight was to further qualify the launch vehicle and develop the technology necessary to build the more powerful Saturns needed for manned lunar landings and other space exploration.

As an additional mission, SA-6 carried into earth orbit the first unmanned "boilerplate" model of the Apollo spacecraft, which is being developed to ultimately transport three men to the moon.

Another first was the use of an active guidance system to steer the second stage and attached Apollo into an orbit ranging from 110 to 140 statute miles. SA-5, launched January 29, 1964, placed a 37,700-pound satellite into orbit using only an "open loop guidance" or autopilot system.

The SA-5 satellite, consisting of the S-IV stage, instrument unit and a sandfilled nose cone, is the heaviest known object ever orbited. The SA-6 satellite, consisting of the emptied S-IV stage, instrument unit and Apollo spacecraft, weighed about 37,300 pounds.

Other primary missions of the SA-6 flight included further testing of vehicle propulsion, structure and flight control systems, as well as additional proving of the stage separation scheme.

General Bernard A. Schriever, Commanding General, Air Force Systems Command, Andrews Air Force Base, Maryland, visited the Langley Research Center on Monday and toured a number of the research facilities. Greeting him upon his arrival at Langley is Dr. Floyd L. Thompson (right), Director of the Langley Center. Included on the inspection tour were the Hangar, Structures Research, Unitary Wind Tunnel, and Applied Materials and Physics.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

BABY DERBY. . .Celebrating the birth of a four pound, three ounce daughter on May 11 are Margaret, formerly of MORL Section, and Snowden C. Mills, Mechanical Service Division. . .Passing out candy and cigars is Walter C. Long, Instrument Research. He became the father of a daughter, Wendy Carol, on May 9. . .Announcing the birth of a daughter, Kelly Lee, on May 18 is Davis Wright, Mechanical Service.

THANKS FOR FLOWERS. . .Kitty Joyner, who was in charge of decorations for the luncheons for the NASA Inspection in Advanced Aeronautical and Space Research, wishes to thank the many staff members who contributed the lovely flowers for the five-day event.

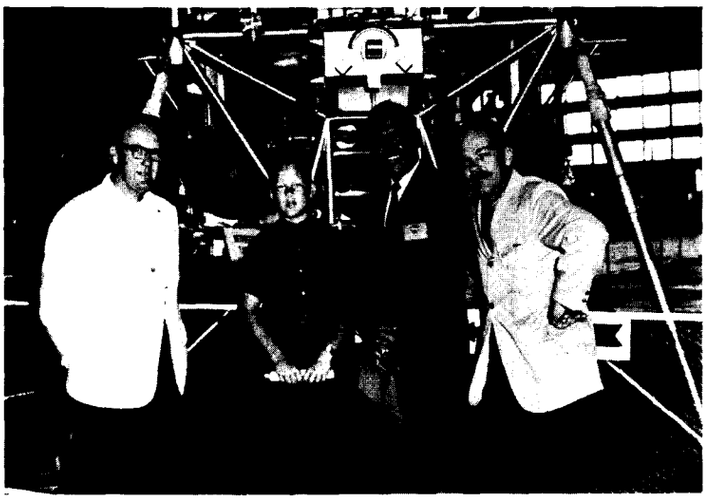
REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on June 9 from 3 p.m. until 4. Beverly Beale, Government-wide Service Plan representative, will be here on June 17 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

ENGAGEMENT. . .Making plans to desert the bachelor ranks is Marcus Larry Brumfield, Applied Materials and Physics Division. He is engaged to Lynda Waldrop, Hampton, and no definite date has been announced for the wedding.

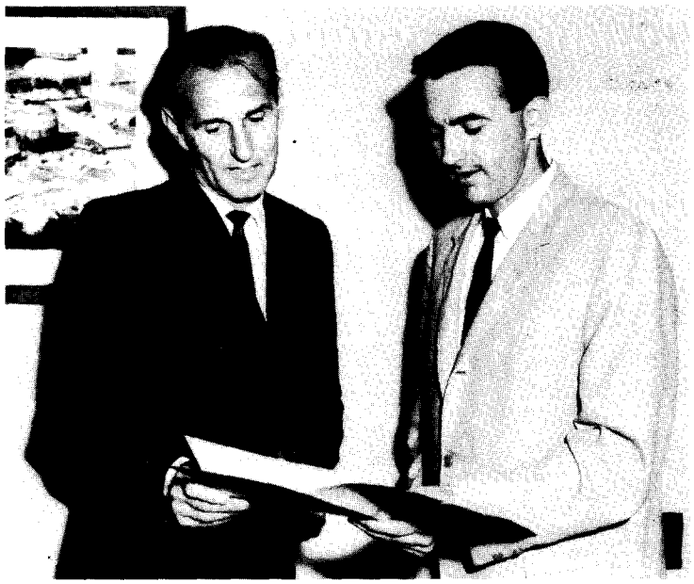
COMMUNITY THEATER. . .At a recent meeting of tl Community Theater of the Virginia Peninsula the following officers were elected for the 1964-65 season: Granville Derby, 8-foot Tunnels Branch, president; Richard T. Whitcomb, Head of 8-foot Tunnels Branch, vice-president for business; Clyde Winters, Applied Materials and Physics Division, vice-president for production; Barbara Durling, Dynamic Loads, treasurer, and Alberta Harrawya, recording secretary.

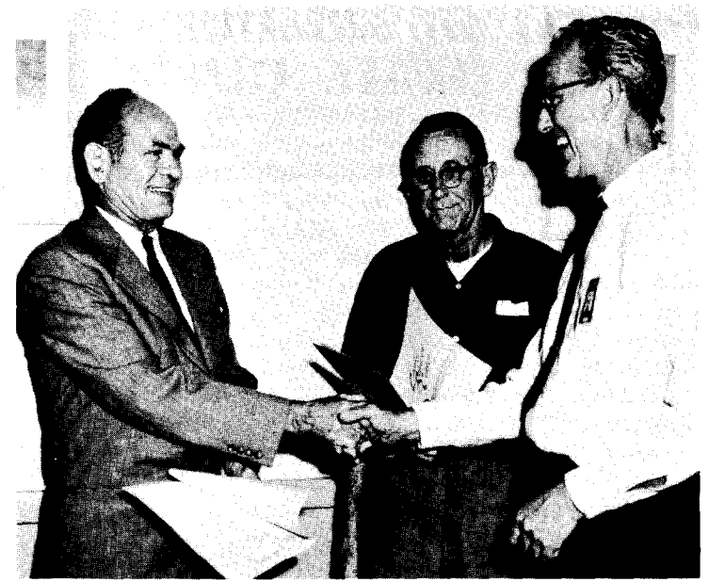
WEDDING ANNOUNCEMENT. . .Mary Ella Gerich and Leonard P. Kopia, both of Instrument Research Division, were married on May 16. Dennis Carey, also of IRD, was a groomsman.

WANTED: Driving combination from vicinity of Stuart Gardens to W.A. on 8 shift. Decker, 4535.
WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.



OPEN HOUSE. . .A large group of student and Peninsula residents attended the Center's Open House which was held on Saturday, May 23. Top photograph - A number of students inspect the display in the NASA Hangar. Center photograph - Duane McSmith, Safety Officer, talks with a group of young future spacemen. Bottom photograph - Posing for the camera are (from left): Axel T. Mattson, Office of Associate Director; John Mattson, Harry DeVoto, Ames Research Center, and Daniel Wentz, Public Affairs Office.





Three employees recently received cash awards under the NASA Incentive Awards Program. Left photograph - Harry H. Hamilton (left), Chief of Photographic Division, presents an award to Phillip H. Levi for suggestion a drying cabinet and squee-gee board. Right photograph - William B. Mayo, Chief of Mechanical Service Division, presents awards to William S. Saunders (left) for suggesting a safety device on rolling type doors and to William T. Parker (center) for a a rotating air and water-cooled mercury arc lamp. Suggestions should be sent to the Center's Awards Office.

KENNEDY LIBRARY FUND

A Government-wide voluntary campaign is being conducted at the Center through June 10 to give all employees an opportunity to contribute to the John F. Kennedy Library which will be a memorial to the late President.

The Library will house a complete record of the late President's life, his times, and his Administration. It will be built on a site donated by Harvard University and selected by President Kennedy just eight weeks before his death.

Contributions may be made in a lump sum or over a period of 3 years. Jess Ross is coordinator for the Center's effort. Persons interested in contributing to the John F. Kennedy Library are requested to contact their division secretaries.

UNIVERSITY RECEIVES GRANT

Texas A and M University, College Station, Texas, will receive a $1 million facilities grant for construction of an activation analysis research laboratory under terms of an agreement with NASA.

The agreement, providing funds to build the facility on the Texas A and M campus, was recommended by the NASA Grants and Research Contracts Division and approved by James E. Webb, NASA Administrator. The laboratory will be used in the University's space-related research program for remote analysis of materials through nuclear activation.

Scientists at Texas A and M also are conducting space-oriented research under NASA grants in several fields. Ten graduate students are participating in space related studies under a program sponsored by NASA.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of June 8:

Monday - French onion soup with croutons and cheese, roast ribs of beef, chuckwagon steak, Polish sausage with sauerkraut, hamburger.

Tuesday - Consomme julienne, chicken fried veal steak, barbecued spare ribs, liver and onions, chili con carne.

Wednesday - Chicken noodle soup, country style chopped steak with gravy, corned beef and cabbage, fried chicken, tamale pie.

Thursday - Vegetable beef soup, sauerbraten, crab cakes with cole slaw, meat loaf, cheeseburger.

Friday - Clam chowder, grilled steak, baked Smithfield ham, broiled fish, fried fish, baked hash.

The menu for the week of June 15 is as follows:

Monday - Puree of bean soup, roast ribs of beef, veal cutlet, chicken chow mein with rice or crisp noodles, fish cakes and cole slaw.

Tuesday - Green split pea soup, Swiss steak, baked ham, spaghetti and meat sauce, grilled cheese and bacon sandwich.

Wednesday - Minestrone soup, Spanish pot roast, shrimp Newburg, fried chicken, chili hotdog.

Thursday - Vegetable-beef soup, grilled steak, deep fried scallops with tartar sauce, knockwurst and beans, barbecued sandwich.

Friday - Clam chowder, roast beef, stuffed flounder, broiled fish, western omelette.

FOR SALE: 3-bedroom, 1-1/2 bath rancher in Beaconsdale Meadows. Locke, LY 6-7532.

FOR SALE: 6-room house in Stuart Gardens. Pilny, CH-4-4773 after 5 p.m.

FOR SALE: New floor furnace, oil gun burner-type, 85,000 btu. King, CH 7-3817.

FOR SALE: 1961 Corvet, $2595. Croom, 877-2703.

FOR SALE: Magnavox transistor AM-FM portable radio. Dearing, PA 2-0225 after 6 p.m.

FOR SALE: 18 hp outboard Evinrude motor - 1960 model. Marshall, 596-2935.

NASA-FAA SST SIMULATION STUDY LINKS LANGLEY, ATLANTIC CITY

Simulation studies to assure that the projected U.S. supersonic transport will mesh smoothly into the nation's air traffic control system are now underway in a joint program between the NASA and the Federal Aviation Agency.

An advanced supersonic transport flight simulator is installed at the Langley Research Center supported by a battery of analog computers and accessory equipment for navigation, communication, recording and power.

At the FAA's National Aviation Facility Experimental Center at Atlantic City, New Jersey, there has been established a simulation capability for reproducing an entire Air Route Traffic Control Center (ARTCC), a partial adjoining ARTCC for fringe traffic, and an airport approach control and tower complex.

Communications and data channels link the two facilities, to bring together NASA's special competence in performance, stability and control, and operating problems of supersonic aircraft and FAA's vast experience in air traffic control.

The complex arrangement has been set up in anticipation of several related problems which will arise when a supersonic airliner is introduced into a traffic control system largely populated by subsonic airplanes with different flying characteristics.

For example, the supersonic transport will use fuel at a high rate and hence would be heavily penalized by extensive traffic delays. Its particular characteristics will limit its choice of flight paths and will probably cause an increased workload for its crew.

From the traffic control viewpoint, SST speeds will create problems of safe separation distances between planes and an increased workload for traffic controllers.

Answers to some of these expected problems must be found in advance, so that it will be possible to design both the airplane of the future and the traffic control system of the future to work more efficiently together.

The Langley Center simulator consists of a four-place cockpit like that of a present-day jet. There are stations for a pilot, co-pilot, flight engineer and navigator. Instruments have been changed to cover speeds over 2,000 miles per hour and altitudes to 100,000 feet.

The analog computer linked to it can be programmed to simulate the flying characteristics of several different SST concepts. Such characteristics come from wind tunnel experiments which NASA has conducted on SST concepts for many years. Signals from the pilots' control motions initiate simulated aircraft motions which in turn are reflected in changed instrument readings in the cockpit.

At the FAA installation at Atlantic City a large group of electronic instruments simultaneously create an air traffic control environment. The complex traffic patterns centered around Kennedy International Airport in New York City work with the artificially-created traffic as presented on their radar scopes and through communications, a spot of light representing the SST being flown by simulation at Langley appears on their viewing screens. The controllers then bring the SST from cruising altitude down to final approach or simulate a take-off and acceleration to cruising altitude.

The simulated flights are conducted on the same time scale as an actual approach or take-off would be, thus realistically putting before both the flight crews and controllers situations with which they must deal on the spot.

As part of its extensive contribution to the national Supersonic Transport Program, Langley Research Center has developed an advanced simulator to find the best ways to integrate the Mach 2-3 airplane of the future into the air traffic control system. The simulator shown here has a cockpit arrangement similar to current subsonic jet transports, with four crew spaces provided.

Airline jet pilots and co-pilots will perform most of the simulator "flying," supplemented by NASA research pilots and FAA flight personnel.

Simulation studies are expected to continue during the next several years.

WARNING NOTICE

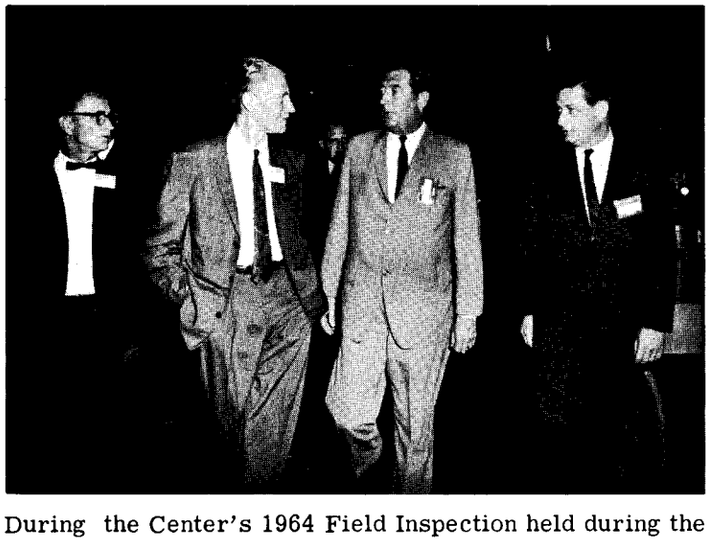
Some types of plastic containers shouldn't be used for flammable liquids.

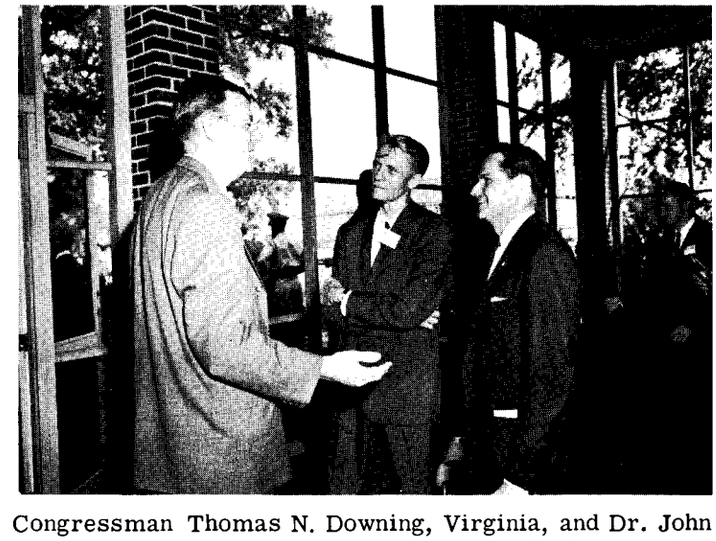
The National Fire Protection Association has warned that flammable liquids are being stored in polyethylene plastic containers which were designed for water, bleaches, fruit juices, tea, milk and such liquids. Unfortunately, many small manufacturers of such containers are advertising using them for all liquids including gasoline and other flammable liquids.

These containers vary from 1 to 5 gallons in size. Some of the 5-gallon containers are equipped with plastic spigots at the bottom and are being used in hospitals and laboratories. The NFPA previously has pointed out the hazards of plastic spigots for flammable-liquid containers.

Colorful replicas of the famous GI metal cans of World War II are being made from polyethylene. These blow-molded units, intended to carry water, juices, and such liquids, should not be used as emergency gasoline cans because at temperatures as low as 140 degrees to 150 degrees F., gasoline will permeate polyethylene with ease, especially in thin sections. Temperatures in the trunk of a car or in the covered bow of an outboard runabout can easily reach these figures on hot summer days and cause a fire. Polyethylene containers are combustible; they are also subject to rupture, especially in cold weather.

Service station personnel are cautioned not to fill this type of plastic container with gasoline and to warn customers against using them for this purpose.





During the Center's 1964 Field Inspection held during the week of May 18, a number of congressmen and Government officials toured Center facilities. Upper left photograph - Dr. Floyd L. Thompson, Director, greets Congressman John W. Davis, Georgia; Don Fuqua, Florida, and Eldwich J. Andolsek, U.S. Civil Service Commission. Upper right photograph - Visitors during the Inspection were welcomed by James E. Webb, NASA Administrator. Center left photograph - Eugene C. Draley (left), Assistant Director for Flight Projects, discusses an impact display with Fuqua, Congressman Thomas N. Downing, Virginia, and Dr. John E. Duberg, Assistant Director. Center right photograph - Charles J. Donlan (left), Associate Director, greets James T. Pyle, Federal Aviation Agency. Lower left photograph - Touring the facilities are (from left): T. Melvin Butler, Assistant Director for Administration; Dr. Thompson, Downing, and Fuqua. Lower right photograph - Dr. Thompson talks with George W. Brady (left), Institute for Defense Analysis, and Milton B. Ames Jr., NASA Headquarters, Washington, D.C. --Photos by Bob Nye

ENGINEERS BELIEVE MAN WOULD HAVE SURVIVED STAGED CRASH

Aerospace engineers believe that airline passengers may be protected from injury in crashes if they are held in their seats by large, air-filled bags.

The "airbag" system was tested recently when a DC-7 airplane was purposely crashed into a hillside at more than 160 miles per hour.

The experiment was staged at Phoenix, Arizona, for the Federal Aviation Agency by the Flight Safety Council. Results indicate the dummy who sat in for a man would have survived the crash.

The Martin Company designed the airbag system under contract from NASA. It was one of a number of experiments conducted in the staged crash.

Martin is studying the concept for possible use by both airplane passengers and astronauts. The version for aircraft use is called "Air Stop."

In regular use the bags would be stored out of the way during flight and rapidly inflated by a switch in the pilot's cabin when a hard landing or crash is anticipated. The bag inflates between the passenger and the seat ahead of him. The passenger is thus held securely in his seat.

A switch equipped with a time delay may be activated by aircraft impact, automatically deflating the bags and freeing the passenger after he is on the ground.

In the Phoenix test, high speed motion picture cameras were trained on a dummy to document the restraining effects of the air bags. The pictures show the dummy received the most severe shock and acceleration when the aircraft hit the second of two hills on the crash area mock-up. He was forced down and forward as if moving toward a kneeling position.

Martin engineers estimate that the forward acceleration sustained by the dummy was cut to 25-50 percent. An unprotected dummy suffered an estimated 40G (40 times the force of gravity). The protected dummy received an estimated forward force of 8G and downward force of 5G at the initial impact. The dummy suffered about 5 and 10G in the second impact. By comparison, pilots ejected from military aircraft safely sustain 16 to 17G.

Another test of the "Air Stop" system is planned later this year.

DICKERSON JOINS NASA

NASA has announced the appointment of Joseph T. Dickerson Jr., as Special Assistant to Dr. George E. Mueller, Associate Administrator for Manned Space Flight.

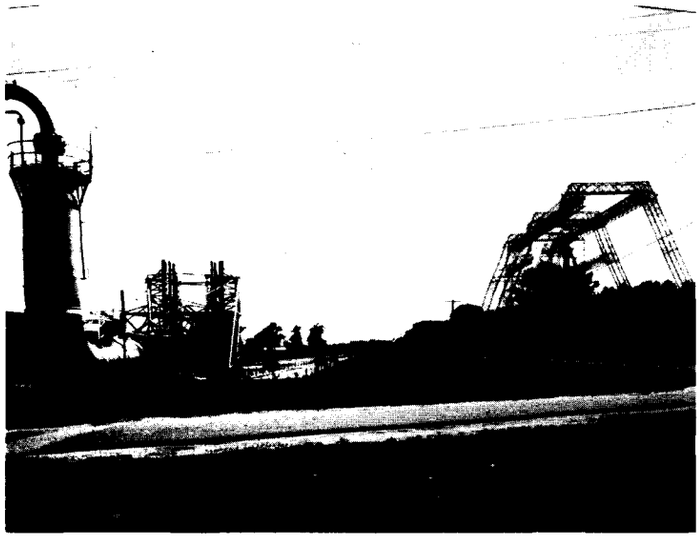
Dickerson will assist Dr. Mueller in the areas of management, labor relations and government-industry relationships.

Dickerson was associated with Shell Oil Co. for 33 years. From 1951 to 1954 he was a Vice-President and from 1954 through 1959 was President of Shell Pipe Line Corp. He was Executive Vice President of the Mid-Continent Oil and Gas Association from 1960 to 1964.

He is a native of Marion, Kansas, and was graduated from the University of Oklahoma in 1921 with an L.L.B. degree. He served in World War II in North Africa and Italy.

WANTED: Ride from Shore Park area to W.A. on 8 shift. Dot Histand, 4866.

WANTED: Driving combination from Bethel Park to W.A. on 8 shift. Martha Davidson, 4788.



Lunar landing and Earth landing which normally are separated by a quarter million miles are investigated in side-by-side research facilities at the Langley Research Center. Aircraft landing research is conducted at the Landing Loads Track (left). In this facility, a hydraulic water jet catapults a carriage at speeds up to 150 miles per hour along a 2,200 foot track. In the Lunar Landing Research Facility (right), scientists will work with research pilots to explore and develop techniques for landing a rocket-power vehicle on the Moon, where gravity is only one-sixth as strong as on Earth.

ASSOCIATION ELECTS OFFICERS

At a meeting of the General Assembly of the Activities Association held last week, four new members were elected to the Executive Board for a two-year term. New officers are Humbert E. Rockey, Instrument Research Division, vice-president; Linda T. Johnson, Personnel, secretary; Betty J. Tholl, Procurement, chairman of arts and crafts, and Richard L. Kurtz, Flight Vehicles and Systems Division, chairman of the social committee.

Members who have one more year to serve are as follows: Herbert J. Pelton, Procurement, president; A. J. Voitlein, Aero-Space Mechanics, treasurer; Virginia LaPrade, Photographic, chairman of the children's committee; Ray Goodman, Heavy Machine Shop, chairman of the activities committee, and Herbert Boulter, Instrument Research, chairman of building and grounds.

CIVIL SERVICE EXAM OPENED

The U.S. Board of Civil Service Examiners at Langley Research Center are accepting applications for the position of Experimental Facilities Mechanic, WB-10, $2.94 per hour.

No written test is required and the examination is not based on the length of experience but on the scope and quality of experience.

Applications will be accepted by the Board of U.S. Civil Service Examiners, NASA Langley Research Center, Langley Station, Hampton, Virginia, until the needs of the service have been met.

WANTED: Driving combination from Stoneybrook to W.A. on 7:30 shift. Evans, 4586.

WANTED: Ride or passengers to Mississippi June 25. Hill, 4842.

RESEARCH IN LOW SPEED AERONAUTICS AIDS SPACECRAFT, V-STOL AIRPLANES

While the United States program of space exploration has engaged the minds and energies of thousands of scientists, engineers and technicians, the NASA is continuing energetic research to support needed advances in the art of low speed aeronautics.

Studies in flight and in the laboratory are producing knowledge useful for advanced airplanes as well as for lifting reentry vehicles still in the concept stage.

Aeronautical research experts at the Ames Research Center, Flight Research Center and Langley Research Center are making a concerted effort to improve the flying qualities of a class of aircraft capable of fast forward flight combined with unusually slow landing and take-off speeds. Such airplanes are generally called V/STOL (vertical/short take-off and landing) aircraft, and the effort to develop them has introduced many new problems in research because they fly so slowly.

Systematic research is underway in wind tunnels and in flight to learn more about the dynamic behavior of V/STOL aircraft. Ever since the helicopter demonstrated the practicality of hovering flight, designers have sought to combine its versatility at very low speeds with the high cruise speed capability of conventional airplanes.

One promising concept is the tilt-wing method for achieving both qualities in the same aircraft. It uses a mechanism for rotating wing and propellers through an arc of 90 degrees - with the combination vertical for landing and take-off and horizontal for conventional forward flight. Transition from hovering to cruise position has been demonstrated to be feasible by flying test bed aircraft such as the VZ-2.

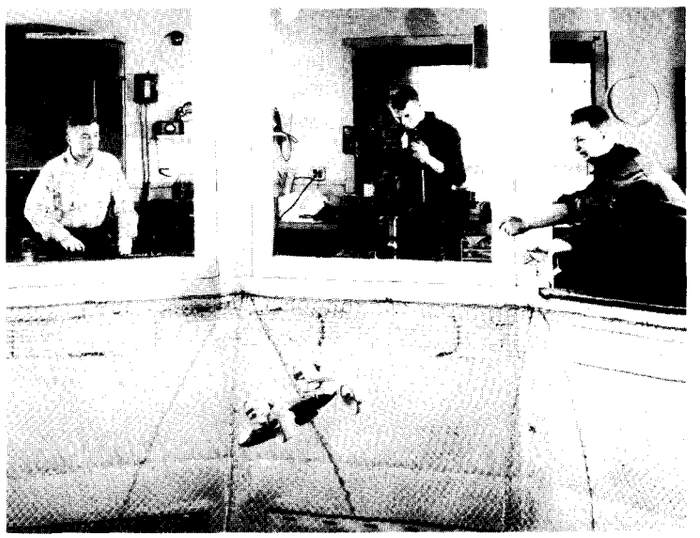
Sufficient technology has been developed by NASA and industry efforts to support construction of a military aircraft embodying the tilt-wing V/STOL concept. The resulting airplane, the XC-142A assault transport, is designed to move a four ton payload at speeds above 300 miles per hour. First flight of the XC-142A is expected later this year.

NASA efforts in V/STOL research include studies of the X-22 airplane which is equipped with four ducted fans pivoted to tilt through 90 degrees to permit transition from hovering to forward flight. NASA research has also supported the effort to develop and build the XV-5A airplane, intended to rise vertically with lift generated by two large fans buried in the wings. For forward flight, the XV-5A's lifting fans will be shut down and covered over and the jet engine used to drive the fans will be employed to provide conventional thrust.

Principles of low-speed aerodynamics are also being applied to spacecraft recovery, and NASA scientists are at work on several different approaches to the problem.

Spacecraft of the Gemini or Apollo type have only small amounts of aerodynamic lifting capability, and hence must be recovered by some auxiliary means such as a parachute, rotor or parawing. The parawing is a light, flexible auxiliary wing which can be packaged like a parachute and deployed when needed.

Lifting body concepts for more advanced spacecraft require that some modest amount of gliding capability be built into the vehicle design, and NASA is carrying out a tri-center research program at the Langley, Ames and Flight Research Centers to find the best shapes for multi-purpose reentry vehicles which might be suitable for a variety of missions.



By releasing models of various airplane or spacecraft designs into the air-stream of a vertical wind tunnel, scientists at Langley Center investigate their spin and recovery characteristics. As a Langley technician releases an X-22A tilt-duct vertical/short take-off and landing aircraft model in a free-body experiment at subsonic speeds, the vehicle immediately descends through a vertically rising air stream as flight behavior is recorded on high-speed motion picture film. The model falls into a protective net upon completion of the test and is recovered for further use.

Two lifting-body concepts have received the most extensive research attention - the HL-10 configuration, originated at the Langley Center, and the M-2 concept devised by researchers at Ames.

Both are sufficiently promising to warrant further research. Flight experiments have been made at the Flight Center with a light, plywood model of the M-2, towed aloft by a DC-3 airplane, and successfully flown to a controlled, glide landing by a research pilot.

On the basis of the flight and laboratory experiments conducted so far, a contract was let earlier this year for the construction of two flight test vehicles, one based on the M-2 concept and the other on the HL-10. They will be built according to conventional low-speed aircraft construction practices, and designed so that their weights can be varied from 4,000 to 8,000 pounds, providing a wing loading test range from 25 to 50 pounds per square foot.

Even in the age of space flight, low-speed research is a continuing necessity, to improve the versatility of spacecraft, and to exploit the advantages of low speed for uses on Earth.

FOR SALE: 10-foot Catamaran pram for rowing or small outboard, sailing rig and hardware included - $115. Kelly, PA 3-2777.

FOR SALE: 3-bedroom brick home. McRee, 838-0389.

FOR SALE: 1958 Rambler. Fowler, 877-2258.

FOR SALE: B-flat metal clarinet by Noblet. Graham, 826-3384.

FOR SALE: 1964 Volkswagon Micro bus. Downing, CH - 44088.

FOR SALE: 1958 English Ford. Adams, CH 5-6009 after 6.

NASA BOWLING LEAGUES

Tom Cats lead Group A in the NASA Tenpin League with 87 wins and 53 losses. Top scores were rolled by Marvin Fink with a 271 game and Richard Hanna with a 702 set.

Misfits lead Group B with 99 wins and 41 losses. Top bowlers for the week were Ray Moore with a 243 game, Thomas Bess with a 651 set, and Susan Cuddihy with a 227 game and 612 set.

GROUP A			GROUP B		
Team	W	L	Team	W	L
Tom Cats	87.	53	Misfits	99	41
Phantoms	84.5	55.5	Ten-Benders	90.5	49.5
Hornets	84.5	55.5	Ranch House	84	56
Electronic Shop	82	58	Latecomers	82.5	57.5
Flight Eng.	79.5	60.5	Cee Pees	74	66
Short Circuits	78.5	61.5	Lunar-Tics	74	66
Johnnie's	78.5	61.5	Spare Parts	73.5	66.5
Unitary	78	62	Alley Oops	73	67
Alley Cats	76	64	Barristers	72.5	67.5
Devious	74	66	Dynamos	70	70
Frame Ups	71	69	Greenhorns	69	71
Flyers	68.5	71.5	Hucksters	69	71
Payloads	67	73	Sudz	68	72
Oddballs	64	76	Gliders	66.5	73.5
Crusaders	64	76	Question Marks	63	77
Pinwigglers	58	82	Dillys	62	78
Malfunctions	57	83	Analogs	60.5	79.5
A-OK's	55	85	Mets	54	86
Galaxies	49.5	90.5	Bowling Belles	52	88

Light Machine No. 1 moved into a tie with Ten Spots for first place in the NASA Duckpin League. Each team has 79 wins and 57 losses. Top scores were rolled by Bill Suit with a 156 game and 368 set, Mable Jones with a 123 game and 316 set, and Helen Stubblefield with a 120 game and 330 set.

Ten Spots	79	57	Lt. Mach. 2	65	71
Lt. Mach. 1	79	57	Rebel Bombers	61	75
Strike Outs	77	59	ACD	61	75
Pinpoppers	72	64	Doodle Bugs	60	76
AMC	71	65	Reentry	55	81

SECURITY INCIDENT

This is a true story that was recently released by the Air Force News Service.

The air policeman checked the desk trays on the desk for improperly stored material. Then he flipped open the telephone list finder. There it was, under the letter "K" - a desk key. With this key, the AP opened the middle drawer of the desk and started looking through the papers. On the back of a "memo of call" slip he saw a set of three numbers. These numbers opened a safe in the office containing top secret information and a list of the combinations to 32 other safes.

The person in whose desk the combinations were found was called to base headquarters. He reported in at about 4 a.m., extremely perplexed as to how a safe in his office could be open. He had entirely forgotten about writing down the combination.

Moral of this story: Memorize your safe combination. Don't write it down.

WANTED: Girl's 24 or 26-inch bicycle. Fournier, LY - 60758.

Francis M. Rogallo (left), Head of 7 by 10-foot Tunnels Branch, recently received a check for $200 for his invention entitled "Vehicle Flexible Wing Configurations." The check was presented to him by Mark Nichols, Chief of Full-Scale Research Division. The award was made by the NASA Inventions and Contributions Board.

EMPLOYEES DIE UNEXPECTEDLY

Charles E. Gerrity, Equipment Specialist in the Technical Service Contract Support Unit, died unexpectedly on May 25 at the age of 46.

Gerrity was born August 4, 1917 in Phoebus and attended Hampton High School. He joined the Center staff on June 19, 1942 and left to enter the Navy in 1944. Following his discharge in 1946 he returned to the Center. He resigned in 1955 to accept a position with Prudential Insurance Company, Long Beach, California, and returned to Langley January 2, 1962.

He is survived by his son, Charles H. Gerrity, Instrument Research Division, and a daughter, Rita Ann Gerrity, Hampton.

Numa E. Thomas, Optical Instrument Specialist in Instrument Research Division, died Monday morning in Riverside Hospital.

Thomas was born March 2, 1920 in Jackson Springs, North Carolina. He served as a photographer in the U.S. Navy from November 1944 to February 1946 and joined the Center staff on May 16, 1946.

Surviving are his wife, Mrs. Jean W. Thomas; two daughters, Andrea Thomas and Karla Thomas, and a son, John Thomas, all of Newport News.

FOR SALE: 1963 Falcon - 5600 miles. Kopcik, PA 3-8348.

FOR SALE: 2 houses on adjoining lots - one 3-bedroom brick house and one 2-bedroom frame house, also 2 cemetery plots in Parklawn. Harrison, PA 3-4133.

FOR SALE: 1964 Volkswagon, $1700. Bond, 868-9290.

FOR SALE: 1962 Pontiac hardtop. Whitlock, 838-1591.

FOR SALE: 1958 Harley Davidson motorcycle, $200. Titus, PA 2-5092.

FOR SALE: Frame garage door. Belle, 851-1188.

FOR SALE: Two hi-fi speakers JBL, 8-inch with cabinets, one turntable - Garrard type A. Oertel, 229-6842, Williamsburg.

WANTED: Driving combination from Hampton Roads Ave. and Kecoughtan Rd. to W.A. on 7:30 shift. Adair, 4842, or Hill, 3395.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 13 LANGLEY RESEARCH CENTER JUNE 19, 1964

BREENE M. KERR JOINS NASA

NASA has announced the appointment of Breene M. Kerr as Deputy Assistant Administrator for Technology Utilization.

Kerr, son of the late Senator Robert S. Kerr of Oklahoma, has been manager of land development of Kerr-McGee Oil Industries, Inc., Oklahoma City.

As deputy for technology utilization to Dr. George L. Simpson, Assistant Administrator for Technology Utilization and Policy Planning, Kerr will have operating responsibility for NASA's Technology Utilization Program.

This program identifies and makes available to NASA contractors, industrial and other users scientific data and technical advances from NASA research to help improve or form a basis for new techniques, processes or products and extend them for non-space use.

It operates in close association with other government agencies such as the Department of Commerce, the Small Business Administration and the Atomic Energy Commission.

Kerr was born January 27, 1929 at Ada, Okla. He received a B.S. degree in geology from Massachusetts Institute of Technology in 1951.

After spending two years in the Army, he joined the geology department of Kerr-McGee in 1953.

Since January 1961, he has been manager of the land depart of the corporation, supervising drilling, leasing and contracts for exploratory operations.

James E. Webb (right), NASA Administrator, receives a new $75 Series E Savings Bond for his personal check from Secretary of the Treasury Douglas Dillon. This was the first of 59 sold to Webb and top NASA officials. The occasion highlighted NASA's campaign as part of the interdepartmental program to increase total federal employee participation in the payroll savings plan. The bonds are of the denomination which bears the portrait of former President John F. Kennedy.

STAFF MEMBERS PRAISED FOR INSPECTION SUCCESS

Dr. Floyd L. Thompson, Langley Director, has received congratulatory letters from all sections of the United States from many of the 2,000 aerospace leaders who attended the NASA Field Inspection of Advanced Research and Technology conducted at the Langley Research Center the week of May 18.

The letters, including one from James E. Webb, NASA Administrator, are unanimous in commending the Langley staff members for their many courtesies, their outstanding organizational ability, and their instructive and interesting technical discussions and demonstrations.

Expressing his appreciation for "a most outstanding job," Webb commented: "Not only was the day well organized and the material presented constructively, but those who made the presentations displayed enthusiasm, knowledge and dedication which could only give confidence to any visitor concerned with the manner in which the funds appropriated to NASA are being utilized."

The following excerpts from some of the letters illustrate how well the staff accomplished its purpose in informing the public of the NASA's vital role in the conduct of advanced research and technology in both the aeronautical and space sciences:

L. Welch Pogue of the law firm of Pogue and Neal, Washington, D.C., former chairman of the Civil Aeronautics Board, described the Inspection as "a portrayal of the fundamental research being conducted by NASA which is most encouraging to citizens of the United States." He offered congratulations on the resumption of the Inspection-- "as it is very difficult for the public of the United States-- even the public interested in aerospace activities in some particular way-- to gain any adequate impression as to what is being undertaken by NASA without some personal exposure..."

George R. Herbert, President of the Research Triangle Institute, Durham, North Carolina, observed that "the presentations by the technical staff and the visual impact of the Inspection conveyed the real feeling of the importance of the research being undertaken."

Dr. Frank J. Kreysa, Associate Director of the Smithsonian Institution's Physical Sciences Division, "found the well-planned activities most profitable-- the various inspection stops had clear and interestingly arranged displays and demonstrations, and competent speakers..."

Dr. H. H. Kurzweg, NASA Director of Research, Office of Advanced Research and Technology, reported that the "many comments which I've heard...were all favorable with respect to content and the very professional manner in which the entire inspection was handled. Everybody seems to have left with a greater realization of the extent and diversity of Langley's capabilities."

F. C. Ruling, regional vice-president of the General Elec-

(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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Leland Imig, Structures Research, is engaged to Sue Backstrom and the wedding will be held on July 3 in Lincoln, Nebraska. . .Making plans to desert the bachelor ranks is Glenn Gates, Mechanical Service Division. He is engaged to Rebecca Ragsdale and the wedding has been set for June 27 in Fox Hill. . .Making plans for a September 12 wedding is JoAnn Watts, Structures Research. She is engaged to William B. Hudgins and the event will take place in Tabor City, North Carolina.

NEW ARRIVALS. . .Announcing the birth of a son is Larry W. Swartz, Electrical Systems Division. . .Passing out cigars and candy is William E. Miller, Applied Materials and Physics Division. He became the father of a daughter on May 30. . .Celebrating the arrival of a son on June 1 is Paul R. Yeager, Instrument Research. . .Weighing in at six pounds, fifteen ounces on June 1 was Craig Martin, son of John H. Crews Jr., Structures Research.

PROFESSOR PLANS VISIT. . .Dr. Richard T. Eppink, Department of Applied Mechanics, University of Virginia, will visit the Center on Thursday, June 25. Employees wishing an interview with Dr. Eppink should call the Training Office, 2326, for an appointment.

BLOODMOBILE. . .The Red Cross Bloodmobile will visit the Center on July 1. 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.

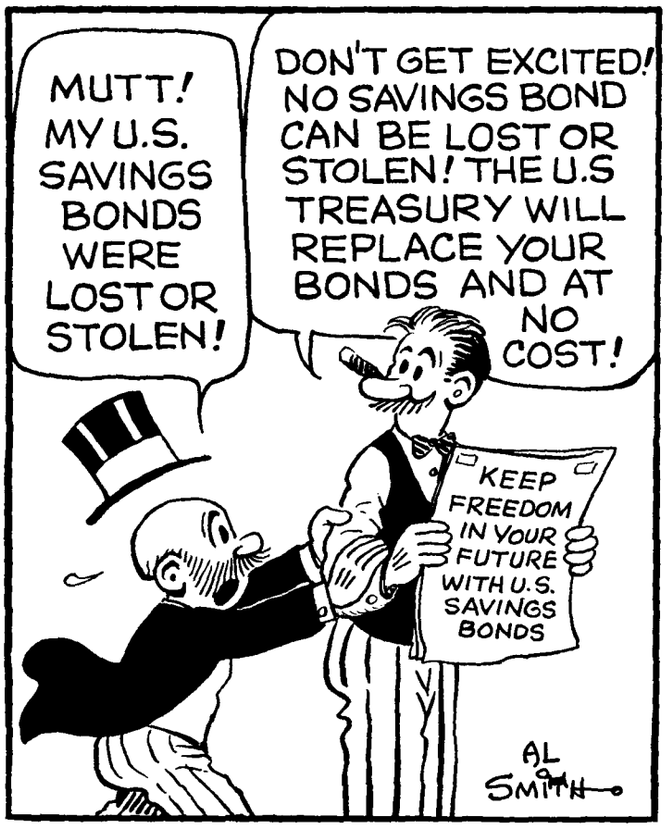
WEDDING. . .Shirley Royals, Analysis and Computation, and David Brown, Richmond, were married May 10 at Fort Monroe.

GOLF NOTICE. . .A rule of the Langley Golf Association was recently ammended which states that each member is entitled to only one guest on Saturdays, Sundays, and holidays.

NOTICE. . .All colored cloth arm bands and colored badges used in the NASA Field Inspection should be returned to Mail Stop 139.

FOR SALE: 3-bedroom brick rancher in Warwick Villa. Olstad, 595-0206.

WANTED: Ride or driving combination from Lake Shore Dr. area, Hampton to W.A. on 7:30 shift. Franks, 4766.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of June 22:

Monday - Consomme julienne, fried clams, beef stroganoff over egg noodles, grilled Canadian bacon with spiced applesauce, beef ravioli.

Tuesday - Cream of potato soup, sliced turkey with dressing and cranberry sauce, broiled ham slice with raisin sauce, fried fillet of flounder, chili con carne.

Wednesday - Chicken broth, roast beef, braised beef tips over steamed rice, fried chicken, baked hash.

Thursday - Tomato soup, grilled steak, deep-fried fantail shrimp, stuffed pepper, franks and beans.

Friday - Clam chowder, hot roast beef sandwich with mashed potatoes and gravy, broiled halibut steak, fried fillet of flounder, grilled spiced luncheon meat.

The menu for the week of June 29 is as follows:

Monday - Vegetable-beef soup, pot roast of beef, grilled pork chops, shrimp jambalaya, foot-long hot dog.

Tuesday - French onion soup with croutons and cheese, ribs of beef, chuckwagon steak with onion gravy, grilled liver and onions, macaroni and wiener casserole.

Wednesday - Puree of bean soup, half-pound chopped steak with gravy, crab cakes with cole slaw, stuffed pepper, barbecued sandwich.

Thursday - Chicken-noodle soup, grilled steak, baked ham, fried chicken, cheeseburger.

FOR SALE: Male German Shepherd. Cody, 191 Saunders Rd.

FOR SALE: 1953 Chevrolet. McFall, LY 6-0707.

FOR RENT: Waterfront cabin on Chickahominy River. Phillips, PA 3-0058 after 5 p.m.

STAFF MEMBERS PRAISED

(Continued from page 1)

tric Company, Philadelphia, Pennsylvania, "was tremendously impressed with the breadth of the advanced research . . .and the significant contributions that your programs have made to aeronautics and space developments."

Marcellus Wright Jr., Marcellus Wright and Son, architects, Richmond, considered the Inspection "beautifully staged from start to finish and everyone was impressed by the precision timing which was maintained. The friendly and helpful attention given to the visitors was most appreciated and served to add so much to the smoothness of the entire operation."

Harold E. Wessman, Dean of the University of Washington's college of engineering, Seattle, said the "visit was an extremely enlightening and educational experience for me. I was particularly impressed by the organization of the entire affair. What impressed me most, however, were the fine talks given by many young engineers at the various exhibits."

John V. Robinson, Assistant Director for Space Developments for the State of New York, stated that the Inspection "afforded me a propitious opportunity to learn the current status of research and development being conducted at one of NASA's principal centers."

R. E. Fadum, Dean of Engineering at North Carolina State College, said: "The schedule included a good cross-section of activity and gave me a much better understanding of the scope of the Center's role. . ."

Charles L. Kessler (Captain, U.S. Navy), Director of the State Headquarters for Selective Service, felt that a "sense of dedication was in the very atmosphere. . ."

Victor W. Buhr of Clark, Buhr, and Nexsen, architects-engineers, Norfolk, said, "everyone was impressed with the complexity and magnitude of your many problems and with the very efficient manner in which your research associated therewith has been conducted."

S. D. Harper, Director of Engineering of the Special Systems Division of Honeywell, Inc., said: "I am left with the vivid impression that Langley is a tremendous force for the good of this nation and is setting a national standard in efficiency."

Major General J. Stanley Holtoner, USAF, Commandant of the Armed Forces Staff College, Norfolk, mentioned that "many of our students were so favorably impressed that they returned with their families on Saturday to observe the public open house."

Sidney R. Curtis, Vice-President of General Dynamics/Electronics, Rochester, N.Y., said, "This was a stimulating and provocative experience for me and was particularly helpful in understanding how NASA fits into the over-all economy."

Rear Admiral Henry J. Wuensch, Commander, Fifth District, U.S. Coast Guard, Portsmouth, said he and his group "came away with an understanding of the vast scope and tremendous importance of the work being done. . ."

J. H. Lampe, Dean of Engineering at Old Dominion College, Norfolk, called the Inspection "extremely well organized, effectively presented, and inspirational as to technical developments and advances for our way of life ahead."

R. A. Thompson, representing the Standard Oil Company, Cleveland, Ohio, stated that "the displays were directly to the point and the lectures and demonstrations were geared both to the specialist and non-specialists."

Major General J. Stanley Holtoner (left), USAF, Commandant of the Armed Forces Staff College, Norfolk, was one of the many visitors who sent congratulatory letters to the Center on the success of the NASA Field Inspection of Advanced Research and Technology. General Holtoner is shown here with Charles J. Donlan, Associate Director.

Richard W. Neale, General Marketing Manager, The Chesapeake and Telephone Company of Virginia, Richmond, declared, "I'm sorry that more people in this great country of ours can't have the same opportunity" to see the Inspection.

Rear Admiral W. A. Stuart, Commander of Hunter Killer Force, U.S. Atlantic Fleet, commented, "The precise and efficient manner in which the Inspection was run and the vast amount of interesting information disseminated in the short time was particularly impressive...I feel that acquainting each other with the advancements, projects, and problems of our individual fields is of utmost importance."

John Newbauer, Editor of Astronautics and Aeronautics, said he found the Inspection "exceptionally informative and helpful in broadening my view of the nation's technical delopments supporting advanced space vehicle and aircraft developments."

PROMOTION OPPORTUNITIES FOR STENOGRAPHERS AND TYPISTS

In accordance with the provisions of the Langley Merit Promotion Plan, it is desired to establish lists of eligibles for Clerk-Typists and Clerk-Stenographers for future promotional opportunities under this program.

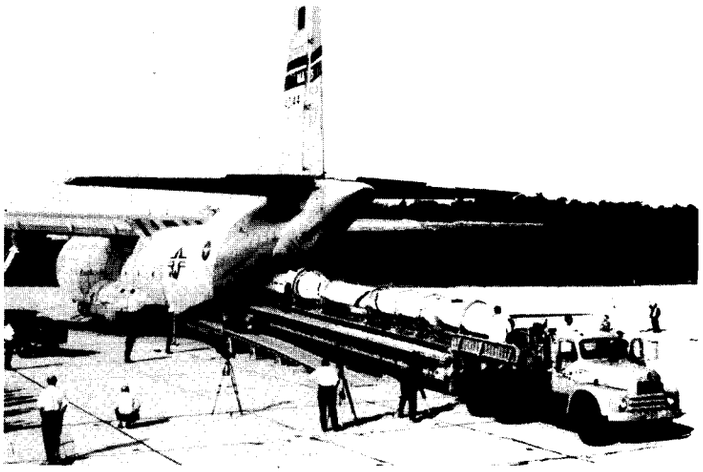
All stenographers at the GS-3, GS-4 and GS-5 levels, and all typists at the GS-2, GS-3, and GS-4 levels, who meet the time-in-grade requirement for promotion and are interested in being considered for promotional opportunities other than those which occur within their own division, are invited to submit their names for the promotion roster to John J. Cox, Employment Office, extension 2233.

When vacancies occur, selection will be made from a list of those best qualified for the particular position.

WANTED: To rent furnished one bedroom apartment. Dr. Singh, 3483.

WANTED: Driving combination from Hilton Village to E.A. on 8 shift. Hubbard, 2343.

NASA SCOUT VEHICLE AIR LIFTED



A fully assembled four-stage NASA Scout launch vehicle and its special trailer are loaded aboard a C-133A transport for a flight from Wallops Station to Langley. It was the first time that a completely assembled Scout had been transported by air.

A fully assembled NASA Scout vehicle was air lifted for the first time last month. The purpose of the operation was to determine whether the normal shock and vibrations of air transport would cause adverse effects or damage to the vehicle's systems. The flight was an initial test of procedures being considered improve the efficiency and reliability of the launch vehicle.

Project management for the Scout is by Langley Research Center and Lee R. Foster is project engineer.

Scouts are produced by Ling-Temco-Vought at Dallas where they are assembled for checkout testing prior to delivery. Currently Scouts are shipped partly disassembled to the launch sites and NASA must reassemble and retest them before firing. Shipping fully assembled Scouts to the launch sites would eliminate reassembling and retesting, thus saving substantial time and labor.

For the test, Scout was assembled on its transporter at Wallops Island by Italian Space Commission personnel of the San Marco Project under the supervision of a L-T-V launch site team. Ballasted inert rocket motors were substituted for the actual flight motors. After completion of a prelaunch systems checkout, the vehicle was towed ten miles to Wallops Station and loaded aboard an Air Force C-133A aircraft. The Scout weighed 41,000 pounds and the transporter 23,000 pounds. The overall length of the configuration was 81 feet.

The air lift operation spanned a period of four hours. Aborted take-off tests, a profile flight test simulating the environment the aircraft would be expected to encounter in an actual mission, and varied landings were performed. Instrumentation measured the accelerations, strains, and temperature to which the vehicle was subjected.

The flight operation ended at Langley where the Scout and transporter were off-loaded and positioned in the NASA Hangar for viewing during the Field Inspection. Following the Inspection, Scout was returned to Wallops Station via air lift for a complete systems checkout and evaluation. It is expected that air transport of a fully assembled Scout vehicle to the launch site for firing will take place early next year.

THREE EMPLOYEES RETIRE

Three employees recently retired from the Center with a total of over 65 years of Federal Service.

Taylor W. Bosmond, Building Equipment Service Section, Plant Maintenance Division, retired on May 31. He was born August 16, 1892 in New Kent County. He served in the U.S. Army from 1917 to 1919 and worked for Slaughter Lumber Company in Hampton, Construction Quartermasters Corps, Fort Monroe, and Newport News Shipbuilding and Dry Dock Company before joining the Center staff on August 7, 1950.

George W. Koontz, Instrument Construction Shop, Mechanical Service Division, also retired on May 31. He was born May 11, 1894 in Roanoke. Before joining the Center staff on September 21, 1936 he worked for the Norfolk Navy Yard in Portsmouth and the Naval Torpedo Station in Alexandria. He served in the U.S. Navy from 1917 to 1919.

Samuel D. Harrell, Experiment Facilities Mechanic in Mechanical Service Division, retired June 5. He was born November 15, 1899 in Williamston, North Carolina. Before starting his NASA career on February 14, 1947 he worked for the Norfolk Navy Yard, Panama Canal Zone, War Department, Fort Monroe, and Newport News Shipbuilding and Dry Dock Company.

COURSE OFFERED STAFF

Analytical Geometry, an introduction to Calculus, is being offered to staff members under the University of Virginia extension. The three-hour credit course will start tomorrow and will be held at 9 a.m. on Saturdays in Building 1348, Langley Air Force Base. For further information call Kenneth Margolis, 2359.

APPRENTICE HONOR ROLL

Training officials announced that twelve apprentices completed the spring semester with an average of 98 or better. Members of the honor roll are:

William E. Anspach, Materials Processing; Grover C. Collie Jr., General Electrical Service; Robert M. Ely, Research Facilities Service; Mark C. Harvey, Vehicle Instrumentation Section; Warner W. Smith Jr., General Electrical Service; Stephen C. Irick, Dynamic Model Shop; Carter F. Lewis, Research Facilities Service; Thomas K. Lusby Jr., Electronic Shop; Vincent L. Pritchett, Instrument Construction Shop; Charles M. Southall, General Electrical Service; Dallas G. Summerfield, Model and Pliant Structures; Leonard T. Twigg, Instrument Physics Research; Ralph R. Stoddard, Research Projects and Models, and Larry W. Swartz, Electrical Flight Systems.

WANTED: Driving combination from vicinity of Bowditch Ford Co. to W.A. on 7:30 shift. Peabody, 4851.

LOST: "Solid State Physics - Advances in Research and Applications" by Seitz and David. Please return to Library.

FOR SALE: Maytag wringer washer, 52-gallon National cabinet style hot water heater, and oak roll-top desk. Devan, 877-2671.

FOR SALE: Custom-made trailer hitch for 1961-63 Falcon. Marshall, 596-2935.

FOR SALE: TV, small sofa and chair. Brooks, 722-5279.

FOR SALE: 3-bedroom rancher, 1-1/2 baths, carport - $15,500. Carter, 596-8843.

FOR SALE: 1962 Austin Healy Mark 300, 100 by 340-foot lot in York County, and 1962 fiberglas boat with 35 hp motor. Faison, CH 5-1217.

COMPUTERS INDISPENSABLE AS TOOL FOR AMERICA'S CONQUEST OF SPACE

Long before a spacecraft is mated to its launch vehicle and long after a satellite is successfully in orbit, NASA scientists and engineers rely on the versatility and speed of computers to solve many stubborn problems of space technology.

Every NASA center uses the computer in many different forms as a technical tool, in contrast to its better known functions in bookkeeping, inventory, and accounting.

Langley Center is one of the elements in the complex NASA organization charged with responsibility for a portion of the agency's aeronautical research mission. In carrying out this role, Langley has just completed a series of computer studies for the Federal Aviation Agency on tomorrow's supersonic transport. The computer makes feasible complex analytical processes which would be too cumbersome and time-consuming if done by hand methods. In doing so, it has contributed importantly to the national program for design and construction of the 2,000 miles per hour airliner of the future.

In dealing with advanced theory, computers have also proved their worth many times over. Recently, Langley scientists completed a series of theoretical studies of the phenomenon of radio attenuation during atmosphere entry - the familiar "blackout" caused by ionization which builds up around a spacecraft during its return to Earth, blocking radio communications between the astronaut and his vital ground stations.

Using computers in concert with experiments in actual flight as well as laboratory studies with ground facilities, NASA scientists are moving closer to a solution of the blackout problem which has harassed America's astronauts during critical reentry maneuvers. Computers make possible analysis of the highly complex phenomena of aerodynamics, thermodynamics and physical chemistry which combine during high speed reentry to produce the troublesome phenomenon.

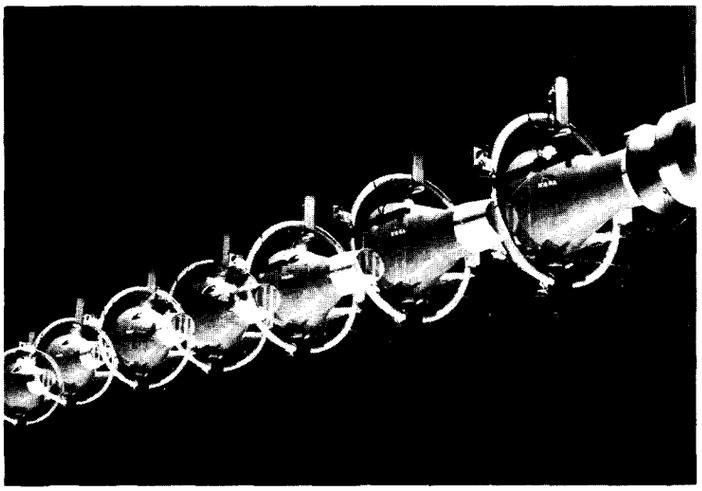
A relatively new application for computers is in spacecraft and launch vehicle checkout.

When a spacecraft has been attached to its rocket vehicle on the launch pad, a very comprehensive program of checks is required, for it may be the first time that a multitude of subsystems from many different manufacturers has been assembled in a final unit.

A complex spacecraft like Gemini or Apollo may require the testing and verification of as many as 1,500 individual items or quantities, each one involving up to 400 separate measurements per second, taken periodically during a 72-hour countdown procedure when time is at a premium. The task would be clearly beyond the limits of human possibility were it not for the aid of the computer.

The computer can be effectively used to complete a multitude of complex mathematical operations in a minute fraction of the time that a human operator would require. It cannot reproduce the human attributes of judgment or creative thought, but it has been used by NASA scientists and engineers as a tool without which many complex and vital operations in space could never be attempted.

During the launch of the Project Mercury spacecraft, for example, only 30 seconds were available after the launch vehicle rocket engines burned out in which to determine whether the spacecraft was headed into the proper Earth orbit. If it was headed off course, even a small fraction of a degree, the flight would have to be aborted to bring the craft down safely in a contingency recovery area near ships in the Atlantic Ocean. Otherwise, the astronaut might land in a desolate area of the Atlas Mountains in Africa. In that vital half minute, however, computers assembled sufficient information to permit the mission director to make the crucial decision to proceed.



What may appear to be a fleet of spacecraft flying in formation is actually a multiple exposure action photograph of the Rendezvous Docking Simulator at Langley Research Center. NASA scientists use this advanced facility to explore under controlled laboratory conditions many complex aspects of piloted space flight. The facility enables scientists to determine man's ability to complete a rendezvous in either Earth or lunar orbit during the final 200 feet of the docking maneuver. Two research pilots ride in a full-scale model of the Gemini spacecraft, and by operating its controls bring it into gentle, final contact with a target vehicle. The simulator spacecraft and the target hang on cables from an overhead track. The target can move vertically and laterally, but the spacecraft is capable of all six degrees of freedom of mechanical motion. An analogue computer (not shown) forms an integral part of the simulator system. The arrangement shown here simulates Earth orbit rendezvous and docking as proposed in the Gemini program.

Computers are extensively used at Langley and other NASA centers in performing simulation studies for research on guidance, navigation and control of both spacecraft and aircraft. Used in this manner, the computer becomes a very flexible research facility for many types of study, and computers can often be employed on a variety of research tasks in a single day.

The same computer, for example, has been used to simulate an Apollo problem in the morning, an aircraft landing gear experiment in the afternoon, and a supersonic transport control problem during a night shift.

NASA's role in carrying out research and applying principles acquired to the development of technology and equipment for the Nation's space and aeronautical programs is challenging and very complex. Without the aid of the computer, the task would be extremely difficult. In fact, it has been said, "Our present national aeronautical and space efforts would be impossible without the use of electronic computers."

NASA RESEARCH EVALUATING PROBLEMS OF MANNED ORBITING LABORATORIES

While scientists and engineers of the NASA continue energetically to pursue the goal of manned lunar exploration in this decade, research is preparing a systematic foundation of knowledge on which to base national decisions about the future course of the United States space program.

Multi-manned Earth satellites, capable of sustaining a crew in space for a year or more, constitute one area of major research concern. Although there is no approved program for building such spacecraft, research to furnish the basis on which sound technological choices can be made is already well along.

The projected lifetime of a Manned Orbiting Research Laboratory (MORL), which is one concept under research evaluation, would require a method for replacing crew members and sending additional supplies into orbit. Scientists are convinced that both tasks could be done by using the principles of rendezvous and docking to be developed in the Gemini and Apollo programs.

Other concepts envision much larger orbiting stations, which would probably be expanded into a final configuration after being placed in orbit.

All of the concepts being considered, however, share a number of common problems, and the research being done to find workable solutions will be applicable to any one of a wide range of possible choices.

Air density and its accurate measurement is a good example of one such common problem. The small amounts of air which exist several hundred miles above the Earth's surface exert a retarding force, or drag, on any orbiting object. Gradually, the drag will lower a satellite orbit so much that the spacecraft will spiral back into the denser portions of the atmosphere.

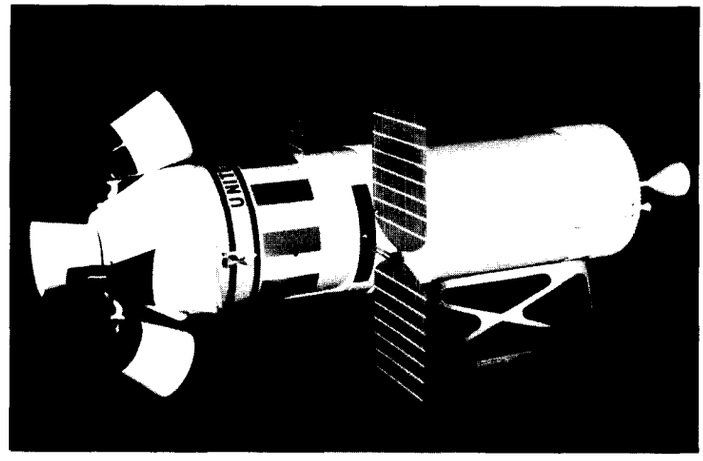
To solve the problem of selecting proper orbit altitudes, NASA has launched a number of Explorer class satellites to get accurate measurements of air density at extreme altitudes. From the precise measurements, correct decisions can be made on the best altitudes for manned satellites of various configurations.

Another problem facing designers of future spacecraft is the danger of radiation and its effects on both astronauts and space vehicles. High energy protons and electrons in the Van Allen belts, ionizing radiation from cosmic rays, and particles flung outward by the Sun during solar flare events can have a lethal effect on the crew of an orbiting laboratory.

In a new research facility now under construction near the Langley Center, scientists will soon have a laboratory tool with which to investigate the radiation problem systematically.

The Space Radiation Effects Laboratory will have as its primary research tool a 600 million electron volt synchrocyclotron capable of simulating one of the most hostile aspects of the space environment.

Just as man on Earth strives constantly to perfect new ways to keep comfortable in changing weather conditions, so space scientists and engineers are experimenting with new materials and techniques to provide an efficient working environment for space crewmen of the future. In the search, special materials are being evolved with which to construct the walls of space cabins, which are subjected to drastically changing temperatures as the orbiting spacecraft moves alternately through the sunlit and shaded portions of its orbit about the Earth.



One concept of a Manned Orbiting Research Laboratory (MORL) being investigated by NASA and aerospace industry contractors is a 260-inch diameter MORL based on the Saturn 1B launch vehicle. The study model shown here is attached to the Saturn IVB stage, with Gemini-type ferry vehicles clustered around its docking fixtures. Solar panels to generate electrical energy from sunlight are deployed as they would be in orbit.

Experiments to be flown on future launches of the giant Saturn rocket will also aid designers of spacecraft intended to orbit the Earth after Apollo. NASA and industry engineers are now working on the design of several satellites for orbital flights beginning next year to provide definitive information on the materials needed to shield spacecraft from micrometeoroids - the tiny particles of matter which are moving through space at extreme speeds and which cause the phenomenon of a meteor or shooting star when they enter the Earth's atmosphere as a fiery streak of light. The Saturn-launched experiments will extend knowledge already provided by several micrometeoroid satellites in the Explorer series.

When future manned space missions of extended duration are considered, research findings now being assembled by NASA will be available to support many different choices, and designers will have at hand the knowledge required to protect America's astronauts against the dangers of radiation, temperature extremes and micrometeoroids.

FOR SALE: Reel-type lawn mower. Hamilton, 851-3160.

FOR SALE: AKC registered male and female Dachsunds. Fowler, 826-2878.

FOR SALE: 21-inch Westinghouse portable TV. Brantley, 722-1613.

FOR SALE: Hampton-One design sailboat with trailer. Stubbs, PA 2-1254.

FOR SALE: 14-foot runabout with 35 hp Sea King electric start motor and trailer. Bradshaw, PA 3-4426.

FOR SALE: 1963 MGB. Anders, 244-4402.

FOR SALE: 1958 Oldsmobile 88. Crowther, 319 Apple Ave.

FOR SALE: 39-inch rollaway bed and mattress - $20. Bunting, 722-5953.

WANTED: Model airplane ignition engines for local collection. Will give new engines, U.S. plate blocks, slot cars, etc. Hutts, PA 3-2883.

FOR SALE: 1955 Plymouth - $150. Phelps, 722-4066.

METEOR PHOTO NETWORK IN OPERATION

NASA and the Smithsonian Astrophysical Observatory have put into full operation a seven-state midwestern network "to catch a falling star."

The network consists of 16 unmanned automatic camera stations and the "stars" - bright meteors - will be caught on film. Photos of the meteor trails will be used for scientific studies and to track and recover any resultant meteorites.

Dr. Richard E. McCrosky is the Smithsonian's chief scientist on the project which is called the Prairie Network. The camera stations were designed and constructed by Smithsonian engineers under a $240,000 grant from NASA. Films will be processed and examined at the network's field headquarters in Lincoln, Nebraska. Headquarters of the observatory are in Cambridge, Mass.

When high-speed particles of varied sizes enter the Earth's atmosphere, trails of hot, glowing gases are produced. These are commonly referred to as shooting or falling stars. Large particles cause bright meteors, or fireballs, and may have enough mass for a portion of them to reach the Earth intact. The surviving mass is called a meteorite.

Of interest to NASA scientists are photographic measurements that will help determine how much mass a body loses when it enters the atmosphere at velocities comparable to those of reentering spacecraft.

Timed shutters on each camera will chop the photographs of light trails into lengths of known duration to determine the deceleration of meteors. Because deceleration of a body depends on its mass, the light trail measurements can be used to calculate mass lost during atmosphere entry.

The photographs also will be used to determine the origin of meteors. By calculating and extending the light trails backward into space, the scientist will be able to determine the particle's solar orbit or if it possibly came from the Moon.

The light trail patterns also can indicate if the meteor came from a comet or an asteroid. Fragile cometary particles, for instance, lose their mass in spectacular but short-lived bursts of light.

Using the same line-of-flight extrapolation, scientists can quickly plot the earthward trajectory and pinpoint the probable impact area. Recovery teams will be sent out and private citizens in the nearby communities will be asked to help in the search.

Scientists seek such fresh meteorites for analysis of radiation effects on them caused by cosmic-ray bombardment during the trip through space. These radioactive fingerprints may provide valuable clues to the composition of the universe. Biochemists are interested in examining fresh meteorites for traces of organic matter of extraterrestrial origin.

Physical layout of the camera network is described by McCrosky as a geometric pattern of equilateral triangles with a camera station at the corners of each triangle. Adjacent stations are about 160 miles apart to provide maximum coverage and overlap and to increase the possibility of simultaneous observation by two or more stations. Total recovery area covered by the cameras is more than 2.5 billion acres.

Each station contains four wide-angle (80-degree) cameras aimed north, east, south, and west to effectively cover the entire sky. A light-sensitive photocell automatically turns the equipment on at sundown and off at sunrise.

A "cloud detector" assures that the cameras will operate with clear skies. A small photocell is trained permanently on Polaris, the North Star. If Polaris is cloud covered and cannot be seen by the detector, the cameras are automatically turned off. When the North Star is visible, the detector assumes the rest of the sky is clear and permits the cameras to operate.

The cameras are in six-foot square structures located near the following communities: Havana, Ill.; Milan and Vichy, Mo.; Vinto and Carroll, Iowa; Steinauer, Mullen, Alma, and Neligh, Nebr.; Flandreau and Reliance, S.D.; McPherson, Pleasanton and Garden City, Kan.; and Woodward and Hominy, Okla.

Robert W. Ferree (left) receives a cash award from M. E. Cook, Chief of Plant Maintenance Division, for suggesting a propane leakage detection and alarm system in the 9- by 6-foot Thermal Structures Tunnel. The award was made under the NASA Incentive Awards Program.

FOR SALE: 3-bedroom brick home on Greenfield Ave. Gurkin, 838-0046 after 5:30 p.m.

FOR SALE: 2-story, 3-bedroom brick home near Wythe. Beddoes, PA 3-3569.

MEN ON THE MOON MAY GET TELEVISION CLOSE-UPS

Project Apollo astronauts probably will carry hand-held television cameras when they land on the Moon and provide the world with the first close-up of its surface.

Long range television pictures of the Moon are expected to be obtained by Ranger and Surveyor probes before the astronauts drop on its surface with hand cameras.

Television transmission from Apollo will be received at a designated Earth station, video-taped, scan-converted for commercial TV, and released within minutes to the public.

The hand camera that may give viewers on Earth their "live" close-ups is being developed by Radio Corporation of America, and an operating prototype is being put through tests at Downey, California, by the Space and Information Systems Division of North American Aviation, Inc.

North American is Apollo systems contractor for NASA.

Smaller than a carton of cigarettes, the TV camera will use a 70 degree wide-angle lens for on-board viewing or a nine to 35 degree zoom lens for scenes taken through a window at distant objects.

It may be mounted in two positions in the Command Module, and installed in stations to show angles of the astronauts and spacecraft during liftoff, Earth orbit, lunar trajectory, and lunar orbit.

Astronaut in spacecraft aims Moon-camera

Project Apollo astronauts probably will carry hand-held television cameras when they land on the Moon and provide the world with the first close-up photos of its surface.

NASA SPACE INSTRUMENT USED IN EMBRYO RESEARCH

An instrument which will permit precise detection of the effects drugs may have on heart action of unborn babies has resulted from technological research in the space program.

The Food and Drug Administration and NASA's Office of Technology Utilization report that preliminary experiments just completed by Dr. Jacqueline Verrett of FDA's Division of Pharmacology indicate that a piezo-electric transducer invented at Ames Research Center can, for the first time, monitor the heartbeat of a chicken embryo quickly, continuously, quantitatively and without egg damage that could affect experiments.

The instrument, which produces minute electrical signals when activated by exceedingly small pressures, was invented by Vernon L. Rogallo of Ames' Measurement Research Branch to measure the impact of micrometeoroid dust in space. It is capable of measuring 1/1000th the impact of a grain of salt falling three-eights of an inch.

For the past four years the FDA has conducted research using the chick embryo technique, correlated with tests on animals, to study the effects of drugs, pesticides, and food additives. Until now, the research has yielded only gross information because the minute momentary changes in chick embryo hearts were not precisely detected.

Under NASA's Technology Utilization Program, efforts are made to transfer new space innovations to every-day use as quickly as possible.

FDA saw sufficient potential in the instrument to send Dr. Verrett to Ames to perform her experiments as a test of the device's effectiveness.

"The preliminary experiments at Ames indicate that this instrument has considerable future promise for expanding the effectiveness of FDA's research activities involving chick embryos," Dr. Verrett said.

WANTED: Ride or driving combination from Big Bethel Rd. and Todds Lane to W.A. on 7 shift, Allard, 3383.

WANTED: Driving combination from vicinity of 58th St. and Warwick Blvd. to W.A. on 7 shift. Soloman, 3373.

FOR SALE: Wilcox-Gay tape recorder, 2 speeds, 4 speakers, remote control clutch, $100. Histand, 877-1066.

FOR SALE: Bowen-Henderson grand piano. Reid, 826-5829.

FOR SALE: 1963 Chevrolet II sports coupe. Brantley, 722-1613.

WANTED: Home for kittens. Hooker, 838-5196.

FOR SALE: Large pony. Phillips, 877 2118 after 5 p.m.

FOR SALE: 24-inch girl's bicycle, $10. Powell, PA 3-1250.

FOR SALE: 1963 Ford Galaxie. Hurst, 851-0332.

FOR SALE: 1955 Bel-air Chevrolet, $350. Sussman, MA - 29234, Norfolk.

FOR RENT: 3-room house at Buckroe. Penn, 826-0197.

FOR SALE: Deluxe model trumpet. Montgomery, PA 31813.

Langley Researcher

VOLUME 3, NUMBER 14 LANGLEY RESEARCH CENTER JULY 2, 1964

NASA BUYS HINGELESS ROTOR HELICOPTER FOR RESEARCH USE

NASA is purchasing a hingeless rotor helicopter for use in flight research at the Langley Research Center.

Cost of the XH-51N research vehicle, which is scheduled for delivery next February by the Lockheed Aircraft Corporation, Burbank, California, will be $556,158. The helicopter is being bought under a fixed-price research and development contract.

The XH-51N will be used by scientists and pilots of Langley's Flight Mechanics and Technology Division as a flying laboratory to assess the loads and flying qualities problems that are likely to be encountered by operational aircraft of the hingeless rotor type.

In addition, the extent to which the potential advantages of simplicity and improved flying qualities of a hingeless rotor helicopter can be realized in practice will be studied.

The XH-51N flight program will supplement wind tunnel and laboratory research being conducted at Langley on hingeless rotor helicopters.

WALLOPS SELECTS GENERAL ELECTRIC TO PROVIDE DATA PROCESSING SYSTEM

Wallops Station announced it has selected the General Electric Company for negotiations to provide a real-time impact prediction and data processing system. The contract will be approximately $1.5 million.

The equipment and services will provide a real-time data collection, processing and display system. The system will give Wallops Station the capability of selecting more precise data from tracking radar for accurate prediction of impact points for launch vehicles at any time during flight, as well as provide a means of processing telemetry radar and general purpose data in larger quantities and at greater speeds.

The system to be supplied under the contract specifica- includes data transmission and recording equipment, programming, services, processing equipment, and display equipment.

The contract resulting from this negotiation will be a fixed-price-type contract. The approximate length of performance will be 21 months. Proposals by nine leading producers of real-time data processing equipment and service were involved in the contract competition.

Project responsibility for General Electric Company will be under the surveillance of the Radio Guidance Operation, Defense Electronics Division, Syracuse, New York.

SUMMER DANCE PLANNED

The Activities Association is making plans to sponsor a Midsummer Night's Dream Dance on Friday, July 24 in the Activities Building. Dancing will be from 9 p.m. until midnight to the music of Charlie Johnson and his band. Complete details will be announced later.

NATIONAL SCIENCE FAIR WINNER VISITS LANGLEY

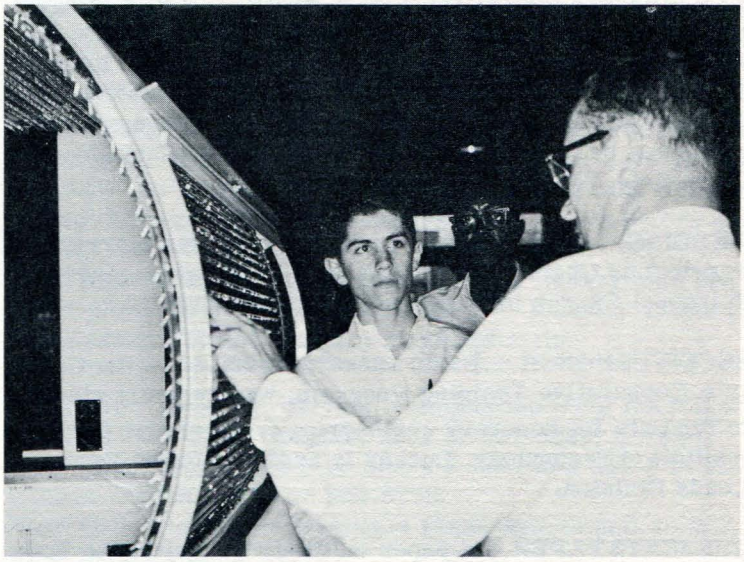
David Taylor, 16-year old student of Middletown Township High School in Middletown, New Jersey, was a guest of the Langley Research Center on June 23. His visit was a prize for winning an NASA certificate in Space Electronics and Communications at the National Science Fair-International held in Baltimore, Maryland, in May.

Taylor whose prize winning exhibit was an experiment in the simplification of television image - conversion and transmission - was accompanied by a teacher of his choice - Gershom Tomlinson, an instructor in chemistry at Middletown Township High School, who was also a guest of NASA. Tomlinson brought along his wife, a teacher in the same school.

Another National Science Fair-International winner of an NASA certificate in the Space Vehicle category - Virginia M. Morris, 15, of Columbia High School in Richland, Washington, plans to make her prize winning trip to Langley with her favorite teacher in August. Her project, using a mouse in a closed ecological environment, showed that animals may live for extended periods on algae for food and breathe algae-produced oxygen.

Axel T. Mattson, Research Assistant for Manned Spacecraft Projects, represented NASA as one of the judges at the 15th National Science Fair-International, and selected Taylor and Miss Morris, from a large number of con-

(Continued on page 5)



David Taylor, winner in the National Science Fair-International held in Baltimore, Maryland, in May, was a guest of the Langley Research Center last week. He was accompanied by Gershom Tomlinson, an instructor in chemistry at Middletown Township High School in Middletown, New Jersey. Explaining a test setup in Structures Research Laboratory to the visitors is Roger Peters.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW HEIR. . .Celebrating the birth of a son, Mark Andrews, on June 4 is Thomas A. Harris Jr., Instrument Research Division. Proud grandparents are Thomas A. Harris, Research Assistant in the Office of the Director, and Mrs. Carrie Spence, Flight Mechanics and Technology Division.

ENGAGEMENT. . .Making plans to change the Miss to Mrs. is Anne Ensley, Classification Section. She is engaged to Vance Overbray, Newport News, and a February wedding is planned.

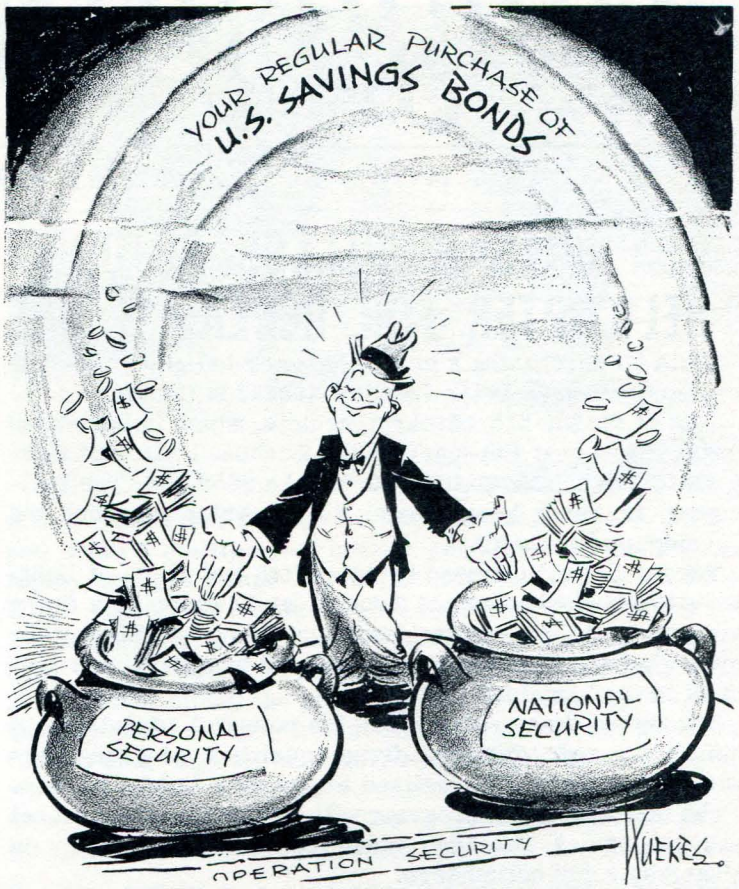
NEW FORMS. . .New forms, suitable for preparing originals for Vu-graphs or lantern slides have been obtained. These forms will be available from the Technical Illustrating Section, telephone 3346, starting July 6. The use of this one form will permit a quick interchange from Vu-graph to lantern slides and should be used by all authors for both purposes. All existing stocks of square format (6-inch x 6-inch) Vu-graph forms in the research units should be disposed if after July 6.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on July 14 from 3 p.m. until 4. Beverly Beale, Government-wide Service Plan representative, will be here on July 15 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

WEDDING. . .Stuart Rose, Light Machine was married to Terrie Lee Charlton, Hampton, on June 22 at St. Andrews Episcopal Church in Nagshead, North Carolina.

RECEIVES HONOR. . .David Luckey, a member of the Center's Cooperative Training Program, was recently elected to Tau Beta Pi, honorary engineering fraternity at Georgia Institute of Technology. Luckey is assigned to the Dynamic Loads Division.

PRESENTS PAPER. . .A paper entitled "Transition to Turbulent Conduction for Plasmas in Crossed Electric and Magnetic Fields in the Presence of Hall Currents," by Robert V. Hess, Joseph Burlock, Barry D. Sidney, Philip Brockman, and Richard H. Weinstein, all of Aero-Physics Division, was presented by Hess at the International Symposium on Diffusion of Plasma Across a Magnetic Field in Munchen, Germany. The symposium ends tomorrow.



HOW TO BE AT BOTH ENDS OF THE RAINBOW!

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 6:

Monday - Consomme julienne, roast ribs of beef, grilled pork steak, Hungarian goulash, fish cakes and cole slaw.

Tuesday - Cream of potato soup, country style chopped steak and gravy, deep-fried fantail shrimp, chicken shortcake, grilled cheese and bacon sandwich.

Wednesday - Vegatable-beef soup, Spanish pot roast, breaded veal cutlet, baked ham, chili dog.

Thursday - Chicken-noodle soup, Swiss steak, shrimp Newburg, fried chicken, grilled luncheon meat.

Friday - Clam chowder, grilled steak, crab cakes with cole slaw, ham loaf with horse-radish sauce, broiled halibut steak, Austrian ravioli.

The menu for the week of July 13 is as follows:

Monday - Cream of tomato soup, roast veal with dressing, grilled pork chops, spaghetti with meat sauce, meat croquettes with white sauce.

Tuesday - Roast ribs of beef, Alaskan shrimp, liver and onions, long hot dog.

Wednesday - Cream of mushroom soup, fried clams, beef stroganoff over noodles, fried chicken, baked hash.

Thursday - Vegetable-beef soup, grilled rib eye steak, barbecued spareribs, crab meat au gratin, cheeseburger.

Friday - Clam chowder, pot roast of beef, broiled halibut steak, fried fillet of flounder, individual tuna pie, barbecued sandwich.

FOR SALE: 13-1/2-foot runabout with fiberglas bottom, 35 hp Evinrude motor and trailer - $400. Marshall, 596-2935.

Godwin C. White

Edward S. Bradshaw

Ernest Dennis, Jr.

Charlie Johnson

25 RECEIVE HONORARY AWARDS

Twenty-five employees recently received Honorary Suggestion Awards under the Center's Incentive Awards Program. The award was in the form of a certificate.

The following members of the Mechanical Service Division received awards: James L. Miller for "moment of inertia testing devices," Albert W. Bainbridge for "name plates," Joseph V. Boyle for "antenna tower cover," Jimmy L. Harris for "pan to use with tap disintegrator on drill press," Edgar B. Kastelberg for "coating for metal melting crucibles," William J. Block for "remote controlled linear servo," Tilford R. Crandol for "motor case strength," Wilbur C. Heier for "molded rocket nozzle," Harry A. Barritt for "alteration to painting procedure," and Karl Lambroff for "safety -use of danger signs." Wilson G. Winfree received two awards - one for "sabot safety trap" and one for "honing lathe for gun barrels."

Joint awards were presented to Richard E. Bloxom, Electrical Systems Division, and Robert M. Baucom, Structures Research, for "new high-speed recording system;" to William J. Block, Mechanical Service, and Robert E. Shanks, Flight Mechanics and Technology, for "reversible film editing and reading projection screen," and Ferdinand E. Hartman, Mechanical Service, and David R. Woodward, Full-Scale Research, for "mono-chart drive for multiple Moseley strip chart recorders."

Also receiving awards were Irving Fruchtman, Aero-Physics, for "data write recording film, the large economy size;" Elsie F. Olive, Fiscal Division, for "revision of Form L36F520;" Vernon T. Rhyne, Analysis and Computation, for "improvement in method of laying-out printed circuit card negatives;" Beverly Z. Henry Jr., Full-Scale Research, for "layout of elliptical templates;" Vernon P. Gillespie, Research Models and Facilities, for "linear actuator for simulated space environment;" Aubrey T. Ferguson, Analysis and Computation, for "excessive wear on slidewire," and Dwight G. Mcsmith, Mechanical Service, for "improved meter design and recommendation to stock same."

FOUR RECEIVE CASH AWARDS

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

Receiving the awards were: Godwin C. White, Mechanical Service Division; Edward S. Bradshaw, Instrument Research Division, and Ernest Dennis Jr. and Charlie Johnson, both of Administrative Services Division.

The citations read as follows:

Godwin - "For his outstanding performance of duties which have improved the efficiency of experimental testing at the 11-inch Hypersonic Tunnel."

Bradshaw - "For outstanding performance in establishing a new capability at this Center in an important radio telemetry receiving technique."

Dennis and Johnson - "For outstanding job interest as demonstrated by high quality work."

KENNEDY LIBRARY FUND

Jess G. Ross, Center Coordinator for the John F. Kennedy Library fund-raising campaign, announced that employees donated a total of $1,258.70 during the drive which ended on June 15. This represented donations from 429 contributors.

The library will house a complete record of the late President's life, his times, and his Administration. It will be built on a site donated by Harvard University and selected by President Kennedy just eight weeks before his death.

Persons desiring to contribute to the library may send their check or pledge direct to: John F. Kennedy Library, 260 Tremont Street, Boston, Massachusetts.

FOR SALE: 1963 Dodge Dart. King, CH 7-3817.

WANTED: Roommate to share 2-bedroom apartment. John Watson, 596-0898 after 5 p.m.

WANTED: Ride from Pine Grove Ave. and Walnut St. to W.A. on 8 shift. Rackley, 3325.

WANTED: Driving combination from Glendale to W.A. on 8 shift. Conway, 4420.

WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or 587-9023, Norfolk.

WANTED: Single man to share 2-bedroom house in Poquoson. Pracht, 4845 or 868-9670.

WANTED: Ride from Riverdale Plaza Apartments to W.A. on 8 shift. Reagon, 4477.

WANTED: Ride or driving combination from Southampton area to Old Dominion College on Wednesday nights from 7 to 9:45. Carol Verell, PA 2-5256 after 5 p.m.

WANTED: Ride from Huntington Court Apts. to W.A. on 8 shift. Anspach, 3221.

WANTED: Alternate driver from River Drive Apts. to W.A. on 8 shift. Lamar, 4540.

PROPOSALS ASKED FOR AUTOMATED BIOLOGICAL LABORATORY STUDY

NASA has asked industry for proposals to do project definition work and preliminary design for an Automated Biological Laboratory (ABL) to search for and describe extraterrestrial life on Mars and other celestial bodies.

A contract based on the proposals will call for a one-year effort to review scientific objectives, define an experimental payload suitable for landing and operation on Mars, and establish spacecraft and launch vehicle requirements.

ABL will be aimed primarily at taking advantage of favorable Mars mission opportunities in the early 1970's, when Voyager spacecraft are expected to begin flights.

A number of life detection devices - such as Gulliver, Wolf Trap, Multivator, high resolution TV and others - are already under development through NASA grants and research contracts. These and others will be considered for integration into the ABL.

Going directly to the integrated laboratory concept in the search for extraterrestrial life is considered by many biological scientists to offer essential advantages not afforded by separate landings of payloads with only a few experiments on each.

The contractor will be asked to adapt various life detection techniques to automation and to examine them for reliability during their planned operational life of two Earth years. Automation shall be considered for programming and sequencing of experiments, sample acquisition, recycling to initial conditions and data handling.

The ABL contract will be under the direction of the Bioscience Programs Division of the Office of Space Science and Applications.

V. L. JOHNSON NAMED OSSA LAUNCH VEHICLE DIRECTOR

Vincent L. Johnson has replaced Dr. Richard B. Morrison as Director of the Launch Vehicle and Propulsion Programs Division of NASA's Office of Space Science and Applications.

Johnson will continue to serve temporarily as Program Manager for the Centaur launch vehicle.

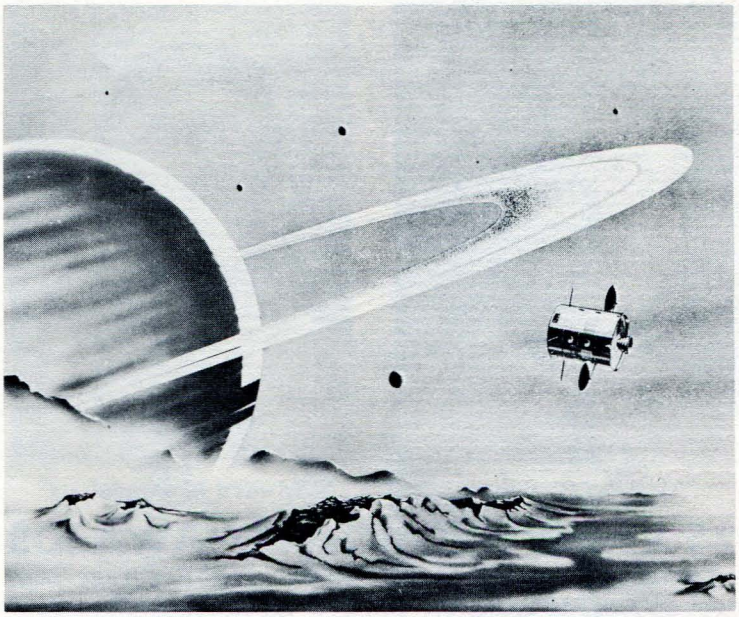
Dr. Morrison will return to the University of Michigan where he has been on leave of absence as Professor of Aeronautical and Astronautical Engineering since he joined NASA in June, 1962.

The Launch Vehicle and Propulsion Programs Division manages the development and use of the light and medium vehicles -- Scout, Delta, Thor-Agena, Atlas-Agena and Centaur -- currently used for NASA's unmanned Earth orbital and deep space programs. The Division also directs studies of future unmanned launch vehicle and propulsion system requirements.

Johnson joined NASA in 1960 and has been program manager for Scout class vehicles, Delta and Centaur. He came to NASA from the Navy Department where he had been an engineer with the Bureau of Ordnance and the Bureau of Weapons.

Johnson was born October 26, 1918 in Red Wing, Minn. He attended the University of Minneapolis.

WANTED: Driving combination from Southampton to W.A. on 7:30 shift. Lambiotte, 4842.



A Voyager spacecraft is shown passing over the surface of Titan, the largest of Saturn's nine moons, in this artist's conception released by Lockheed Missiles and Space Company. Voyager, a planetary observation program of the NASA calls for an unmanned spacecraft to orbit Mars and Venus. The Voyager could also survey the moons of Saturn. The planet is distinguished by its ring, as shown in the above illustration. Voyager would be launched by a Saturn V class booster. Lockheed Missiles and Space Co. is conducting research for Marshall Space Flight Center in connection with large space vehicles of the Saturn V class employing chemical or nuclear propulsion.

AFTER YEAR IN ORBIT TIROS VII WORKS AS WELL AS DAY LAUNCHED

NASA's TIROS VII meteorological satellite completed a year in orbit June 19 with all components working as well as the day it was launched.

Although TIROS VI is still ahead of VII for longevity - it lasted 13 months - one of its two cameras stopped operating after two and one-half months in orbit.

During the past year, about 70,000 pictures, 90 per cent of them usable, were received from TIROS VII by ground stations. The satellite spotted 16 hurricanes and typhoons. More than 400 storm bulletins were issued by the U.S. Weather Bureau as a result of data received from the satellite.

During the 1961-62 hurricane seasons, TIROS satellites spotted and tracked every major storm in the northern and southern hemispheres.

Eight TIROS have been successfully launched since April 1960, all but the first exceeding the original life expectancy of three to four months.

The Television Infra-red Observation Satellite program is under the supervision of NASA's Office of Space Science and Applications. Project management is the responsibility of Goddard Space Flight Center. The spacecraft were built by Radio Corporation of America.

FOR SALE: 5 hp Sea King outboard motor - $50. Yeatts, PA 3-2570.

FOR SALE: 1957 Cushman motor scooter. Bruce, 826-1483.

FOR SALE: 1955 Ford station wagon. Phillips, 868-9895.

TWO EMPLOYEES RETIRE

Harry Kalkin

Harry Kalkin, Research Models and Facilities Division, retired from the Center on June 19 with 25 years and 9 months of Federal service and John L. "Boats" Weber, member of the Photographic Division, will retire tomorrow with 43 years and 7 months of Government service.

Kalkin was born June 27, 1889 in Russia. He received a degree in Architectural Design from Cooper Union and attended Beaux Art Institute of Design, City College of New York. Before joining the Center staff on December 16, 1943, he worked for the U.S. War Department in New York, Department of Agriculture in Washington, D.C. and New York and the Panama Canal Zone.

Weber was born June 27, 1896 in Jersey City, New Jersey. He served in the Navy from 1917 to 1921 and worked for the Post Engineers, Fort Monroe, and Veterans Administration in New York and Kecoughtan. He entered on duty at the Center on March 31, 1947.

SCIENCE FAIR WINNER

(Continued from page 1)

testants who previously had won regional or state Science Fair awards in the United States and Canada.

During his tour of the Center, Taylor talked with engineers and scientists and saw research in progress while he inspected Instrument Research Division, Structures Research Laboratory, Data Reduction Center, Lunar Orbit and Landing Approach Simulator, Lunar Landing Research Facility, and the Rendezvous Docking Simulator.

Taylor has received a number of science awards. He belongs to his school's Science Club and debate team, and his hobbies are amateur radio, electronics, and chess. He plans to become a physicist.

In an effort to help promote interest in science among high school students, the NASA awarded special prizes to a total of twelve exhibitors at the annual fair in Baltimore. The winners, with teachers of their choice, were invited to visit NASA Centers. Two of the winners - Taylor and Miss Morris - chose Langley.

WANTED: Driving combination from Dare to E.A. on 8 shift. Mulqueen, 898-6327.

FOR SALE: Share in Riverdale Recreation Association including membership fee for 2 for this year - $200. Verell, 838-1024.

FOR RENT: Furnished or unfurnished 2-bedroom apartment in Stuart Gardens - available from Sept. 1 through March 31. Leatherwood, 4539 or 245-5800.

FOR SALE: Riding lawn mower with 36-inch reel and cycle bar, 7-1/2 hp motor - $100. Wilson, UN 8-9284.

WANTED: Alternate driver from Northampton to W.A. on 7:30 shift. Carpini, 3446.

John L. "Boats" Weber (second from right) was recently honored at a retirement party by his friends and co-workers in the Photographic Division. Shown with him are (from left): Fred N. Rector, Head of Publications Branch; Lois Bridges, Publications Branch, and Harry H. Hamilton, Chief of the Photographic Division.

COURSES OFFERED STAFF

If sufficient interest is shown, a graduate credit course in Principles of Combustion will be offered under the University of Virginia Extension for the 1965 spring semester. Dr. Wayne D. Erickson will be the instructor.

The course begins with a basic study of the thermodynamics of reacting systems. This is followed by the fundamentals of gaseous chemical kinetics. Chemical reactions in flow systems are then studied. Modeling and similarity principles in chemically reacting systems are examined next. Some consideration is given to the combustion of liquids and solids. The course is concluded with a number of applications of principles to practical combustion processes.

Plans are also being made to offer a non-credit course in Basic Aerodynamics for professional employees who have no college background in aeronautics. Dr. William Grossman will be the instructor. If there is sufficient interest, the course will begin during the early part of July. Classes will be held on Tuesdays and Thursdays from 4:30 p.m. until 6:30. Students will be charged a nominal fee.

A prerequisite course in Biology for the Medical College of Virginia Bio-Medical Engineering program will be offered by the College of William and Mary beginning in September. This course will be offered two afternoons a week from 1 p.m. until 4 p.m.

Employees interested in enrolling in these courses should call the Training Office, 2326.

FOR SALE: Girl's 26-inch English bicycle. Fisher, 244-7655.

WANTED: Home for kitten. Conkling, 4519.

FOR SALE: 1959 Oldsmobile hardtop. Miller, CH 7-5907.

FOR SALE: 3-bedroom frame rancher with garage - located in Meadowbrook. Rhinehart, 826-5599.

FOR SALE: 14-foot runabout with steering wheel and windshield - $150. Fodrey, LY 6-6257.

FOR SALE: 1964 Ford Fastback. Geddings, 868-9200.

TWO DIRECTORS APPOINTED

NASA has announced the appointment of two directors in the Advanced Manned Missions Program, Office of Manned Space Flight.

Maurice J. Raffensperger has assumed his duties as Director of Manned Earth Orbital Missions Studies. Dr. Franklin P. Dixon has been appointed Director of Manned Planetary Mission Studies. Both report to Edward Z. Gray, Director of Advanced Manned Missions Program, OMSF.

Dr. Michael I. Yarymovych, who has served as acting director of Manned Earth Orbital Studies since November 1963, is undertaking a special assignment on studies extending Apollo system capabilities.

Before joining NASA, Raffensperger was Director of Engineering at Nortronics Division of Northrop Corp., Anaheim, Calif., with responsibility for advanced concepts and hardware development of military space systems.

Raffensperger, 41, is a native of Merced County, Calif. He attended public schools at Redwood City, Calif., San Jose State College, and earned a Bachelor and Master of Science degree in electrical engineering at Stanford University.

Dixon has been associated with Aeronutronic Division, Philco Corp. since 1959. His most recent position with the company was Manager of Reconnaissance and Intelligence Programs.

Dixon, 37, is a native of Corpus Christi, Texas. He attended Texas A. & M. College and received a B.S. degree from the University of Texas. He received a Master of Science and Ph.D. in Science from California Institute of Technology.

NASA TO UPGRADE DELTA

NASA plans to upgrade the performance of Delta launch vehicles by enlarging their second-stage fuel tanks.

The modification, increasing tank diameters from 32 to 54 inches, will apply to eight Deltas that NASA plans to purchase from the Douglas Aircraft Co., Santa Monica, California.

The bigger tanks will improve performance by increasing the burning time from 160 to 400 seconds. The change is expected to cost about $6 million and bring the cost of the eight Deltas to around $15 million. The contract is still to be negotiated.

Some of the Deltas to be modified will utilize three solid propellant motors strapped on the Thor or main stage for thrust augmentation. These Thrust Augmented Deltas (TAD) can place a 1,000-pound payload into low Earth orbit compared with 800 pounds for the standard Delta.

When large tanks are added to TADs, the vehicle can place 1,200 pounds into low Earth orbit or 225 pounds into escape velocity compared to 100 pounds for the standard Delta.

The new large tank Deltas will be used for launching payloads in the Biosatellite, Pioneer and meteorological satellite families. Of the 24 Deltas that have been launched, 22 successfully placed satellites into orbit.

FOR SALE: English Setter pups. Young, 723-0240.

FOR SALE: Cabinets and counters suitable for kitchen or work shop. Havens, 838-2810.

WANTED: Ride from East Sussex Apartments to W.A. on 8 shift. Cooke, 3344.

WANTED: Ride or driving combination from Mathews or Gloucester to W.A. on 8 shift. Buchanan, 3312.

from TODAY'S IDEAS *Send yours to* INCENTIVE AWARDS COMMITTEE

SAFE HOME WORKSHOP PRACTICE

Many employees, in this do-it-yourself age, have home workshops. The workshops may range from a small area with a collection of miscellaneous tools in a corner of the garage to a well-equipped shop devoted to such hobbies as woodworking, metalworking, radio, or electronics.

Although relatively few employees use hand or power tools in their regular work, many use them extensively off the job in home or automobile repair work or in following their hobbies.

To help prevent home workshop injuries, keep these points in mind:

PLAN THE JOB. Obtain proper tools if you do not already have them. Many home workshop accidents are caused through the use of makeshift tools or equipment. Be sure you use the right tool for the job. Special-purpose tools and equipment can often be rented from hardware stores or rental services. These will often make the job easier as well as safer.

MAKE SURE YOUR TOOLS ARE IN GOOD CONDITION. Loose, broken, or split handles, full cutting edges, ungrounded electrical power tools, and unguarded power saws all are potential causes of injury.

USE PERSONAL PROTECTIVE EQUIPMENT. Safety glasses, gloves, and safety shoes are just as important to you in your home workshop as they are on the job. Wear them whenever you work with tools.

KEEP CHILDREN AWAY FROM TOOLS. Tools are not playthings; they can cause injuries, particularly if children are allowed to play with them. Confine the use of tools to your older children - those mature enough to realize the hazards. Teach them the proper use of tools and exercise close supervision, especially while the youngsters are learning.

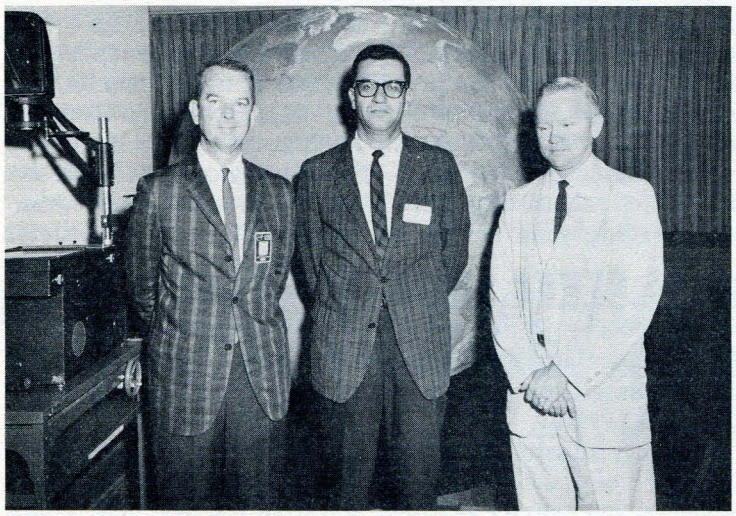
Observance of these practices in your home workshop will reduce accidents and injuries - not only to you, but to your family as well.

FOR SALE: 3-bedroom house in Glendale. Tully, LY 6-7993.

FOR SALE: B-flat clarinet with case and music stand. Huffman, PA 2-8401 after 5 p.m.

LOST: "Cerenkor: Radiation and Its Application" by J. V. Jelley. Leyhe, 3421.

PROFESSORS ASSIGNED TO LANGLEY UNDER ASEE-NASA PROGRAM



Fifteen engineering and science professors have been assigned to the Langley Research Center under the ASEE-NASA Summer Institute for Engineering Teachers. Upper left photograph - Visiting professors and Langley officials attend a briefing. Upper right photograph - James R. Sterrett (left), Aero-Physics Division, talks with Dr. Donald R. Haworth, Oklahoma State University. Lower left photograph - Macon C. Ellis (left), Aero-Physics Division, poses with Dr. William B. Pardo, University of Miami, and Dr. Frederick Crownfield, College of William and Mary. Lower right photograph - Members of the group are (from left): Dr. Joseph Bursik, Rensselaer Polytechnic Institute; Charles I. Tynan, Applied Materials and Physics Division; Dr. Edward Stevenson, University of Virginia, and Dr. John E. Duberg, Assistant Director. The group will be at the Center through August 21.

Fifteen engineering and science professors have been assigned to the Langley Research Center under the ASEE-NASA Summer Institutes for Engineering Teachers. The visiting professors started their assignment on June 15 and will be at the Center through August 21.

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. Host institutions are University of Virginia, Virginia Polytechnic Institute, and the College of William and Mary.

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. Similar programs are being conducted at the Lewis Research Center and Ames Research Center.

The following professors have been assigned to Langley: Dr. William J. Barclay, North Carolina State University; Dr. Forrest P. Clay, Old Dominion College, and Dr. Tsute Yang, Villanova University, who have been assigned to Instrument Research Division; Dr. Charles E. Bell Jr., Old Dominion College; Dr. Joseph Bursik, Rensselaer Polytechnic Institute; Dr. Allen K. Clark, Old Dominion College, and Dr. Louis A. Jones, North Carolina State University, assigned to Applied Materials and Physics Division; Dr. Ming M. Chen, Boston University, and Dr. Richard L. Jennings, University of Virginia, Structures Research; Dr. David H. Cheng, City College of New York; Dr. Robert Kroll, University of Cincinnati; Dr. Charles S. Martin, Georgia Institute of Technology, and Dr. Leonard Meirovitch, Arizona State University, Dynamic Loads Division; Dr. Donald R. Haworth, Oklahoma State University, and Dr. William B. Pardo, University of Miami, Aero-Physics Division.

U.S.-SWEDEN EXTEND STUDIES

NASA and the Swedish Space Committee have agreed to extend for another year cooperative sounding rocket studies of the upper atmosphere and noctilucent clouds.

Noctilucent clouds are very high, faintly luminuous clouds usually visible only during summer twilight in northern latitudes. Instrumented sounding rockets will be launched this summer from Kronogard in northern Sweden to collect particles within the clouds.

Altitude of the region under study extends from about 30 to 60 miles. The noctilucent clouds generally are found at an altitude of around 50 miles, but scientists need to correlate nearby wind and temperature ranges. There is some evidence that the luminous clouds occur in very cold atmospheric layers with warmer layers above and below.

The Kronogard experiments in 1962 and 1963 measured extraordinary variations in wind velocities and possibly the lowest temperature ever recorded in the Earth's atmosphere - 143 degrees below zero Centigrade (-255.6 degrees Fahrenheit). On one occasion a wind of about 450 miles per hour was recorded at 52 miles altitude. A half mile higher the wind was nearly calm.

Sampling, or collection, surfaces of different types and of high purity were mounted in cylindrical containers to gather particles of the noctilucent clouds. Container inlets were opened for an interval and then closed as the payloads passed through the region of the clouds.

The sampling surfaces gathered significantly more particles when they passed through noctilucent clouds than did surfaces exposed when no such clouds were observed. The particles were mainly from .05 to .5 microns in diameter. (A micron is one-four-thousandth of an inch.)

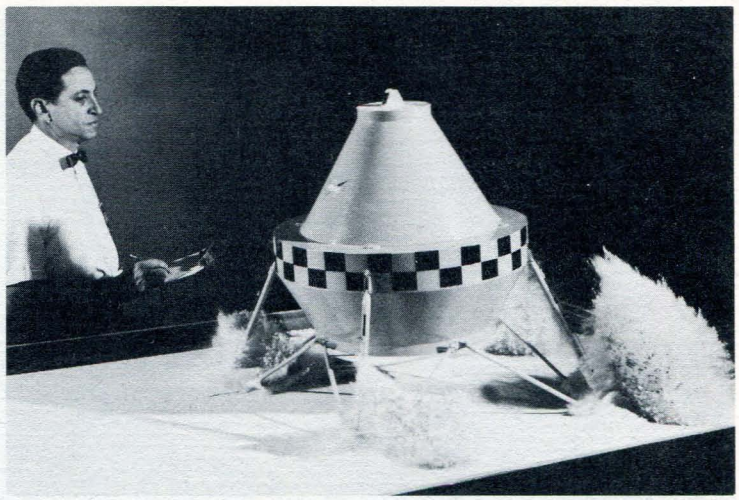
After flights that passed through the noctilucent clouds some particles on the recovered sampling surfaces were found surrounded by a circular pattern believed caused by a volatile coating (possibly ice) which evaporated on impact.

Presence of iron and nickel in the particles has been determined and the possibility that all or some of the particles may be of extraterrestrial orgin remains under study.

There will be this year four sampling payloads to collect upper atmosphere particles and four rocket grenade payloads to measure winds and temperatures. Two of each type will be launched about 15 minutes apart in the presence of noctilucent clouds and the other two pairs will be fired when no such clouds are observed.

Under the new agreement, the United States will provide the eight payloads and part of the ground equipment on a loan basis. Sweden will provide four of the eight sounding rockets and most of the ground instrumentation. Launching, payload recovery, and other support operations will be carried out by Swedish personnel. Swedish and U.S. scientists will share responsibility for analysing the data obtained. No transfer of funds is involved. The joint studies began in 1961.

FOR SALE: 7-room house in Betsy Lee Gardens - $2300 down and assume loan. Ferton, CH 4-4887.
FOR SALE: Umbrella tent. Newcomb, 838-2140.
FOR SALE: 1962 Fairlane 500. Ferguson, 868-4221.
FOR SALE: 100 x 350-foot wooded lot in Dare - $2300. Bieri, 877-0515.
FOR SALE: Garden tractor with Briggs and Stratton motor and attachments. Phillips, UN 8-5931.



A one-sixth scale model of a lunar landing vehicle, equipped with a multiple-leg landing gear employing yielding-metal energy straps for impact attenuation, simulates a lunar landing in pumice dust. Langley Research Center's Impacting Structures Facility launches the model as a free body by a compound pendulum device. By incorporating in a small model the proper ratios of mass, inertia, and landing-gear forces, scientists reproduce and measure the landing shock, behavior, and stability of a full-scale vehicle landing on the Moon. The studies provide basic information required by NASA for Project Apollo, a program for sending man to the Moon and returning him safely.

NASA SEEKS SCIENTIFIC EXPERIMENTS

NASA has requested proposals from scientists for scientific experiments to be carried on five Advanced Technological Satellites to be launched from Cape Kennedy in the 1966-68 period.

Primary mission of the ATS spacecraft is to evaluate advanced communication techniques, meteorological components, and gravity gradient stabilization systems. There will be payload space available on each satellite for additional scientific experiments. The launch vehicle will be the Atlas-Agena.

The first launch is expected to be in early 1966. The 780-pound satellite will be put into a 6900-statute-mile orbit with the primary mission of testing a gravity gradient system of stabilization. Such systems use the Earth's gravitational field to keep the satellite correctly aligned with respect to he Earth.

The second and third launches will be aimed at evaluation of advanced communications techniques, meteorological components, and station-keeping (holding the satellite in a particular place in space.) These spacecraft are expected to be launched at six month intervals following the first launch and the satellites will be placed in 22,300 miles high synchronous equatorial (stationary) orbits. They will be spin stabilized (rotating in space so that they do not tumble) rather than pointed toward Earth at all times.

The fourth and fifth ATS experiments will be similar to the second and third except that they will be stabilized by gravity gradient techniques.

FOR SALE: 2-piece living room suite. Van Scriver, 826-1521.
FOR SALE: 3-bedroom brick rancher in Hallwood. Boyd, 851-0732.
FOR SALE: 8-foot fiberglas dinghy. Hubbard, LY 6-8753.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 15 LANGLEY RESEARCH CENTER JULY 17, 1964

NASA TO LAUNCH SERT I SPACECRAFT FROM WALLOPS

NASA will launch the 375-pound SERT I (Space Electric Rocket Test) spacecraft on a sub-orbital flight from Wallops Island no earlier than tomorrow.

A four-stage solid-fuel Scout rocket will be the launching vehicle.

The experiment will test for the first time in space two NASA electrostatic (ion) engines.

Primary purpose is to verify that the ion engines can produce thrust in space. This is possible only if the positive ion exhaust beam can be effectively neutralized. Methods of neutralizing the beam appear to work in ground vacuum tank tests but must be verified in space.

Neutralizing is accomplished by injecting a stream of electrons into the ion beam as it rushes out of the back of the engine. Ground tests are not conclusive because in a vacuum chamber it is possible for electrons to be emitted from the sides of the chamber.

If data from SERT I indicate that beam neutralization is completely effective, the development of ion thrustors for space missions may continue in ground vacuum chambers with confidence. If beam neutralization is of limited effectiveness, a new program of vacuum chamber and flight tests may be undertaken.

The SERT I flight test is part of the program being carried out by the Office of Advanced Research and Technology. It is aimed at providing research information and technology required for future development of electric engines.

Lewis Research Center manages the SERT project and RCA, Astro-Electronics Division, Princeton, New Jersey, is the SERT I payload integration contractor.

(Continued on page 4)

SUMMER DANCE JULY 24

A Midsummer Night's Dream comes true in the air conditioned comfort of the Activities Building on July 24. The Charlie Johnson Combo, featuring Margie Warner as vocalist, will provide the music for the Friday night affair. Dancing will start at 9 p.m. and continue until midnight.

Cost of the night's entertainment will be only $2.50 per couple and will include setups. A limited number of tickets will be sold and no tickets will be available at the door. Tickets may be purchased until July 23 from the following persons: Dick Kurtz, Building 586, telephone 2362; Pat Warren, Building 584, phone 2314; Pete Lawson, Building 1232, phone 4536; John Walker, Building 1225, phone 4671; Betty Tholl, Building 1195, phone 4520; Humbert Rockey, Building 1230, phone 4807, and Pamela James, Building 1244, phone 3461.

Group reservations of six or more couples may be made by calling the Activities Building, 4583.

LANGLEY HORIZON SCANNER CARRIED ON X-15 FLIGHT

Captain Joe Engle flew the number three X-15 on July 8. The purpose of the flight was to carry a horizon scanner and to conduct a pilot check-out of the adaptive control system.

The horizon scanner was installed in a special container mounted on the rear of the X-15. The scanner is a project of Langley Research Center and is used to study the infra-red definition of the Earth's horizon for use as a possible navigational aid for use by future spacecraft. The scanner utilizes a mirror arrangement and a photo sensitive cell to measure the intensity, size, and position of the near infra-red horizon of the Earth.

This was Captain Engle's first flight in the number three X-15 that is equipped with the adaptive control system. This control system has the ability to sense the atmospheric conditions that surround the X-15 and to then provide the pilot with the proper type and amount of control, either aerodynamic or ballistic.

The X-15 was air launched from Delamar Lake, Nevada, 240 miles northeast of Flight Research Center. The X-15 reached a speed of 3,511 mph (Mach 4.94) and an altitude of 170,000 feet. The flight lasted approximately 10 minutes.

John A. Dodgen, Instrument Research Division, is the project engineer for the horizon Scanner instrument.

Senator A. S. Mike Monroney (center), democrat from Oklahoma, visited the Center Wednesday and toured a number of research facilities. Shown with him are (from left): Dr. John E. Duberg, Langley Assistant Director; Dr. Floyd L. Thompson, Langley Director; Senator Monroney, Joseph A. Stein, NASA Public Affairs Officer, Office of Advanced Research and Technology; and John Burzio, Staff Counsel, Commerce Committee, U.S. Senate. Senator Monroney is a member of the Senate's committees on Appropriations, Commerce, and Post Office and Civil Service.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

JUNE WEDDINGS. . .Glenn Gates, Fatigue Laboratory, was married to Rebecca Ragsdale on June 27. . .Titus M. Harrison, Electrical Systems Division, took his final vows with Hope Joyner, Norfolk, on June 14 at Mt. Gilead Baptist Church in Norfolk. . .Wedding bells rang on June 28 when W. Robert Young, Instrument Research Division, was married to Betty Dianne Shaver, Fishersville. The wedding took place in Fishersville and J. Earl Jones, IRD, served as an usher.

NEW HEIRESS. . .Announcing the birth of a daughter on July 13 are Margaret, Personnel Division, and Wayne Simonton, Mechanical Service Division.

JULY WEDDINGS. . .Margaret Greene, Scout Office, was married to Michael Coburn, Hampton, on July 16. . .Nancy Horton, Administrative Services Division, married Richard Allen Pittman, Great Bridge, on July 3. . .Lee Imig, Structures Research Division, took his final vows with Sue Backstrom on July 3. . .Yi Tung, Electrical Flight Systems Section, married Georgia Lung, Denver, Colorado, on July 2. The ceremony was performed in the Main Chapel, Langley Air Force Base.

WANTED: Driving combination from Gatewood Rd. to W.A. on 7 shift. Flanders, 4792.
FOR SALE: 1959 Plymouth station wagon. Davis CH 56562.
FOR SALE: 3-bedroom rancher - $11,500. Kahle, 722-7454.
FOR SALE: 1936 Ford, $125; 7 triple track storm windows with screens, $40. Evans, 723-0387.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 20:

Monday - Chicken broth, roast ribs of beef, chicken and dumplings, grilled ham steak, fish cakes with cole slaw.

Tuesday - Tomato-barley soup, baked Smithfield ham, sauerbraten, fried fillet of flounder, chili con carne.

Wednesday - Puree of bean soup, grilled steak, barbecued beef chunks over steamed rice, fried chicken, cheese ravioli.

Thursday - Beef consomme, Spanish pot roast, deep-fried scallops with tartar sauce, chicken chow mein over crisp noodles, barbecued sandwich.

Friday - Clam chowder, roast beef, stuffed flounder, broiled fillet of perch, baked hash.

The menu for the week of July 27 is as follows:

Monday - Cream of tomato soup, Swiss steak, breaded veal cutlet, roast pork with applesauce, grilled cheese and bacon sandwich.

Tuesday - Vegetable-beef soup, roast beef, chicken shortcake, grilled Canadian bacon with spiced applesauce, seafood croquettes.

Wednesday - Minestrone soup, pot roast of beef, baked ham with raisin sauce, liver and onions, beef ravioli.

Thursday - French onion soup, grilled steak, corned beef brisket, fried chicken, tamale pie.

Friday - Clam chowder, pepper steak, broiled fish, fried fish, macaroni and wieners.

CIVIL SERVICE EXAMS OPEN

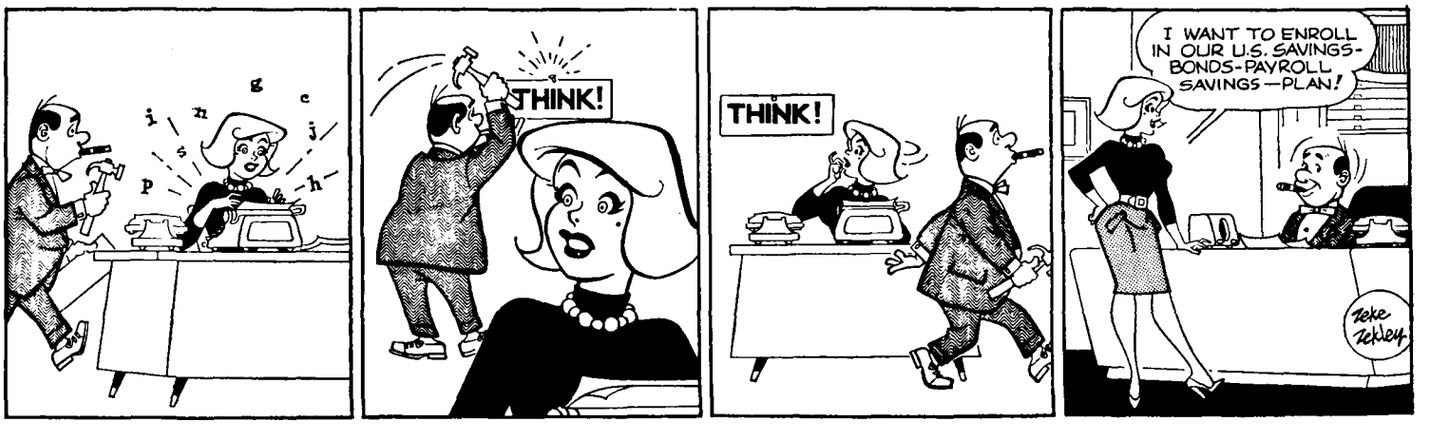
Applications are being accepted for the positions of Digital Computer Systems Operator, $4690 per year, and for Electric Accounting Machine Operator, $3880 per year, at the Langley Research Center.

Both positions involve night duty. Hours of work may vary but will generally be from 3:30 p.m. to midnight. To qualify applicants must pass a written test and meet certain experience requirements.

A copy of the examination announcements and application forms may be obtained from the Executive Secretary, Board of U.S. Civil Service Examiners, NASA-Langley Research Center, Hampton, Virginia.

WANTED: Passengers to Mississippi July 24. Joplin, 2283.
WANTED: Ride or driving combination from Suffolk and Bartlett Junction to W.A. on 8 shift. Johnson, 4530.

Peachie Keen by Zeke Zekley



Three employees recently shared a $200 cash award for a suggestion that might result in the granting of a patent. The invention suggestion was entitled "Lunar Penetrometer." Left photograph - Receiving congratulations from I. E. Garrick, Chief of Dynamic Loads Division are (from left): John L. McCarty and Dr. George W. Brooks. Right photograph - Alfred G. Beswick (right) receives his share of the award from James E. Stitt, Assistant Chief of IRD.

RICE PAYLOAD LAUNCHED FROM WALLOPS

NASA launched an airglow experiment for Rice University from Wallops Island July 9.

This was the fifth in a series of firings to measure and study the nature and causes of aurorae and airglow in the night sky during the dark of the moon--phenomena which are as yet little understood. The first in the series was sent aloft from Wallops Island on the night of January 14, 1964. The other three tests were launched from the Churchill Research Range in Canada. Data obtained at the two locations will be analyzed, compared, and interpreted by Rice University's Space Science Department in Houston.

Instrumentation in the 65-pound payload was designed and built by professors and students in the University's Space Science Department, which was created in January 1963. This series marked Rice's first venture into space, under a NASA grant. Dr. Brian J. O'Brien, Rice University, is the Project Scientist and C. D. Laughlin, also of Rice, is the Payload Manager. Harvey C. Needleman is the Wallops Station Project Engineer.

Designated Sammy in honor of the school's mascot, "Sammy, the Owl," the experiment was flown on a two-stage Nike-Apache sounding rocket, reaching a peak altitude of 104 statute miles. Impact of the payload and spent second stage, which were not separated during flight, occurred 98 statute miles downrange in the Atlantic Ocean. There was no attempt to recover the payload since desired data were telemetered to ground stations during the flight.

To measure light intensity, or airglow, and charged particle flux as functions of altitude, the payload was equipped with airglow photometers, Geiger counters, low-energy particle detectors, and magnetometers.

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.

The following members of the Mechanical Service Division received awards: James L. Miller for "utilization of dynamic balance performed on sub-assemblies by use of adjustable joints at assembly;" Troy G. Brooks for "mechanical method of deburring and finishing material specimens and other component parts," and Nelson B. Harris for "contour cutting of aluminum honeycomb."

Allan C. Hanarahan and Daniel W. Soloman Jr., both of Electrical Systems Division, shared an award for suggesting "a method of adding microphones where microphone inputs are insufficient."

BEN BARBER RETIRES

Ben Barber, Furnace Attendant in the Foundry Unit, Mechanical Service Division, retired from the Center on July 8 with over 31 years of Government Service.

Barber was born August 27, 1905 in Hampton. Before joining NASA he worked for the Quartermaster Corps at Langley Field and for the Quartermaster Corps at Fort Monroe. He had several temporary appointments at the Center and joined the staff permanently on April 2, 1935.

WANTED: Ride from Edge Hill, Yorktown, to E.A. on 8 shift. Pereira, 2297.

WANTED: Ride or driving combination from Beechwood area, Denbigh, to W.A. on 8 shift. DiBattista, 4737.

WANTED: Third person to share house in Adwood Court. Ellison, 4677.

WANTED: Driving combination from Menchville Rd. to W.A. on 7:30 shift. Bowles, 4766.

WANTED: Driving combination from Beechwood to W.A. on 8 shift. Cooper, 4457.

WANTED: Driving combination from River Dr. Apts. to E.A. on 8 shift. Bomberger, CH 5-0585.

FOR SALE: 4-bedroom, 2-bath house with garage on Southampton Ave. Busemann, PA 3-4293.

WANTED: Ride from Stuart Gardens to E.A. on 8 shift. Mary Greene, 2221.

NASA TO LAUNCH SERT I

(Continued from page 1)

Since electric engines exhaust their propellant at speeds much greater than conventional chemical rockets, they become contenders to propel future deep space missions. This increased exhaust velocity gives them a greater "specific impulse"--a miles-per-gallon-type figure for rockets.

SERT's test engines have exhaust velocities greater than 100,000 miles per hour. For research use, the thrust of the two test engines, .001 of a pound and .006 of a pound, is sufficient to study the problem of ion beam neutralization.

The engine, or "thrustor", is only part of the propulsion system which includes a power generating source, a control system and propellant.

The projected uses of electric engines for deep space missions depends on the availability of light weight nuclear electric power systems in the high kilowatts to multi-megawatts power range and their ability to operate reliably for one to three years.

A more immediate use probably will be for attitude control or station-keeping of satellites, spacecraft or space stations, where low power levels are required. Thus, solar cells or isotope power generation systems would be able to provide the electrical energy needed for electrical engine operation.

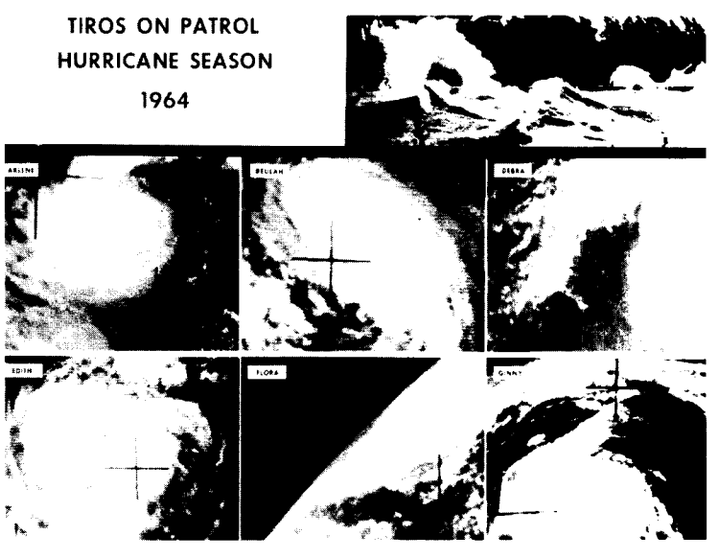
The SERT I spacecraft is spin-stabilized and contains two ion thrustor engines of different types driven by a single battery supply.

One engine, using mercury as a propellant, is an electron bombardment ion engine, built by the Lewis Center. The other engine, built by Hughes Aircraft Company, Hughes Research Laboratories, Malibu, Calif., is a contact ionization thrustor and uses cesium for a propellant.

FOR SALE: 1955 Dodge 4-door sedan with 1957 motor. Skeps, 722-1586.

WANTED: Driving combination from Glendale to W.A. on 8 shift. Conway, 4420.

TIROS ON PATROL
HURRICANE SEASON
1964



TIROS weather satellites flown by NASA photographed these hurricanes from space in 1963, helping weather men alert wide areas in the storms' paths. TIROS VIII remains in orbit, patrolling the globe as a storm sentinel for 1964.

AERO-SPACE WORKSHOPS

NASA will participate in about 200 one to three-week aero-space workshops and teacher institutes at colleges and universities in every state but Hawaii and Wyoming this summer.

The educational workshops are being held for the fourth summer in a row at the request of colleges, universities and state departments of education. In 1961, 125 schools took part in the program.

NASA participation is at no cost to the U.S. Government, other than staff made up of NASA Educational Program Personnel and Spacemobile lecturer-demonstrators.

The workshops introduce elementary and secondary school teachers to aero-space science advances and relate the advances to education.

NASA Spacemobiles (panel trucks containing space technology models and demonstration equipment) films, exhibits and lectures are used to acquaint teachers with the latest in space activities.

The courses are credit or non-credit depending on the institution involved.

NASA has more requests for participation than its staff can handle. However, NASA education officials believe the program has assisted materially in keeping teachers aware of general advances in the space related sciences and has aided helping them teach children who may become space scientists.

WANTED: Ride from 300 block Washington St., Hampton, to W.A. on 8 shift. Mary Dalin, 4607.

LIGHTWEIGHT PROJECTILE IN GUN FACILITY PUNCHES HOLE IN METAL

A special gun facility that propels a small, extremely lightweight mylar plastic disc at speeds great enough to punch a large hole in a thick aluminum target is being used at the Langley Research Center.

NASA scientists, seeking through research to obtain true meteoroid simulation in ground laboratories to provide information useful for designing cabin walls in manned orbital space stations, stated that two advanced gun facilities are under construction.

One is an electrostatic facility which will fire a stream of fine dust-like particles at meteoroid velocities. The speed of meteoroids is estimated to range from about 27,000 mph to as high as 140,000 mph. This facility is expected to go into operation in 1965.

The other, of which a pilot model was recently demonstrated, is an explosive foil gun capable of propelling a single particle heavy enough to penetrate structures. The prototype facility will be completed late this year and will be capable of simulating realistic meteoroid velocities.

Such devices will provide valuable tools to prove the reliability of cabin wall construction before astronauts are exposed on long space station journeys to meteoroids, radiation, heat, and other hazards.

The pilot model of the explosive foil gun is powered by a bank of large capacitors charged by a high-voltage power supply. The capacitors are discharged through a switch into a thin strip of aluminum foil--which is exploded by the momentary heavy current.

The gun breech contains the aluminum foil and a diaphragm of material used to simulate a meteoroid. A disc-shaped mylar plastic particle, punched from the diaphragm by the exploding foil, speeds down the plastic tube gun barrel into a vacuum chamber and strikes the target at nearly 14,000 mph, about seven times as fast as a bullet from a modern military rifle.

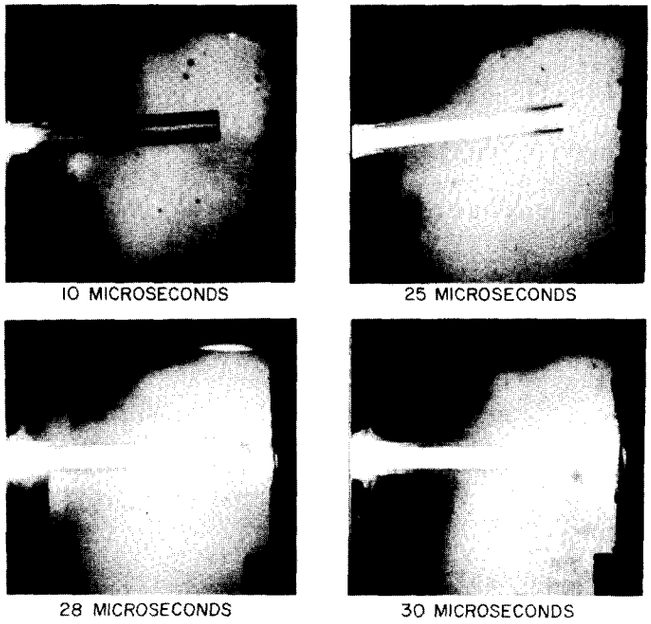
Although this is only one-tenth as fast as some meteoroids, it illustrates that even a small particle can inflict substantial damage at these speeds. The importance of protection from meteoroid impact is evident when it is realized that even one penetration could result in an aborted mission.

The space cabin wall not only forms a protective barrier between the astronaut and meteoroids, but from other hazards of the space environment as well.

Cabin walls reflect heat arriving directly from the sun and that reflected from the Earth's surface. They also must radiate to space the excess heat generated by men and equipment inside the space station. This means that the walls must insure a delicate thermal balance between these factors to maintain a comfortable temperature where the astronauts are living and working.

Another function of the cabin walls is to attenuate harmful ionizing radiation, charged subatomic particles with energies so great that no practical wall construction could stop all of them. But the flux of these particles can be reduced-- so that they are not a hazard to the men and equipment inside for a reasonable time in orbit.

NASA research shows that for short stays in space, the pressure requirement is the only critical design condition. For longer durations, the radiation environment or the meteoroid hazard is the critical design condition, depending on the orbit.



Vapor from an exploding strip of aluminum foil drives a small plastic disc down a plexiglass gun barrel in this series of high speed sequence photographs made by the Langley Center. The Exploding Foil Gun is being developed to study the impact of micrometeoroids on spacecraft structures. The foil is exploded by the sudden discharge of nearly 100,000 amperes of electrical energy. Times are in microseconds, and show the pellet striking its target 30 microseconds after the electrical discharge into the foil begins the operation. The small, lightweight pellet has enough energy to puncture an eighth-inch thick aluminum target.

If one man stays in a space station for a very long time, even in a low orbit between the upper atmosphere and the lower fringe of the ionizing Van Allen radiation belt trapped by the Earth's magnetic field, radiation protection requirements become critical.

Scientific investigation into the characteristics of meteoroids has disclosed that a cabin wall composed of several layers is more effective, pound for pound, than a single aluminum sheet. The outer wall shatters the meteoroid, forming a cloud of smaller particles and spreading the projectile energy over a large area of the second sheet--reducing the probability of damage.

Making use of this so-called bumper phenomenon, a composite cabin wall can be designed for meteoroid protection that is about one-third the weight of an equivalent single sheet.

NASA scientists described two types of cabin walls which were designed on the basis of an analysis of the known characteristics of the space environment and its effect on structures and materials. Whether the designs will perform as desired must be determined by subjecting them to a simulated space environment through advanced research facilities such as the exploding foil gun and similar devices.

FOR SALE: 3-bedroom frame rancher with built-in range and oven - $13,600. Desmarais, LY 5-0984.

NASA WELCOMES AUSTRALIAN TRACKING STATION NETWORK

The first tracking station to be completely built for Project Gemini was dedicated June 25 at Carnarvon, Australia, close to the point on Earth exactly opposite from the launch site at Cape Kennedy.

James E. Webb, NASA Administrator, participating in the dedication ceremonies by telephone, said that NASA established the new ground support station at the antipodal point to Cape Kennedy because every spacecraft launched from the Cape passes close to Carnarvon on its first orbit.

NASA manned spaceflight tracking facilities were moved to Carnarvon from Muchea and Woomera late in 1963 after Project Mercury experience indicated the advantage of this location. Security of the astronaut's life, his flight direction, altitude and velocity must be established early in the first orbit, and Carnarvon is the first land station to see the spacecraft after it passes over southeast Africa and turns northeast up the Indian Ocean toward Australia.

Webb said that Carnarvon will support the two Gemini astronauts while they maneuver their capsule to rendezvous and join with a second spacecraft, the orbiting Agena space vehicle.

Webb's remarks welcoming Carnarvon to operational membership in the Manned Space Flight Network also initated the new station to membership in SCAMA. This is the NASA 13-country network of operational voice communications which carried the Administrator's words from NASA Headquarters to Carnarvon at the farthest west point of Australia via 4,800 miles of telephone land line and 8,200 miles of submarine cable.

During Gemini missions, SCAMA will keep flight controllers at the stations in voice contact with the control centers at Cape Kennedy, Houston and Goddard Space Flight Center and all other stations in the network. Teletype circuits also connect all stations and control centers and will carry the flow of flight information from the stations to control center computers during the mission.

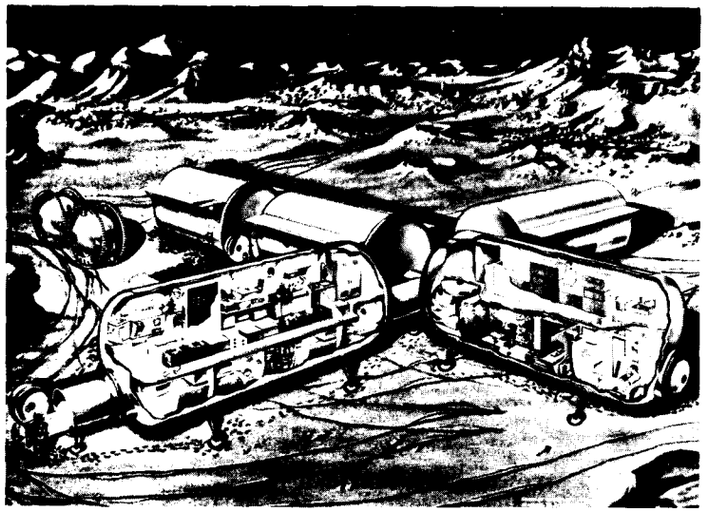
Facilities at Carnarvon are built around the recently developed FPQ-6 radar, the most accurate known instrument for radar tracking. Telemetry, command and communications equipment considerably advanced beyond that available for Project Mercury is installed to support the Gemini spacecraft and Agena space vehicle simultaneously and to handle the greatly increased flow of information between the spacecraft and ground.

The station will also be used to support NASA's unmanned observatory class of scientific satellites including the Orbiting Astronomical Observatory, the Orbiting Geophysical Observatory and new versions of the current Orbiting Solar Observatory. Carnarvon will be required to track their launch vehicle, monitor the rocket's second burning, and obtain data to determine orbit.

Following Gemini, the station will continue to be used for Project Apollo, as will other NASA facilities in southeastern Australia.

The new station was officially opened by the Honorable Allen Fairhall, Minister for Supply of the Commonwealth of Australia, when he unveiled a plaque recording Australian-American cooperation in the establishment and operation of the station. Built with NASA funds of approximately $6.5 million, the station is staffed and operated by the Australian Department of Supply under an agreement between the Australian and United States Governments.

Guests at the ceremony included NASA Director of Tracking and Data Acquisition Edmond C. Buckley representing NASA Headquarters, Western Australia's Premier David Brand and the Australian Minister for Defence, Senator Shane Paltridge.



Horizontal version of lunar modular living and working quarters for use in the "Man on the Moon" program. Conceived by scientists and engineers of the Lockheed Missiles and Space Company, Sunnyvale, Calif., each module is 18 feet in diameter. Each is fully-equipped and self-sufficient except for electrical power which is supplied from a remote nuclear power source shown in a crater at the right. Solar flare protection chambers are provided at the base of the modules.

FINAL CONTRACT SIGNED BY NASA FOR THREE SCANNER SPACECRAFT

NASA has completed negotiations with Honeywell Aeronautical Division, Minneapolis, Minnesota, for a contract to furnish three spacecraft for an horizon definition experiment called Project Scanner.

Total cost of $1,224,616 includes design, fabrication, integration, qualification, environmental testing and some launch support services. Delivery is set for early 1965.

Project Scanner is a phase of the agency's horizon definition research carried out by Langley Research Center, under the general direction of NASA's Office of Advanced Research and Technology. Horizon definition and measurement are important to spacecraft stabilization and guidance techniques.

The Project Scanner vehicles will be flown on suborbital ballistic trajectories from NASA's Wallops Station.

Each Project Scanner vehicle will carry as prime instrumentation a dual radiometer assembly and a star telescope called a star mapper.

The dual radiometers are being designed, fabricated, tested and calibrated for NASA by Santa Barbara Research Center, Goleta, California, a subsidiary of Hughes Aircraft Company, under a $621,150 incentive-type contract.

Starmapper assemblies to be used in Project Scanner are being built for NASA by Baird-Atomic, Inc., Cambridge, Mass., under a separate $319,477 contract.

STEADY IMPROVEMENT IN HEAT SHIELD MATERIALS ACHIEVED THROUGH RESEARCH

An order of magnitude improvement in the efficiency of reentry heat protection materials over the past five years has been reported by scientists at the Langley Research Center.

Scientists described a recently-developed material for spacecraft heat shields which represents a major advance over the substance used successfully on the Project Mercury spacecraft.

The new material is a silicone elastomer containing hollow glass spheres and hollow plastic spheres embedded in a plastic honeycomb matrix to provide structural strength. It has been specially tailored to combine the chemical and physical properties which produce unusually high thermal efficiency.

It is one of a class of materials known as charring ablators. Its low density provides good insulation characteristics to prevent heat from reaching an internal structure.

During thermal decomposition, such as would occur in a reentry, enough gases of the right composition are generated to block incoming heat, and a tough carbonaceous char layer is formed to re-radiate heat through high surface temperature operation.

Charring ablator heat shields protect a spacecraft by a complex physical-chemical process. At first they begin to decompose chemically, absorbing some reentry heat in the process. During decomposition, gases are evolved, and act as an insulating blanket as they pass over the heat shield surface.

And finally, at the surface, a charred layer of coke-like material develops, capable of operating at very high temperatures to radiate heat away from the spacecraft.

The new material described by NASA scientists performs very efficiently in all of these ways, and hence is a very promising substance for space vehicle heat protection use.

It was pointed out, however, that accurate and detailed ground tests of promising new heat shield materials are essential to determine precisely how they will respond to various environmental changes.

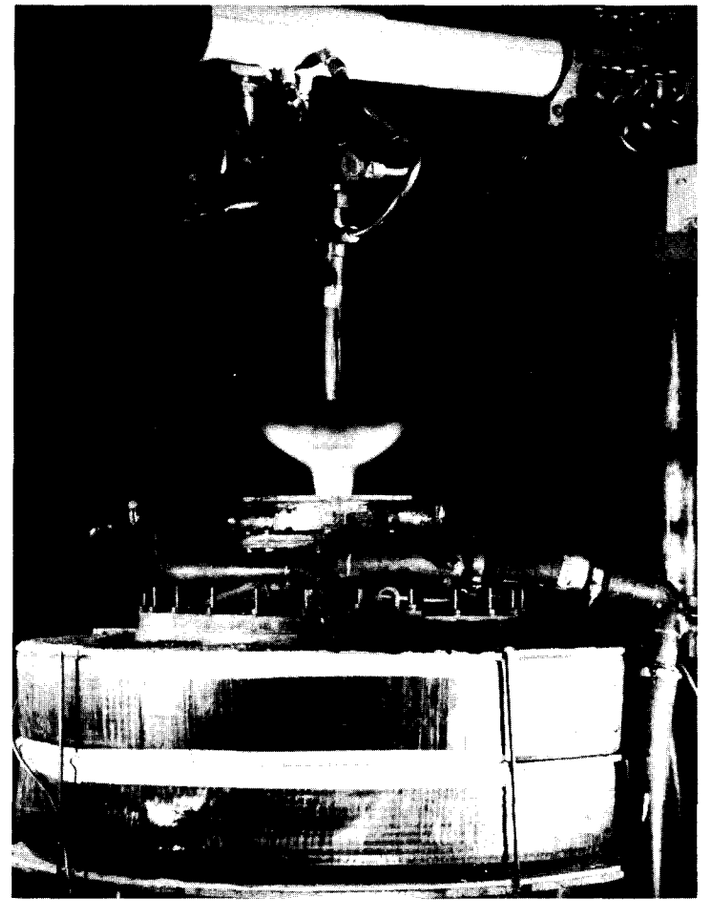
A material that is satisfactory for Gemini reentry speeds may not work well at the escape speed reentry requirements of Apollo. Other variables such as the heating rate, which changes with flight speed and altitude, the severity of char oxidation environment, and increases in surface aerodynamic shear stress must be carefully evaluated.

Present test facilities, it was noted, cannot duplicate the proper combination of all conditions encountered in the entry of advanced manned vehicles, nor can they provide a sufficiently severe value of all the important factors.

The design of future heat shields is considered to require further development of adequate engineering theories to extend existing research information so that the performance of many different materials under widely varying conditions may be accurately predicted.

NASA research is diligently seeking the solutions to these important problems. Tests in ground facilities are being supported by flight tests of promising materials, and a systematic effort is going forward to provide the technology needed for the future requirements of America's space program.

FOR SALE: 3-bedroom home near Bavon Beach in Mathews County on Route 14. Hudgins, 725-3655.
FOR SALE: English Setter pups. Crigler, PA 3-3517.



Intense heat like that experienced by spacecraft during atmosphere entry is generated in the laboratory by scientists of the Langley Research Center. Tests such as this conducted in the Structures Laboratory 2,500 kilowatt subsonic electric arc heater evaluate materials for use as heat shielding for various types of reentry vehicles. In the 10,000° F. air stream produced by the arc heater, an ablation material shaped like an Apollo spacecraft is placed for the experiment. The stream of gas impinging on the model issues from the nozzle at more than half a mile per second.

PURDUE RECEIVES NASA GRANT

Purdue University will receive a grant of $840,000 to finance construction of additional laboratory and rocket-firing facilities under an agreement with NASA.

The agreement, providing funds to expand Purdue's Jet Propulsion Center, was recommended by NASA's Grants and Research Contracts Division and approved by James E. Webb, NASA Administrator.

The Jet Propulsion Center, engaged in aerospace research since 1947, has pioneered in solving problems related to liquid bi-propellant rocket motors operated at high combustion pressures. Current activities of the center cover investigations in a broad area of aerospace propulsion.

The proposed construction will include a storage room, control center, service building, firing cells and associated pressurizing and monitoring systems in support of the university's and NASA's rocket research program. They will be built on Purdue-owned land to form an integral part of the Jet Propulsion Center.

NASA TO BEGIN NEW RAMJET RESEARCH ENGINE PROJECT

A new research project to study feasibility and design concepts of an advanced hypersonic ramjet engine is being organized by NASA.

The project seeks the eventual construction of a scaled **research ramjet** test engine as a means of advancing the technology of air-breathing propulsion. The work will be carried out under direction of Langley Research Center and overall management of NASA's Office of Advanced Research and Technology.

The new work extends the ramjet propulsion technology which NASA has been developing for more than 15 years.

Main objective of the project is to determine the potential of the ramjet as a propulsion system for hypersonic (more than five times the speed of sound) flight missions. The ramjet power plant is expected to be useful for the hypersonic transport aircraft, boosters and spacecraft while flying within the atmosphere. Engineers and scientists foresee great advantages in reduced weight and improved flight efficiency with the ramjet at hypersonic speeds.

In its simplest form, the ramjet has no moving parts. Unlike the turbojet which has a mechanical compressor, the ramjet compresses air by ramming it into the front of the engine at high speed. Burning fuel in the compressed air is expanded through the tail pipe to produce thrust. The ramjet operates best in the speed range above the turbojet.

The NASA project will use hydrogen as a fuel. It will be concerned with supersonic as well as subsonic burning, and will provide information on ramjets operating in a speed range from Mach 3 upward in the hypersonic range.

NASA scientists expect the project to provide the technology necessary for eventual development of a practical engine. The first phase of the work will be concerned with study, fabrication and experiments with small laboratory equipment. Later plans include flight tests on the X-15 at speeds as high as Mach 8.

The project is under the management of the Aeronautical Research Division of the Office of Advanced Research and Technology. The work will be carried out under the technical supervision of Langley, with the assistance of the Ames, Lewis and Flight Research Centers.

173 EMPLOYEES DONATE BLOOD

The Bloodmobile visited the Center on July 1 and employees donated a total of 173 pints of blood.

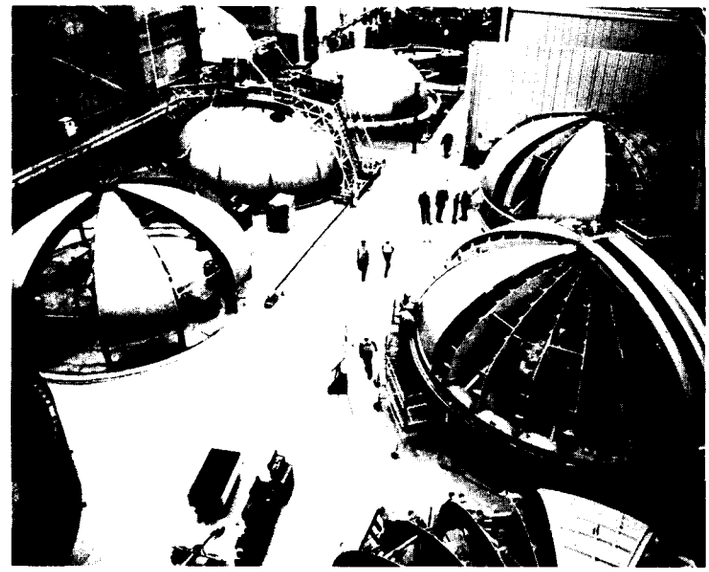
Charles Yates completed his quota for four gallons and Clarence Snyder reached the three-gallon mark.

Two-gallon certificates were presented to Robert Ferguson, Evander Rowell, Wesley Berryman, Leonard Pepe, Edward Germaine, Archie Myers, and Richard Kuhn. Receiving a one gallon pin was Stanley Pearce.

Assisting during the visit were Dr. Ella T. Robeson and Dr. A. S. Teuber.

The next Bloodmobile visit to the Center has been scheduled for Sept. 23. Persons interested in joining the Center's blood program may register by calling East Dispensary, 2243.

FOR SALE: 40-inch Hotpoint electric range with rotogrill oven. Ward, 722-0218 after 5 p.m.



SPACE BEANIES - Resembling giant beanie caps, these futuristic domes are propellant bulkheads for NASA's Saturn V Apollo Moon-landing rockets' second stage. In production at North American Aviation's Space Division, Downey, Calif., the bulkheads are partitions that bottle up, insulate and separate fuels that will power the launch vehicle.

FRIEDL APPOINTED TO NEW POST

George Friedl, Jr., former management consultant in Santa Ana, Calif., has been appointed Deputy Associate Administrator for Industry Affairs by NASA.

Friedl succeeds Earl D. Hilburn who recently was named Deputy Associate Administrator.

Friedl will be responsible for such matters as soliciting and evaluating proposals from industry, selection and use of various types of contracts, pricing, fee allowances and incentive features of NASA contracts. He will direct NASA Headquarters offices concerned with reliability and quality assurance, construction of facilities and labor operations.

NASA's Western Operations Office, Santa Monica, Calif., and the Northeastern Office, Cambridge, Mass., will report to Friedl.

Since 1962, Friedl has been a management consultant in Santa Ana. From 1960 to 1962 he was chairman of the board and president of Matthews Corp., and from 1956 to 1960 he was corporate vice president of Litton Industries and general manager of the firm's Electronic Equipment Division.

Earlier, Friedl was director and principal executive of various subsidiaries of General Precision Equipment Corp. These include: vice-president in charge of advanced planning and vice-president in charge of manufacturing for Link Aviation, Inc.; president and director of Librascope, Inc.; vice-president and director of National-Simplex-Bludworth, Inc.; president and director of Bludworth, Inc.; director of engineering of International Projector Corp.

During World War II, he served as a staff officer at the Naval Research Laboratory, Washington, D.C., where he organized the Electrical Research Division.

Friedl received a B.S. degree from Cooper Union Institute of Arts and Sciences in 1928 and an electrical engineering degree from Cooper Union in 1931. He did graduate work at Columbia University and New York University.

Langley Researcher

VOLUME 3, NUMBER 16 LANGLEY RESEARCH CENTER JULY 31, 1964

TWENTY-FOUR EMPLOYEES RECEIVE NASA SPECIAL SERVICE AWARD

In ceremonies held last week, twenty-four employees received Special Service Awards for their participation in the Aircraft Technical Area of the Federal Aviation Agency's Supersonic Transport Evaluation.

The awards were presented by Charles J. Donlan, Associate Director, and they consisted of a cash award and a certificate which read: "In recognition of your valuable contributions of technical advice, consultation and assistance during the evaluation of industry proposals for the United States supersonic transport development program."

Receiving the awards were the following employees:

Emanuel Boxer, Cornelius Driver, Williard E. Foss Jr., Alexander D. Hammond, Roy V. Harris Jr., Arvid L. Keith Jr., Francis E. McLean, James C. Patterson Jr., Jack F.

(Continued on page 7)

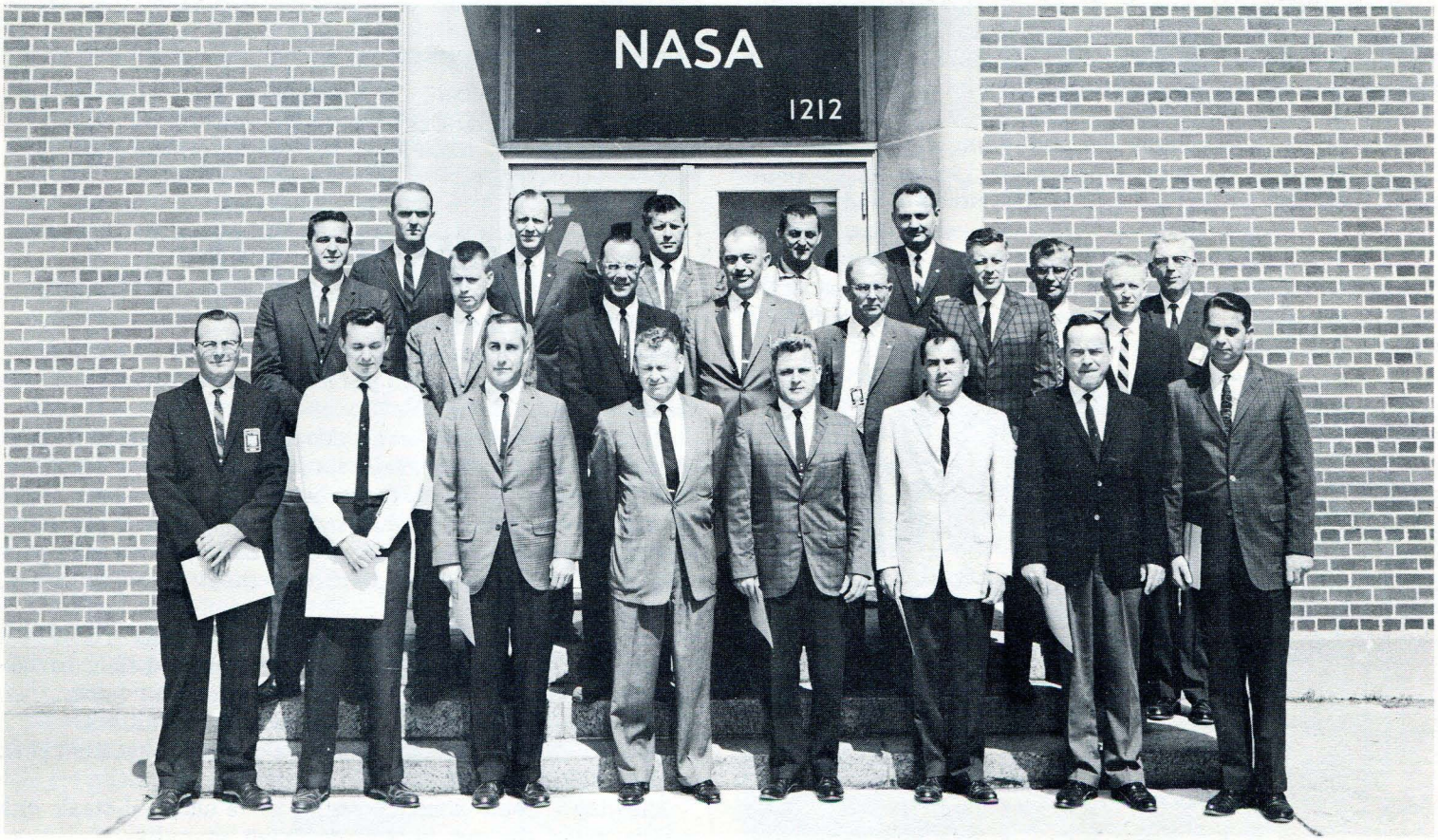
EMPLOYEES CONGRATULATED ON COST REDUCTION EFFORTS

Earl D. Hilburn, NASA Deputy Associate Administrator, has issued a note of thanks to all NASA employees for their part in the NASA Cost Reduction Program. He pointed out that NASA Administrator James E. Webb reported to the President that Fiscal Year 1964 accomplished cost reductions of $128,783,000.

In his letter Hilburn stated, "Each of you is to be congratulated for the whole-hearted spirit of cooperation and special effort which was required to exceed the Agency's FY-64 target of $81,780,000.

"The effect of these cost reductions has been to permit us to do more work within the resources made available by the Congress than would have otherwise been possible.

(Continued on page 7)



In ceremonies held last week, twenty-four employees received the Special Service Award for their participation in the Federal Aviation Agency's Supersonic Transport Evaluation. The awards were presented by Charles J. Donlan, Associate Director. Recipients of the awards were front row (from left): James P. Peterson, Odell A. Morris, Martin T. Moul, Donlan, James W. Schmeer, Roy V. Harris Jr., Alexander D. Hammond, and Roy Steiner. Second row-James C. Patterson Jr., Dr. E. Carson Yates, William J. Alford, John G. Lowry, Upshur T. Joyner, Emanuel Boxer, and Jack F. Runckel. Back row - Charlie M. Jackson Jr., William E. Foss Jr., Arvid L. Keith Jr., Domenic J. Maglieri, Cornelius Driver, John H. Wood, and Joseph W. Wetmore. Absent when the picture was taken were Thomas L. Coleman, Richard A. Pride, and Francis E. McLean. --Photograph by William E. Frazier and William C. Salyer

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

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ANNOUNCEMENTS

ENGAGEMENTS. . .Carl Arthur Trexler, Aero-Physics Division, is making plans to desert the bachelor ranks. He is engaged to Jimette Gladys Gentry, Galax, and the wedding will take place on August 23. . .Dan Cupid scored another victory when George Michael Jurscaga, Mechanical Service Division, became engaged to Teresa Ann Moore, Seaford. No date has been announced for the wedding.

INDEMNITY PLAN REPRESENTATIVE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, Federal Employees Health Benefit Program, will visit the Center on August 11 from 3 p.m. until 4. Employees having problems or questions concerning the Indemnity Benefit Plan may call Linda Hale, 2323, for an appointment.

NEW HEIR. . .Announcing the birth of an eight-pound son, James Marton, on July 19 are Penny, formerly of Technical Editing, and Martin Trusty, Procurement Division.

TOUCH FOOTBALL. . .Plans are underway to form a NASA Touch Football League. Persons interested in playing in the league or teams interested in entering are requested to call E. D. Kersey or Charles Woerner, 4840.

Larry Becker (left), son of Harry H. Becker of Instrument Research Division, loses a close race in the Class A runoff to Ernest Pollock in the 1964 Peninsula Soap Box Derby. The annual event is sponsored by the Peninsula Junior Chamber of Commerce. The winner will represent the Peninsula in the finals which will be held in Akron, Ohio.

"I'M GROWING TOMATOES IN THIS ROW-CUCUMBERS THERE--AND IN THE HOUSE, MONEY WITH U.S. SAVINGS BONDS!"

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 3:

Monday - Tomato-barley soup, roast veal with dressing, shrimp Newburg, grilled pork steak, beef croquettes with white sauce.

Tuesday - Vegetable-beef soup, roast ribs of beef, crab cakes with tartar sauce, Salisbury steak, Western omelette.

Wednesday - Chicken broth with noodles, beef stroganoff over rice, glazed ham, fried chicken, cheese omelette.

Thursday - Tomato soup, grilled steak, barbecued pork chunks over noodles, spaghetti with meat sauce, chili dog, hot dog.

Friday - Clam chowder, shrimp plate, hot roast beef sandwich with gravy, stuffed flounder, broiled fish, barbecued sandwich.

The menu for the week of August 10 is as follows:

Monday - Tomato soup, Spanish pot roast, grilled pork chops, stuffed pepper, fish cakes with cole slaw.

Tuesday - Bean soup, country style chopped steak with gravy, fried shrimp, beef stew, Irish omelette.

Wednesday - Vegetable-beef soup, roast ribs of beef, fried scallops with tartar sauce, liver and onions, Welch rarebit.

Thursday - Chicken noodle soup, grilled steak, salmon loaf, fried chicken, baked hash.

Friday - Clam chowder, seafood plate, sliced turkey with dressing, boiled ham, broiled fish, grilled cheese sandwich.

NASA PROGRAM TO KEEP SCIENTISTS INFORMED OF LATEST DOCUMENTS

NASA has begun a pilot program designed to help scientists and engineers cope with today's rising flood of literature on new discoveries and developments.

The program, called Selective Dissemination of Information (SDI), is being developed for NASA under contract by the Advanced Systems Development Division of International Business Machines Corp., Yorktown Heights, N.Y., and is presently serving 500 NASA scientists and engineers.

SDI automatically notifies, individually, those enrolled in the program of fresh information within their respective fields by a three-step process. It is designed to disperse information to scientists at speeds in keeping with space-age technology.

The individual fills out an interest "profile" using terms and phrases that give a comprehensive and accurate description of the kind of information he needs.

The "profile" is matched, by computer, with corresponding "profiles" of the contents of newly acquired technical reports from all over the world. NASA then sends cards with brief outlines of the information to the potentially interested individuals. To get the full report, the individual requests it from a nearby technical library.

The SDI system is expected to eliminate the need of individuals to spend substantial time sifting through thousands of new reports listed in bulky announcement journals in order to keep up with the latest information in their fields of interest.

The Air Force has enrolled 200 persons in the NASA/SDI program on an experimental basis.

Later this year, SDI will be transferred to the NASA Scientific and Technical Information Facility at Bethesda, Maryland, and opened to additional users.

COLONEL YOUNG PRESENTED MEDAL

Col. Robert P. Young, executive officer of NASA since 1961, has been awarded NASA's Medal for Outstanding Leadership.

The presentation was made by NASA Administrator James E. Webb at a luncheon for Young.

Young was cited for "his outstanding leadership and dedicated service displayed in all aspects of performance while serving as executive officer of NASA, and for his significant and noteworthy contributions in coordinating internal management of the agency."

A native of Mitchell, S.D., Young is a graduate of the United States Military Academy and served with the Army Corps of Engineers in World War II and during the Korean emergency before joining NASA.

Young also serves as Chairman of the Electronics Research Center Site Evaluation Committee which is studying potential center sites in the Metropolitan Boston area.

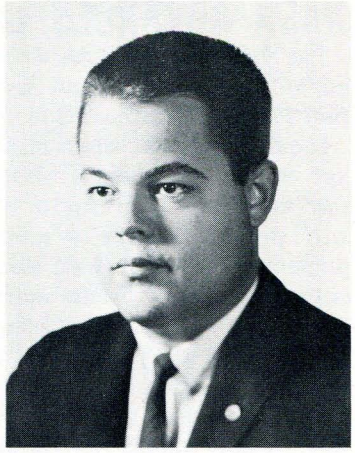
WANTED: Alternate driver from Forrest Park area to W.A. on 8 shift. Foote, 4811, or Pickrell, 3461.

WANTED: Ride or driving combination from North Hampton to W.A. on 8 shift. Sabo, 3265.

WANTED: Driving combination from Portsmouth to W.A. on 7:30 shift. Wynn, 4691.

WANTED: Driving combination from Dare to W.A. on 8 shift. Wade, 877-3059.

James R. Williams



Robert G. Kyle

Vincent P. Mascitti

Daniel J. DiCarlo

EMPLOYEES RECEIVE B.S. DEGREES

Four employees recently received their B.S. degrees under the Center's Student Trainee Program.

The graduates are James R. Williams, Space Mechanics Division; Robert G. Kyle and Vincent P. Mascitti, Full-Scale Research Division, and Daniel J. DiCarlo, Flight Mechanics and Technology Division.

Williams is a native of Gloucester Point. He graduated from Gloucester High School and entered on duty at Fort Eustis as a Student Trainee on July 5, 1960 and transferred to the Center on September 12, 1960. He received his degree in Physics from Virginia Polytechnic Institute.

Kyle was born in Romney, West Virginia. He graduated from Athens High School, Athens, West Virginia, and attended Concord College in Athens for one year. He joined the Center as a Student Trainee on December 30, 1960. He received his degree in Aeronautical Engineering from Virginia Polytechnic Institute.

Mascitti hails from Philadelphia, Pennsylvania. He graduated from Central High School, Philadelphia, and attended Drexel Institute of Technology for one year. He entered on duty June 26, 1961 as an Aerodynamics Test Technician and transferred to the Student Trainee Program on July 9, 1961. He received his degree in Mechanical Engineering from Drexel.

DiCarlo is a native of Philadelphia. He graduated from South Philadelphia High School and attended Drexel for a year before joining the Center staff on June 26, 1961 as a Mechanical Equipment Draftsman. He transferred to the Student Trainee Program on July 9, 1961. He received his degree in Mechanical Engineering from Drexel.

NASA ADVANCES LIQUID HYDROGEN USE

The flight test of NASA's Centaur rocket June 30 succeeded in qualifying liquid hydrogen as a high-performance fuel for space exploration.

Liquid hydrogen, when mixed with liquid oxygen in a rocket engine, produces about 35 per cent more thrust than the kerosene-type fuels now being used. In the future, it will propel Centaur on unmanned Earth orbital and interplanetary flights as well as other upper-stage rockets now being developed for the manned lunar landing program.

The June Centaur shot was the fourth time that the hard-to-tame fuel had performed as planned. The first successful operation of a hydrogen engine in flight took place Nov. 27, 1963, when a Centaur upper-stage was test-launched from Cape Kennedy. Liquid hydrogen also powered the Saturn I rocket last Jan. 29 and the S-IV second stage last May 28.

As a gas hydrogen has been used for years in flight, chiefly to give buoyancy to balloons and dirigibles. But for space flight it had to be liquified, which called for creation of a whole new technology of cryogenics, the science of very low temperatures.

It is at 423 degrees below zero Fahrenheit that the element hydrogen becomes a liquid - colorless, odorless, nontoxic, nonirritating, and noncorrosive. So long as it is not ignited, it remains chemically inert in the presence of all common materials and, in fact, will freeze air, oil, and oxygen to a solid state. It does not deteriorate nor decompose in long-term storage.

Lewis Research Center did much of the pioneering on the new technology and in the period just after World War II had some successful engine runs in the laboratory. In 1962 Lewis received technical management of Centaur, the rocket that was to leap the gap between conventional and high-energy fuels. Marshall Space Flight Center is developing the next generation of liquid hydrogen rockets--the S-IV, S-IVB, and SII stages of the Saturn--which is to be the launch vehicle for manned lunar landings.

From the outset, the development of Centaur and Saturn demanded solution of problems at the very limit and even beyond the current state of the art. Examples:

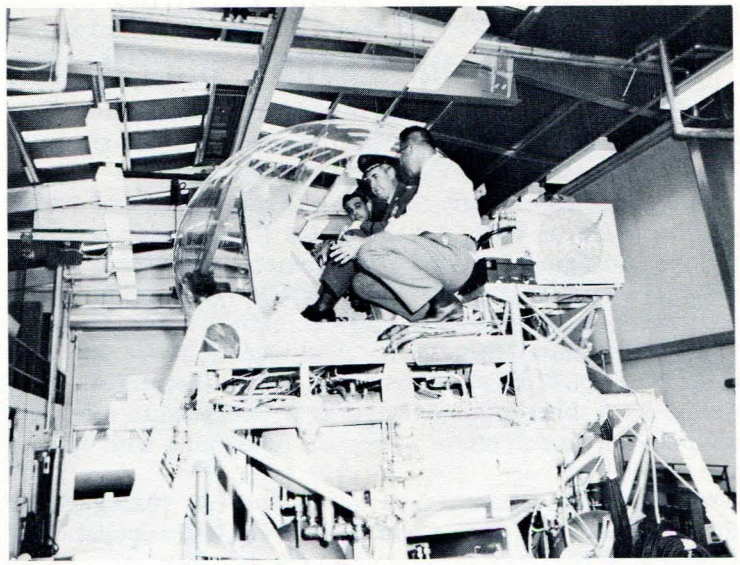
-Heat. Storage tanks had to be carefully shielded from the heat caused by friction and compression in the air, the heat of the engine itself, and the warmth of the Sun to prevent rapid boiloff and violent expansion of the fuel.

-Storage. Liquid hydrogen's super-cold required tank structural materials that would not freeze or, when cooled, become brittle and fail under the stresses of space flight.

-Weightlessness. Nothing was known of the behavior of liquid hydrogen when weightless. NASA research yielded some answers; Centaur and Saturn development flights are providing still more.

-Production and handling. The first liquid hydrogen plant began producing in 1947, a mere 12 pounds an hour. It was 1953 when the National Bureau of Standards devised a way to keep it from evaporating rapidly in storage. When Pratt and Whitney Aircraft Division of United Aircraft Corp. got the contract to build Centaur and S-IV RL-10 engines, the U.S. Air Force built the first facility to produce significant tonnages alongside P&W's Florida Research and Development Center in West Palm Beach.

In this plant, natural gas is broken down into hydrogen gas, carbon dioxide, and other products. The hydrogen is then refrigerated and purified to a standard of 99.99999 per cent, placing it among the purest of known materials. By 1961, industry, university, and government research was using six million pounds; by 1963, 35 million pounds. The estimate for 1966: 95 million pounds.



Captain James F. Smith (left), U.S. Air Force, and General Walter C. Sweeney, Commanding General, Tactical Air Command, Langley Air Force Base, are shown in a research vehicle to be tested on the Lunar Landing Research Facility. Explaining the vehicle to the visitors is Donald E. Hewes, Space Mechanics Division. Captain Smith and General Sweeney visited the Center on July 20.

Although Centaur and Saturn put liquid hydrogen to its first practical use as rocket fuel, the potential has long been known. As the element consumed in the Sun's internal thermonuclear reactions which heat and light the solar system, hydrogen came to be spoked of as the ultimate fuel.

As long ago as 1903, Konstantin Tsiolkovsky, a Russian theoretician, wrote "Treatise on Space Travel," suggesting that a rocket engine might be built to run on liquid hydogen and liquid oxygen. Six years later Dr. Robert Goddard, the American rocketry pioneer, listed liquid hydrogen in his notebook as a possible propellant and in 1921 actually fired a rocket powered by gaseous hydrogen.

Not until 1945 at Ohio State University, however, was there a significant firing of a liquid hydrogen engine. Just two years later, Aerojet-General Corp. developed a 3,000-pound thrust engine using liquid hydrogen.

In Centaur and Saturn, liquid hydrogen will be the workhorse fuel of the U.S. space program for some time to come. For the future, NASA's Office of Advanced Research and Technology has Lewis Research Center under contract to develop an experimental liquid engine with 1.5 million pounds of thrust. OART also is investigating the use of flourine as an oxydizer to get still more thrust from liquid hydrogen, and in work to be carried on at Langley Research Center is studying the possibility of using liquid hydrogen in a ramjet engine for aircraft.

Nor is the end in sight. From chemical engines, liquid hydrogen's next application probably will be in nuclear-powered rockets which will pass the lightweight fuel through a reactor and heat it to a violently expansive gas for thrust through a nozzle. Still farther in the future of space exploration are fusion rockets, which will duplicate the energetic reactions of the Sun and put hydrogen to work at last as the ultimate in fuels.

DR. WINSTON E. KOCK HEADS NASA ELECTRONICS CENTER

Dr. Winston Edward Kock, vice president-research at the Bendix Corporation, Detroit, will head NASA's Electronics Research Center to be located in the Boston area.

Kock's appointment as director of the new center, announced by NASA Administrator James E. Webb, is effective September 1.

Kock will have charge of pioneering work in space and aeronautical electronics as director of the Electronics Research Center. Principal functions of the center will be basic studies and component technique investigations in the fields of communications, data processing, navigation, instrumentation, guidance and control.

Kock will report to Dr. Raymond L. Bisplinghoff, Associate Administrator for Advanced Research and Technology at NASA Headquarters.

"I am greatly pleased to announce this appointment," Webb said. "Dr. Kock is a distinguished leader in the electronics industry and has an outstanding record of achievement as a creative scientist and inventor.

"He has been responsible for some of the most important work in radar and microwave radio, and while employed at the Bell Telephone Laboratories took part in the early stages of development of the 'Picture-Phone,' the device now going into service which transmits pictures as well as sound over telephone circuits.

"To build the physical plant required to find ways and means to bring into play the best brains and experience in the nation, in planning and executing a broad program of electronics research, and stimulating new approaches to the opportunities and problems of University-Government-Industry relationships in such large scale organized effort, is one of the most challenging tasks facing us in the aeronautical and space programs of today. Dr. Kock was chosen through a long and exhaustive search among our nation's top leaders in this field."

Kock comes to NASA after some eight years with Bendix, where he began as Chief Scientist of the Systems Division. He was promoted to Director and General Manager of the Research Laboratories Division, and in 1962 to the position he now holds.

He has won a notable reputation for his work in acoustics, microwaves, antennas, artificial dielectrics, automatic speech recognition, narrow band television and acoustic analogs.

Kock contributed to the development of microwave lenses which are used in Bell System's transcontinental relay link and development of an anti-submarine detection system for which he received the Navy's Distinguished Public Service Medal. He was also instrumental in development of the coaxial form of the transistor and several acoustic lenses used in high fidelity loud speakers.

Kock was born December 5, 1909, in Cincinnati. He received a bachelor degree in Electrical Engineering in 1932 and a master's degree in Physics in 1933, both at the University of Cincinnati. He earned his Ph.D. in Physics at the University of Berlin in 1934. He did post-doctoral work at the Institute for Advanced Study, Princeton, and the Indian Institute of Science, Gangalore, India. He was given an honorary Sc.D. degree by the University of Cincinnati in 1952.

Kock became director of Electronics Research at the Baldwin Piano Co., in 1936, where he developed the Baldwin electronic organ. In 1942, he joined the Bell Telephone Laboratories in New Jersey where he worked on radar antennas and a variety of microwave experiments. He was responsible for invention of the metal plate and artificial dielectric lens. In 1950 he was named director of Acoustics Research. He later headed the group developing the Picture-Phone, and was promoted to director of Audio and Video Systems Research, a position he held when he resigned to join Bendix in 1956.

Kock has been consultant to the Secretary of Defense, Department of the Army, Office of Naval Research, National Academy of Sciences, and the Department of Defense Advisory Panel on Electronics. He is a Fellow of the American Physical Society, American Acoustical Society, and the Institute of Electrical and Electronic Engineers, and member of the American Institute of Physics, National Security Industrial Association, Industrial Research Institute of National Association of Manufacturers, and American Ordnance Association.

He has written a number of technical papers in several fields and holds more than 80 patents.

MAYES RECEIVES M.S. DEGREE

William H. Mayes

William H. Mayes, Aerospace Engineer in the Acoustics Branch, Dynamic Loads Division, recently received his M.S. degree in Engineering in Acoustics and Vibration Studies from the University of Southampton, Southampton, England.

Mayes was born August 16, 1928 in Toms Creek. He graduated from Coeburn High School in Coeburn and received his B.S. degree in Physics from Emory and Henry College in 1956.

Mayes served in the U.S. Army from October 23, 1950 until October 10, 1952. He worked for the U.S. Post Office in Emory from June 1, 1955 to June 1, 1956. He started his NASA career on July 18, 1956 as an Aeronautical Research Intern in Dynamic Loads.

PROFESSOR TO VISIT CENTER

Dr. James B. Eades, Aero-Space Engineering Department, Virginia Polytechnic Institute, will visit the Center on Monday, August 2.

Employees interested in conferring with him are requested to call the Training Office, telephone 2326, for an appointment.

WANTED: Pre-school teacher for Cerebral Palsy Center. Hours are 8:45 a.m. to noon, 5 days per week for 9 months, salary - $2500. Wertz, CH 43702.

WANTED: Driving combination from Riverdale Apartments to E.A. on 8 shift. Collins, 2203.

WANTED: Ride or driving combination from Tide Mill Farms to W.A. on 8 shift. Maddalon, 4705.

WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.

EXPERIMENTS SELECTED FOR OGO

NASA has selected 22 scientific experiments for the fifth Orbiting Geophysical Observatory (OGO-E) scheduled to be launched by an Atlas-Agena vehicle from Cape Kennedy in 1966.

Fifty-four scientists, in universities (foreign and domestic), Government and private industry will take part.

About 220 pounds of scientific instruments will be included in the 1100 pound satellite which is scheduled to be launched into an orbit with an apogee of 92,000 miles and perigee of 170 miles. Solar cells mounted on two large rotatable paddles will supply electrical power.

OGO-E studies are expected to play an important part in learning more about the dangers of energetic particle radiation to manned space travel; Earth and interplanetary magnetic fields; the effect of solar gases (plasma) on the Earth's magnetic field and radio communication; and the effects of solar radiation on the Earth.

OGO-E is the fifth of six Orbiting Geophysical Observatories scheduled for launch by NASA.

OGO-A is at Cape Kennedy being prepared for a late summer launch. OGO's A, B, and E will investigate the natural radiation belts, the geomagnetic field and other phenomena at great distances from the Earth, the region between the geomagnetic field and the solar wind, and the solar wind itself.

OGO's C, D, and F will be launched in near-Earth polar orbits to investigate the ionosphere and upper atmosphere and such phenomena as aurora and radiation belt tips that extend downward near the poles.

All six OGO's are designed to carry a large number of scientific experiments and to operate for about a year.

NASA is negotiating with Space Technology Laboratories, Inc., Redondo Beach, Calif., for a contract to build the OGO-D and E spacecraft. Under an existing contract, STL is designing, developing, fabricating and testing OGO's A, B, and C.

POSITION OPEN IN WASHINGTON

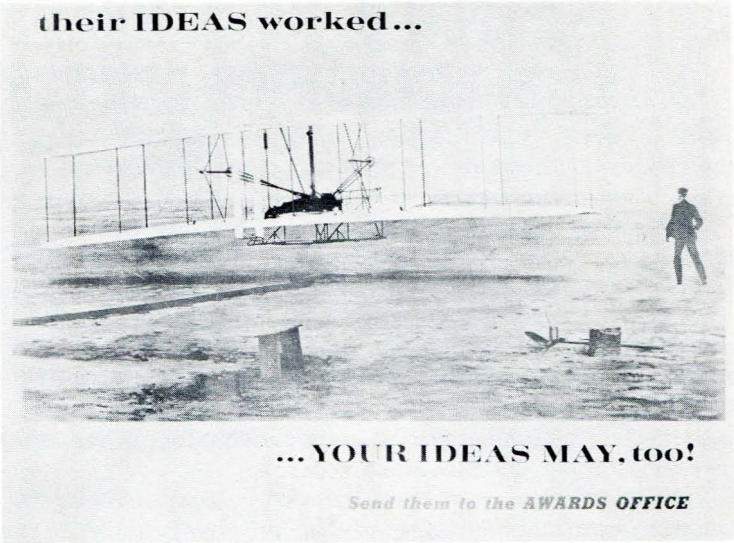
NASA Headquarters in Washington, D.C., has a vacancy for the position Placement Specialist - Recruitment, GS-13. Interested candidates are requested to send their applications to the Staffing Programs Branch, Code BPR, Universal Building, Washington, D.C.

BOOKS FOR SALE: "Machinery's Handbook" by Oberg and Jones, "Mechanical Engineers' Handbook" by Lionel S. Marks, "Scientific French" by Locke, "Cartesian Tensors" by Jeffreys, "Experimental Chemistry" by Sienko and Plane, "Brief Course in Analytics" by Hill and Linker, "Oral Communications for the Layman" by Vaughan, "Inductance Calculations Working Formulas and Tables" by F. W. Grover, "Quantum Mechanics with Elementary Applications" by Kemble, "Mathematics of Physics and Modern Engineering" by Sokolnikoff and Redheffer, "Iliad" by Homer, Communication System Calculator. NASA Exchange, Building 586, telephone 2326.

FOR SALE: Portable Philco TV with stand - $50. Smith, PA 3-6488.

FOR SALE: Simease kittens. Willis, 838-0695.

FOR SALE: Wisconsin model AEH garden tractor or stationary engine - $35. Pierpont, 723-2121.



TUNGSTEN NUCLEAR ROCKET STUDY

NASA announced it will negotiate with General Atomics Division of General Dynamics Corp., San Diego, for a contract covering studies related to the thermal tungsten rocket reactor concept.

The contract to be negotiated will be under the technical direction of Lewis Research Center. Value is expected to be about $1.7 million.

The contract will be managed by the Cleveland Branch of the Space Nuclear Propulsion Office, a joint operation of NASA and the Atomic Energy Commission.

Work under the contract is part of the United States' program to explore the feasibility of the tungsten reactor and to determine its capabilities in the nuclear rocket.

General Atomics will determine means to calculate the critical mass of uranium needed to provide reactivity, the distribution of uranium in the core for efficient thermal design and the ability of the control rods to perform their function. General Atomics also will devise experiments to confirm calculations reached in the study.

In a later phase of the program, critical experiments may be run on a mockup of the reactor.

BOWLING FINANCIAL REPORT

The following is the final financial report of the NASA Tenpin Bowling League.

$1242.16 posted balance as of May 5, 1964.

$1597.98 balance as of June 22, 1964.

Expenses - Banquet $725, Band $225, door prizes $233, treasurer's expenses $40, scorers $200, miscellaneous and secretary's expenses $18.98, final payment on trophies $155.40, bank charges $0.60 - total $1597.98.

FOR SALE: 14-foot molded plywood boat with 40 hp Mercury outboard motor and trailer, $550. Barger, LY 62987.

WANTED: Alternate driver from Eastwood area to W.A. on 8 shift. Andrews, 4522.

WANTED: Ride from West Queen St. and College Place to W.A. on 7:30 shift. Holley, 3271.

WANTED: Ride or driving combination from Franklin Rd. to W.A. on 7:30 shift. Barnes, 4580.

FOR SALE: Camping tent, external frame-type, and gas lantern. Bryant, LY 50819.

FOR SALE: 4-bedroom house with garage and fenced backyard - $400 down. Krodel, 723-8002.

NASA SPECIAL SERVICE AWARD

(Continued from page 1)

Runckel, James W. Schmeer, Charlie M. Jackson Jr., Odell A. Morris, John G. Lowry, and William J. Alford, all of Full Scale Research Division; Thomas L. Coleman and Joseph W. Wetmore, Flight Mechanics and Technology Division; Upshur T. Joyner, Domenic J. Maglieri, Roy Steiner, and Dr. E. Carson Yates Jr., Dynamic Loads Division; Martin T. Moul, Space Mechanics Division; James P. Peterson and Richard A. Pride, Structures Research Division, and John H. Wood, Research Models and Facilities Division. Lowry and Alford were group leaders of the team.

Members of the team also received letters of commendation from the Federal Aviation Agency.

The NASA Special Service Award is given in recognition of outstanding special service or performance in which the contribution or service by the individual is highly significant.

Donlan stated, "All members of this group were specifically cited for their highly significant contributions resulting from technical contributions made as members of the United States Supersonic Transport Evaluation Group. The responsibility for determining the soundness and acceptability of industry proposals for a supersonic transport was assigned to this group. This evaluation task was exceptionally challenging, demanding, and painstaking and of significant national interest. The difficult and demanding evaluation task was performed with skill and dedication. At considerable personal sacrifice, this group performed great service to a major national program."

EMPLOYEES CONGRATULATED

(Continued from page 1)

The impact of the successful FY 1964 cost reduction program has been an increase in Agency productivity and a better return to the taxpayer on his investment in the national Space Program.

"The President has stated that a dollar's value must be received for a dollar spent; nowhere is this more true than in an ambitious and fast-moving program such as ours.

"The performance in FY 1964 was excellent; in FY 1965, Cost Reduction Program goals are going to be harder to achieve because we have tightened up the more obvious areas where definite cost savings can be accomplished. However, through the personal awareness and dedication of each employee, we will continue in FY 1965 to better our Agency-wide goals."

FOR SALE: Exterior French doors, 5 feet by 6 feet, 8 inches with hardware and frames. Baals, LY 6-1659.

FOR SALE: 3-bedroom Cape Code house in Lakeside, pay equity and assume G.I. loan. Ware, LY 6-9062.

FOR SALE: 1958 Chevrolet station wagon, V-8, automatic transmission - $400. Summerfield, 898-3002.

FOR SALE: 3-bedroom house with garage in Patrician Manor. Howell, 826-1450 after 5:30.

FOR SALE: Floor furnace, 60,000 btu, $35. Mills, PA - 2-6024.

FOR RENT: 7-room furnished or unfurnished house in Sedgefield, Shumaker, CH 4-6206.

FOR SALE: 4-bedroom Cape Cod house. Bales, 596-6512.

FOR SALE: Domestic rabbits. Goble, 596-5176.

Two employees recently received cash awards under the NASA Incentive Awards Program. Top photograph - Sherwood L. Butler (left), Chief of Procurement Division, presents a check for $30 to Sanford D. Saunders for his suggestion entitled "Steel Pallet." Bottom photograph - William B. Mayo (right), Chief of Mechanical Service Division, presents an award of $160 to Viggo G. Dereng for his suggestion on "Feed Rate Number Computer for Use with Bendix Dynapath 20 Numerical Control."

FOR SALE: 14-foot Penn Yann strip boat with windshield, steering, 12 hp motor and trailer. Press, 826-0038.

FOR SALE: 1963 Volkswagon. Grantham, 723-1365 after 5.

FOR SALE: 1962 Pontiac. Everhart, 722-0075.

FOR SALE: 1961 Corvette. Lawson, 868-9253.

FOR SALE: 7-room house in Betsy Lee Gardens, $2900 down and assume loan or refinance. Fenton, CH 4-4887.

NASA MODIFYING X-15

NASA is modifying the X-15 No. 1 rocket-powered airplane, holder of the unofficial altitude record of 354,200 feet, to carry on scientific experiments outside the Earth's atmosphere at heights above 100,000 feet.

When the work is completed at Flight Research Center, the X-15 No. 1 will have a new inertial guidance system and streamlined compartments for experiments at each wing tip. The modification is scheduled for completion by September 15.

The compartments will hold instruments to measure the intensity and spectral distribution of sky-light, collect micrometeorites, and, among other things, develop devices for locating precisely the Earth's horizon.

Minneapolis-Honeywell Regulator Co. originally designed the new guidance system for the X-20 Dynasoar. It uses a digital computer instead of an analog computer, as in the present X-15 system, and besides giving the pilot more accurate information on speed, altitude, and attitude will also provide data on energy management for better landing and piloting.

The compartments at the wing tips will be almost five feet long and weigh about 200 pounds. That on the left, at the forward end, will contain a device consisting of six rotating faces of adhesive material, which will collect micrometeorites and extraterrestrial dust. On the ground, with physical and chemical analysis, scientists will try to trace the origin of the particles and thus verify certain astronomical theories.

In the rear of the pod on the left wing tip will be a special spectrometer to measure radiation and polarization of the total daytime sky background from the near-ultraviolet to the near-infrared. Its purpose: To guide the design of star tracking components for celestial attitude reference systems.

The right wing tip pod will contain an instrument known as the densitron to measure air densities at high altitudes. It will ionize air under ram pressure to yield electronic measurements, which will then be compared with the known speed of the X-15 to gauge density at a precise moment and height.

UNITED FUND PLEDGES DUE

Staff members who still owe all or part of their United Fund pledges which were made during the annual drive held at the Center last fall are urged to clear these obligations as soon as possible so the Center's organization can make their quarterly payment to the local chapter.

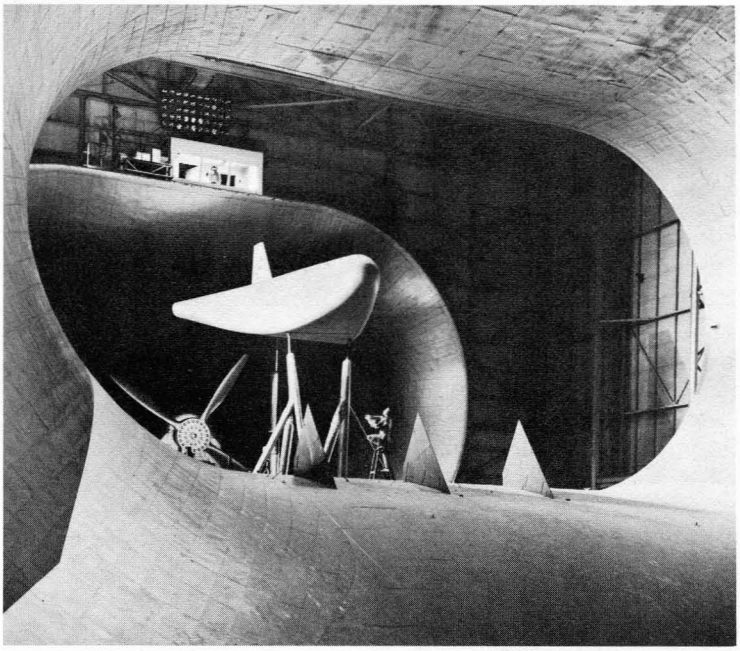
Pledge payments may be made in the East Area at the Receptionist's Desk in Building 587 or in the West Area in Room 112, Building 1195.

NASA GOLF LEAGUE

After four match periods, Electrical Systems and Bogeymen are tied for first place in the NASA Golf League with 3 wins, no losses, and no ties each.

Elec. Systems	3	0	W. FAB.	2	2
Bogeymen	3	0	Sand Trappers	0	2
7 x 10	2	1	Eagles	0	3
SCATS	2	1	IRD Divots	0	3

FOR SALE: 50 feet of snow fence and 7 metal posts - $10. Muraca, 826-1199.



This photograph of the HL-10 lifting-body reentry vehicle by Bob Nye, Langley Researcher staff photographer, appeared in color on the cover of the July issue of Astronautics and Aeronautics, the official monthly publication of the American Institute of Aeronautics and Astronautics. The 28-foot model is shown mounted in the Full-Scale Wind Tunnel to determine its low-speed static stability and control characteristics. Although it has no wings, sufficient lift is generated by the body itself to provide some conventional unpowered flight capability similar to that of the X-15. The vehicle will not need recovery devices such as parachutes or paragliders, since it can land like a conventional airplane.

HAMILTON DIES AT AGE 51

Leonard C. Hamilton, Experimental Facilities Mechanic in Mechanical Service Division, died last Friday in the Kecoughtan Veteran's Hospital after a long illness.

Hamilton was born September 27, 1912 in Minden, West Virginia. He attended Iaeger High School in Iaeger, West Virginia, and Bluefield Business College in Bluefield. He served in the U.S. Navy from September 21, 1943 to March 19, 1946.

Before joining NASA he was self-employed as a bus station operator in Bradshaw, West Virginia, and worked for Brown and Grist Aluminum Windows Company in Newport News. He entered on duty at Langley January 14, 1959 as a tool crib attendant.

He is survived by his wife, Mrs. Josephine Mullins Hamilton; three daughters, Linda Jo Hamilton, Delvia Hamilton, Virginia Lee Hamilton, and two sons, Merriel Wesley Hamilton and Thomas Paul Hamilton, all of Severn.

FOR SALE: 14-foot ski boat, motor and trailer, $395, and 30 hp Johnson electric start outboard, $165. Dennis, 722-4668.

FOR SALE: 12-cubic-foot General Electric refrigerator, 2-door - $50. Coward, 595-2437.

FOR SALE: Set of golf clubs, including woods and irons - $20. Youngblood, 245-3347.

FOR SALE: National HRO-50 radio receiver in excellent condition. Shaughnessy, 838-0007.

DR. EU[illegible]EMME

Langley Researcher

VOLUME 3, NUMBER 17 LANGLEY RESEARCH CENTER AUGUST 14, 1964

WHAT HAPPENED TO YOUR LAST PAY RAISE?

"What Happened to Your Last Pay Raise?" Did you spend it foolishly and have nothing to show for it? Or were you one of the more farsighted few who invested it in your future security-- by purchasing U.S. Savings Bonds?

All Wage Board employees received a pay raise effective August 2 and at press time on Wednesday, the President was expected to sign a bill granting all Classified employees an increase in salary retroactive to July 5.

Now is the time to put your pay raise to work for you. Invest it in U.S. Savings Bonds, a good investment and a sound means of achieving family financial goals.

Bond authorization cards may be obtained from your leave clerk or from the Payroll Office, telephone 2267.

KELLEY NAMED TO ELECTRONICS CENTER

Dr. Albert J. Kelley, Director of Electronics and Control Division of NASA's Office of Advanced Research and Technology, has been named Deputy Director of the new Electronics Research Center which will be established soon in the Greater Boston area. Dr. Kelley will be deputy to Dr. Winston Edward Kock whose selection as Director was announced last month. Both appointments are effective September 1.

The Center will operate under the program supervision of Dr. Raymond L. Bisplinghoff, NASA Asociate Administrator for Advanced Research and Technology.

"I am very pleased to make this announcement," Dr. Bisplinghoff said. "Dr. Kelley has had an outstanding career as a naval officer and has demonstrated exceptional leadership as a research scientist and manager in the field of electronics. His ability, experience and knowledge of our agency will furnish extremely valuable support to Dr. Kock."

Dr. Bisplinghoff recalled that Kelley established NASA's research program in electronics and control when he was assigned in November 1961 to form the division he now directs at NASA Headquarters. He recruited the professional staff of the division and organized the research program which now has an operating budget over $35 million. The program is concerned with research into all aspects of electronics and control systems including guidance, communications, navigation, instrumentation, data processing and stabilization and control of aeronautical and space vehicles.

Dr. Kelley will continue as Director of the Electronics and Control Division until a successor is named.

Dr. Kelley joined the NASA staff in March 1960 to establish a development program for the Agena launch vehicle. Following a short period in the Office of Programs, he was named to his present position.

In early 1963, he was appointed Manager of the Electronics Research Task Group which formulated the plans for the Electronics Research Center.

RANGER VII SUCCESSFULLY LAUNCHED ON PHOTOGRAPHIC MISSION TO MOON

On July 28, Ranger VII left the launching pad at Cape Kennedy on its historic 243,665-mile photographic mission to the Moon.

The Atlas-Agena launch vehicle performed flawlessly with the second stage, Agena, firing until its velocity reached approximately 17,500 miles per hour. At this point it was in orbit about 115 miles above the Earth and coasted for almost a half hour when the engine was again ignited. Second ignition increased the vehicle's velocity to about 24,525 miles per hour, putting it into a previously selected moon corridor about 10 miles in diameter and within four miles per hour of the velocity necessary for this maeuver. At the same time, the increased speed was necessary to escape the gravitational pull of Earth.

At 25 minutes and 49 seconds after 9 the morning of July 31--precisely the time calculated--the United States' spacecraft, Ranger VII, impacted the Moon.

In its 68-1/2-hour voyage to the Moon, the Ranger's performance was so remarkably "nominal," as scientists and engineers state it, that they now describe this feat as "a textbook exercise," meaning everything functioned as planned.

To a large degree, the spacecraft, especially its camera

(Continued on page 8)

This photograph was taken by the Ranger VII spacecraft prior to its impact on the Moon on July 31. Viewed with the clock in the upper left-hand corner, North is at the top. The picture was taken by the F-a camera with a 25mm, f/1 lens from an altitude of 11 miles. It shows an area four miles on a side with craters as small as 45 feet in diameter. Note numerous secondary craters with rounded walls as well as several sharp pits down to the smallest size recognizable.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Making plans for a September wedding is Jo Ann Watts, Structures Research Division. She is engaged to William Burnley Hudgins, Newport News. . .A section romance reached the engagement stage when Sheila Gregory and Tom Gainer, both of 7 x 10-Foot Wind Tunnels, announced their plans to wed in November.

SERVICE PLAN REPRESENTATIVE. . .Beverly Beale, Government-wide Service Plan representative, will visit the Center on August 19 from 2 p.m. until 3. Employees having problems concerning their Government-wide Service Benefit Plan may call Linda Hale, 2323, for an appointment.

VOLLEY BALL LEAGUE. . .An organizational meeting of the NASA Volley Ball League will be held Wednesday, August 19 at 7:30 p.m. in the Activities Building. Persons interested are requested to attend the meeting.

CLUB MEETING. . .The Langley Hunt Club and Rod and Gun Club will meet on August 26 at 8 p.m. at the Base Small Arms Range Clubhouse. Memberships are now being accepted for the Langley Hunt Club - only 100 members are allowed. For further information contact the Langley Rod and Gun Club, extension 3769, on Wednesday and Friday between 7 p.m. and 10 p.m. or on Saturday and Sunday between 1 p.m. and 5 p.m.

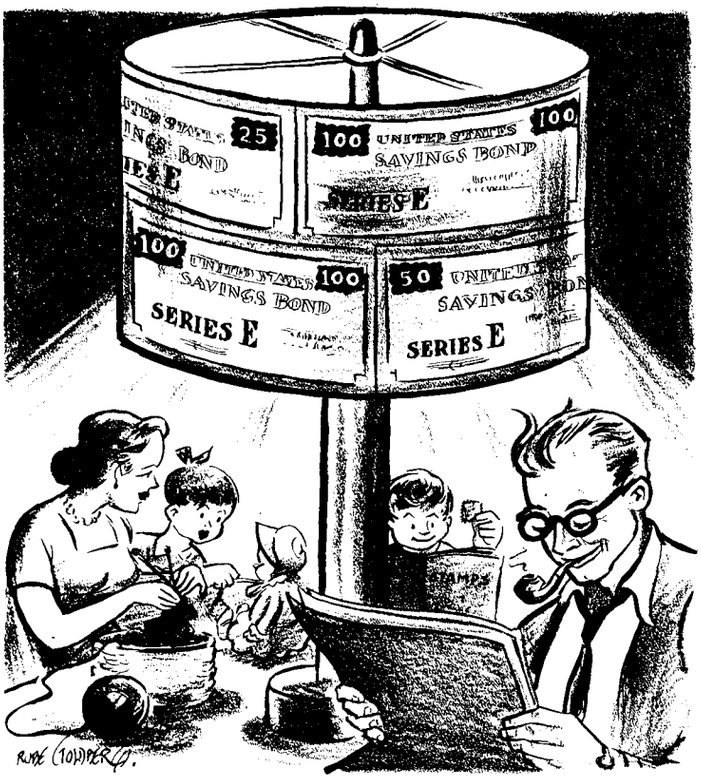
PAYDAY GAME NIGHT. . .Center employees are reminded that the Activities Association sponsors a Payday Game Night every payday at 8 p.m. at the Activities Building.

TENPIN LEAGUE. . .A meeting of team captains in the NASA Tenpin League will be held August 19 at 7:30 p.m. in the Activities Building. Teams with no representative at the meeting forfeit their franchise and will be considered as new applicants when they rejoin the league. League play will start Tuesday, September 8 at 6:30 p.m. at the Hidenwood Lanes.

ARTS AND CRAFTS. . .Betty Tholl, Chairman of the Arts and Crafts Committee of the Activities Association, announced that a meeting will be held on August 19 at 9 a.m. in the Activities Building of representatives of all NASA clubs and groups interested in forming new clubs. Job Order covering the meeting is ABE-943.

FOR RENT: Room for gentleman. Bennett, 722-6246.

LIGHT OF SECURITY



CAFETERIA MENU

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

Monday - Consomme julienne, roast ribs of beef, grilled pork steak, Hungarian goulash, fish cakes and cole slaw.

Tuesday - French onion soup, half-pound chopped steak with gravy, breaded veal steak, stuffed pepper, barbecued sandwich.

Wednesday - Vegetable-beef soup, pot roast of beef, meat loaf, stuffed flounder, chili con carne.

Thursday - Chicken-noodle soup, grilled steak, shrimp Newburg, fried chicken, hot dogs.

Friday - Clam chowder, Swiss steak, broiled fish, fried fish, cheeseburger.

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

Monday - Cream of tomato soup, fried clams, beef stroganoff over egg noodles, grilled Canadian bacon, beans and franks.

Tuesday - Puree of bean soup, sliced turkey with dressing and cranberry sauce, broiled ham slice, fried fillet of flounder, Austrian ravioli.

Wednesday - Chicken broth with rice, roast beef, deep fried scallops, fried liver and onions, beef ravioli.

Thursday - Tomato-barley soup, grilled steak, spaghetti with meat sauce, fried chicken, baked hash.

Firday - Clam chowder, hot roast beef sandwich with mashed potatoes and gravy, broiled fish, fried fish, cheese omelette.

WANTED: Girl's standard size bicycle. Holloway, 868-9287.

WANTED: Driving combination from Ivy Farms to W.A. on 8 shift. Schrader, 4817 or 595-1672.

WANTED: Ride from Shenandoah Rd. TO W.A. on 8 shift. Ferree, 4687.

KRAFT TO DIRECT GEMINI FLIGHT

Christopher C. Kraft Jr., formerly of Langley Research Center, has been appointed flight operations director for the second Gemini-Titan flight (GT-2), an unmanned suborbital mission scheduled this fall by NASA.

Dr. George E. Mueller, Associate Administrator for Manned Space Flight, said Kraft would have overall responsibility for direction of the flight.

Kraft, Assistant Director for Flight Operations at Manned Spacecraft Center, is an original member of the manned space flight team formed when the agency was created in 1958 at Langley.

For the GT-2 mission Kraft replaces Dr. Walter C. Williams who resigned from NASA last March to become Vice-President and General Manager, Manned Systems Division at Aerospace Corp., El Segundo, Calif.

Kraft was responsible for flight direction from lift-off to recovery in Project Mercury, the nation's first manned flight program, and the first Gemini flight.

When not directing a flight, Kraft's regular responsibilities include coordinating details associated with preparing for the tracking, recovery and control of a mission.

Kraft was born February 28, 1924, in Phoebus. He received his B.S. degree in Aeronautical Engineering at Virginia Polytechnic Institute in 1944.

Kraft joined the science staff of Langley Research Center's Flight Research Division in 1945 and transferred to the Manned Spacecraft Center (then the Space Task Group) when it was formed in October 1958.

U.S.-NETHERLANDS PLAN PROJECT

The first joint U.S.-Netherlands scientific sounding rocket project, for the purpose of probing the equatorial upper atmosphere from a launch site in Surinam, was announced by the Netherlands Organization for the Advancement of Pure Research and NASA.

Under a Memorandum of Understanding signed by the two agencies, four Nike-Apache sounding rockets carrying sodium vapor release payloads will be launched from Coronie, Surinam, near the equator next fall.

In this experiment, vaporized sodium is released from a rocket at altitudes of the order of 100 miles to form very large pink clouds under twilight conditions. The clouds are photographed from ground sites permitting measurements of winds and derivation of temperatures, pressures, and density.

Arnold W. Frutkin, NASA Assistant Administrator, whose Office of International Programs negotiated the project, said it was hoped the Surinam firing could be coordinated with similar rocket probes from the U.S. and six other countries around the world in November, in order to contribute effectively to efforts to understand the relationship of high altitude phenomena to the weather experienced on Earth. The Surinam launchings will be the first equatorial probes made from Latin America.

FOR SALE: 1948 Plymouth and 1949 Ford. Wood, PA36671.
FOR RENT: Room for lady in Riverdale. Mrs. Rossman, 9 Woodbridge Dr., 838-1758 or 4607.
WANTED: Camping tent, external frame-type, and gas latern. Bryant, LY 5-0819.
FOR SALE: 3-bedroom brick rancher on fenced in corner lot. Rollins, 722-0235.

Wilmer H. Reed III

Howell D. Garner

H. J. E. Reid Jr.

SCIENTISTS SHARE NASA AWARDS

Seven NASA scientists recently received $10,200 in awards recognizing their contributions to space age technology.

The awards were presented at NASA Headquarters by Dr. Hugh L. Dryden, NASA Deputy Administrator, on recommendation of NASA's Inventions and Contributions Board.

Three Langley scientists were among the recipients. Wilmer H. Reed III, Dynamic Loads Division, received $1,500 for his "Test Unit Free-Flight Suspension System." Howell D. Garner and Henry J. E. Reid Jr., both of Instrument Research Division, shared $1,700 for their "Dynamic Precession Damper for Spin-Stabilized Vehicles."

Two of the recipients, Bruce W. Schmitz and William W. Smith, shared a $1,000 award for their work on a mid-course propulsion system used in NASA's successful Ranger VII lunar photography mission. The title of their contribution was "Trajectory-Correction Propulsion System."

Smith, now with Rocket Research Corporation of Seattle, and Schmitz, California Institute of Technology's Jet Propulsion Laboratory, are employed by NASA contractors.

Joseph Mandelkorn, Lewis Research Center, received $5,000 and William R. Cherry, Goddard Space Flight Center, was award $1,000 for their contribution, "Solar Cells for Radiation Environment."

PROFESSOR TO GIVE LECTURES

Dr. M. Z. Nashed, Assistant Professor of Mathematics, Georgia Institute of Technology, will deliver a series of lectures in Applied Functional Analysis at the Langley Center during the week of August 31.

The lectures will be held daily from 10 a.m. until noon from August 31 through September 4 in Room 218, Building 1229.

In the first lecture, Dr. Nashed will discuss functional analysis and its relation to mathematics and applications. This lecture will be more general and less technical in nature than the succeeding ones. Some applications of functional analysis to nonlinear problems will be discussed on September 1 and 2. The lectures of September 3 and 4 will be concerned with some applications of functional analysis of the calculus of variations and direct methods.

Dr. Nashed will discuss some background in matrices, advanced calculus, and elementary point set topology. He will review matrices and topology in a special lecture at 1:30 p.m. on August 31.

Members of the staff who wish to attend Dr. Nashed's lectures should obtain permission through their division chiefs.

FOR SALE: 21-foot Belvin cabin boat with inboard Willis Jeep motor with marine clutch, also 85,000 btu floor furnace, gun burner type. Fred King, CH 7-3817.

THIRTY-FOUR STAFF MEMBERS RECEIVE ADVANCED DEGREES

Robert C. Costen
Aero-Physics
Ph.D. in Applied Mathamatics
Harvard University

William Grossmann
Aero-Physics
Ph.D. in Aerospace Engineering
V.P.I.

Roger D. Bengtson
Aero-Physics
M.S. in Physics
V.P.I.

David L. Block
Structures Research
M.S. in Engineering Mechanics
V.P.I.

Robert L. Bolton
Instrument Research
M.S. in Mechanical Engineering
Georgia Institute of Technology

James M. Bradford
Applied Materials and Physics
M.A. in Physics
William and Mary

Ronald D. Brown
Structures Research
M.S. in Aeronautical Engineering
University of Virginia

Michael F. Card
Structures Research
M.S. in Engineering Mechanics
V.P.I.

Ross L. Goble
Flight Vehicles and Systems
M.S. in Engineering Mechanics
New York University

Julius E. Harris
Aero-Physics
M.S. in Aerospace Engineering
V.P.I.

Francis T. Hoban
Budget Office
M.A. in Personnel Management
George Washington University

Robert A. Kilgore
Full-Scale Research
M.A. in Physics
William and Mary

William F. Leonard
Instrument Research
M.S. in Electrical Engineering
University of Virginia

Thomas B. McKee
Applied Materials and Physics
M.A. in Physics
William and Mary

Charles W. Meissner
Instrument Research
M.S. in Electrical Engineering
Stanford University

Leonard T. Melfi
Instrument Research
M.A. in Physics
William and Mary

William H. Michael
Space Mechanics
M.S. in Aeronautical Engineering
Princeton University

Gerard E. Migneault
Analysis and Computation
M.S. in Mathematics
V.P.I.

Joseph Norwood
Aero-Physics
M.A. in Physics
William and Mary

Shimer Z. Pinckney
Aero-Physics
M.S. in Mathematics
V.P.I.

James C. Smith
Analysis and Computation
M.A. in Mathematics
William and Mary

Bland A. Stein
Structures Research
M.S. in Metallurgical Engineering
V.P.I.

Roger B. Stewart
Aero-Physics
M.S. in Aeronautical Engineering
University of Virginia

Kenneth Sutton
Applied Materials and Physics
M.S. in Mechanical Engineering
University of Florida

Andrew G. Swanson
Office of Assistant Director
M.S. in Industrial Management
M.I.T.

James C. Townsend
Full-Scale Research
M.S. in Aeronautical Engineering
Princeton University

Richard E. Turner
Applied Materials and Physics
M.S. in Aerospace Engineering
V.P.I.

James B. Whitten
Space Mechanics
M.S. in Aeronautical Engineering
University of Virginia

Sherwin M. Beck
Structures Research
M.S. in Physics
University of Richmond

Harold G. Lester
Dynamic Loads
M.S. in Eng. Mech.
V.P.I.

David J. Romeo
Formerly of Aero-Physics
M.A. in Physics
William and Mary

Donald I. McRee
Formerly of Full-Scale Research
M.A. in Physics
William and Mary

Irving Fruchtman
Formerly of Aero-Physics
M.S. in Mech. Eng.
University of Virginia

U.S.-WESTERN EUROPE AGREEMENT

The first joint satellite agreement between the European Space Research Organization (ESRO) and NASA has been announced by the two agencies.

The organizations have signed a memorandum of understanding for a project involving two scientific satellites, reflecting further extension of the U.S. program encouraging cooperative space efforts with other countries. These two satellites bring to 13 the number launched or planned under the program.

ESRO, which came into formal existence in March 1964, is the nine-nation West European group formed to conduct scientific space research utilizing the capabilities of its member countries.

Membership includes Belgium, Denmark, France, Federal Republic of Germany, The Netherlands, Spain, Sweden, Switzerland, and the United Kingdom. Italy is expected to join when the Italian Government has ratified the ERSO Convention. Austria has observer status.

ESRO plans include sounding rocket and satellite experimentation and the establishment of several centers and a launching site in its member countries.

Under the NASA-ESRO Memorandum of Understanding, the first satellite, to be known as ESRO I, is to contain eight experiments to study high-latitude particles (especially in auroral phenomena) and their effects on the polar ionosphere. The second, ESRO II, is to measure solar and cosmic radiation. It also will contain eight experiments.

Both satellites will be launched on NASA Scout rocket boosters into near-polar eccentric orbits. The launchings are tentatively scheduled during 1967 from the Air Force Western Test Range.

Responsibilities for the project will be dividen between the two agencies.

ESRO will provide the experiment instrumentation; design, construct and test the spacecraft; provide ground checkout and launch support equipment; track and acquire data from the spacecraft within the capability of its projected network; and reduce and analyze all data.

NASA will train ESRO personnel as is mutually determined, provide the Scout launching vehicles, and conduct the launching operations. NASA will also provide necessary supplemental tracking and data acquisition support.

As with all NASA international cooperative projects, each agency will bear the cost of discharging its responsibilities. The scientific results and findings will be made available to the world scientific community.

The NASA-ESRO agreement brings to 13 the international cooperative satellites provided for under NASA memoranda of understanding. These include three joint U.S.-U.K. satellites, of which two have been successfully launched (Ariel I, April 1962; Ariel II, March 1964); five U.S.-Canadian satellites, the first of which-Alouette I-was launched in September 1962; two satellites to be launched in 1965-1967 under the joint U.S.-Italian project San Marco; and FR-1, the cooperative U.S. French satellite to be launched next year.

WANTED: Passengers from Newmarket and Forest Park to W.A. on 7:30 shift. Fred King, 4691.

WANTED: 1 or 2 girls to share 2-bedroom house. Laura Eledge, 4842 or 868-9654.

FOR RENT: 3-room apartment, partly furnished. Wray, 344 Lincoln St.

The Guidance Counseling Class from Hampton Institute visited the Center on July 30 and toured a number of facilities. The purpose of the visit was to provide the counselors an opportunity to see areas of work representing fields in which their students might be employed. The group, under the direction of Professor Fissell Jones (left back row) of Hampton Institute, represented the states of Virginia, North Carolina, South Carolina, and Georgia. In the above photo Mary W. Jackson, Aerospace Engineer in the Large Supersonic Tunnels Branch of Full-Scale Research Division, explains the facilities used in testing research models such as SCAT.

TWO CENTER EMPLOYEES DIE

Joseph Skeps, who retired from the Center on July 30 as a Metals Processor in the Mechanical Service Division, died August 4 after a long illness.

Skeps was born February 19, 1911 in Crowsnest, Pennsylvania. He served in the U.S. Army from September 14, 1928 until September 13, 1931 and worked for the Quartermaster Corps at Fort Monroe before joining the Center staff as a Sheetmetal Worker on December 3, 1941.

He is survived by his wife, Mrs. Mildred E. Skeps, Hampton; two daughters, Mrs. Donald Roberts of Cheyenne, Wyoming, and Mrs. David Stocking of Denver, Colorado, and two sons, Joseph Frank Skeps and Robert John Skeps of Hampton.

Richard J. Diggs, Experimental Facilities Mechanic Foreman in the Mechanical Service Division, was killed in an automobile accident on August 6 on Route 14.

Diggs was born August 24, 1910 in Mathews, Virginia. He graduated from New Point High School in Mathews and attended Norfolk Business College. He joined the Center staff on February 9, 1942 as a Mechanic.

He is survived by his wife, Mrs. Emily Knight Diggs, and three daughters, Emily Sherrill Diggs, Mary Kathryn Diggs, and Janet Ruth Diggs, all of Port Haywood.

FOR RENT: 2-bedroom furnished or unfurnished apartment for 4 months starting Sept. 15. Stone, 247-1000.

FOR SALE. 1953 Plymouth station wagon. Snyder, 851-3548.

FOR RENT: 3-bedroom brick house with attached garage. Pressley, 838-1623.

FOR SALE: 18-foot Deadrise, fully equipped with new Grey marine engine. Diggs, 868-3831.

COOPERATION KEY TO SUCCESS OF TRAFFIC SAFETY EFFORTS

The cooperation of the staff is requested in helping to assure the success of an effort to improve traffic and parking conditions-- in the interest of increased pedestrian and driver safety at the Langley Research Center.

Center employees may assist by observing the posted speed limits-- exercising special caution during periods of heavy pedestrian traffic at the beginning and end of the work day-- and by making it a practice to park legally.

The maximum speed on Langley Air Force Base, including the Langley Research Center, is 25 miles an hour unless otherwise posted.

Individual cooperation can help greatly to reduce the hazards resulting from illegal parking, particularly in the vicinity of intersections and in the driveways and loading zones of buildings.

Efforts are currently under way to properly mark all restricted parking zones for the information of Langley drivers, to increase the effective utilization of existing parking areas, and to provide additional parking facilities. In the meantime, the staff is invited to do its part by refraining from leaving motor vehicles in areas where they may create traffic hazards or interfere with the handling of an emergency such as a fire or accident requiring immediate access to building driveways or fire hydrants.

For the guidance of the staff, curbings marked with yellow paint mean no parking; terra cotta curbings, those painted reddish brown, indicate that 30-minute parking is permitted. Unless a building entrance is clearly marked to authorize parking, it may be assumed that no parking is allowed.

Parking is also prohibited within 20 feet of any intersection, within 20 feet of any stop or yield sign, within 15 feet of a fire hydrant, within 15 feet of any entrance drive, on a crosswalk or sidewalk, and on lawns, grass or seeded areas.

The enforcement of traffic regulations at Langley is a responsibility of the Air Force. Employees are reminded that the Air Force may refer traffic violators to the United States Commissioner for a hearing.

ANDERSON NAMED TO NEW POSITION

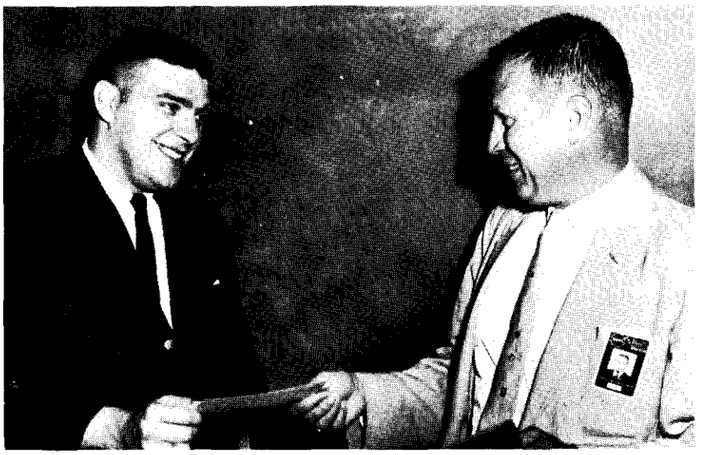
Dr. Oscar E. Anderson Jr., has been appointed Director of the International Organizations Division in the NASA's Office of International Programs.

He will be responsible for planning and directing NASA's participation in international organizations, an activity which has taken on increasing importance and scope with the expansion of space programs in numerous countries.

Anderson replaces Donald R. Morris, an officer in the U.S. Foreign Service, who has returned to the Department of State after a two-year assignment to NASA.

Anderson will be responsible for the activities of the Office of International Programs supporting the work of the Department of State with the United Nations Committee on the peaceful uses of outer space and also the work of the National Academy of Sciences with the International Committee on Space Research (COSPAR). Other responsibilities relate to coordination of the implementation of NASA's cooperative space research programs with the Soviet Union.

FOR SALE: 9 x 12-foot rug. Riggin, PA 2-6087.



Five employees recently received cash awards under the NASA Incentive Awards Program. Top photograph - Edward A. Howe (right), Chief of Fiscal Division, presents a check to Thomas L. Lindsay for his suggestion on "elimination of monthly effort on recap sheets." Center photograph - William B. Mayo, Chief of Mechanical Service Division, presents a joint award of $140 to Gene A. Wagner (left) and Dale W. Dalin for their suggestion entitled "Development of data acquisition technique." Bottom photograph - Douglas E. Keene (left) and Claude T. Haley receive a joint award from Joseph E. Stitt, Assistant Chief of Instrument Research Division, for their suggestion of "The design of cryogenic vessel and piping." Williard H. Miller (right), Standards Section, looks on.

RANGER VII SUCCESSFULLY LAUNCHED

(Continued from page 1)

system, functioned beyond the expectations of the experimenters. They knew when Ranger VII was launched from Cape Kennedy three days earlier, that the shutters in the six television cameras were expected to click some 4,000 times. From this they hoped for some 2,000 usable photographs of the lunar surface. But Ranger yielded 4,316 photographs of such high resolution that Dr. Gerard P. Kuiper, University of Arizona, one of the principal experimenters, stated conservatively that the data returned to Earth provided the scientific community with some three years of work before a thorough evaluation can be made. It is now apparent that within three months of the impact they can make public their preliminary findings.

The photographic system performed to the limit of its design capability, delivering pictures described as having clarity and definition a thousand times better than those available from earth based telescopic cameras. Topographic features less than three feet across are discernible, objects described by one science writer as "the size of a bushel basket."

This achievement--near perfection from launch to impact--was immediately hailed from all corners of the world in such superlatives as "stupendous" and "spectacular." President Johnson proclaimed, "We are pround of this historic extension of man's knowledge." He was confirming the acclamations of scientists who were now declaring this as the greatest single advance in astronomy since Galileo's investigation of natural laws four centuries earlier.

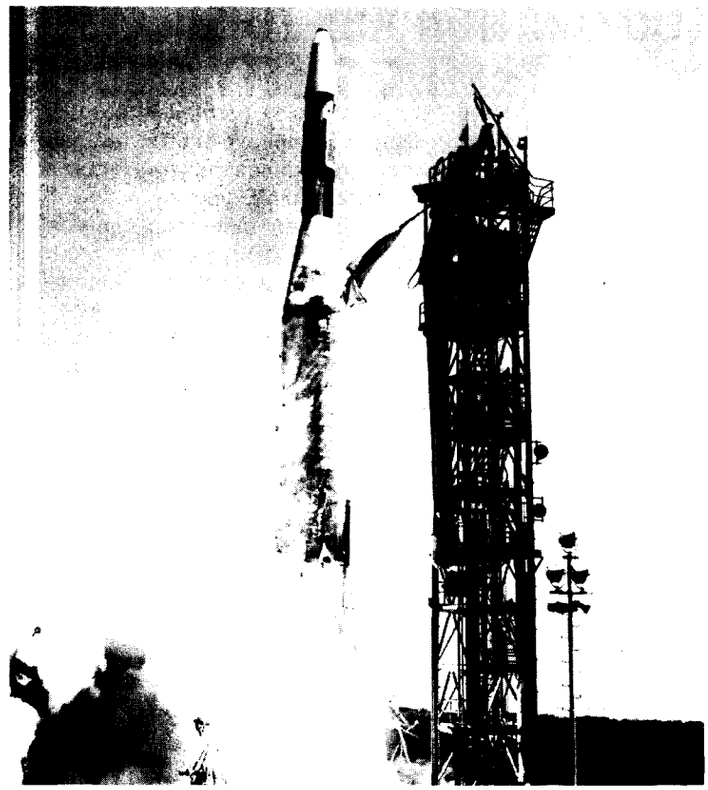
"We know this morning," President Johnson said from the White House on August 1, "that the United States achieved fully the leadership we sought for free men." He was making no claim that this was an American triumph alone. Rather, he recognized it for what it was, "...a victory for peaceful civilian international cooperation in this hour of frustration when so many people are getting upset at some minor disappointments."

It was without question one of the most complicated scientific and engineering feats attempted by man. There were literally thousands of things which could have gone wrong and doomed the flight. But everything worked and worked as expected when expected.

This success was a plural thing. Best estimates place the number of 50,000 people in government, industry, universities and the scientific community who participated. When the President stated it was "not an American triumph alone," he was thanking the many countries throughout the world for their tracking stations.

The benefits, too, will be plural. Scientists the world over will have access to the data the Ranger VII photography is yielding. Already there is confirmation that the basic assumptions made in the manned lunar landing program are sound. Dr. Homer Newell told the President, "These data have provided a reassurance that the range, design range, used in designing the lunar excursion module, is sufficient to take into account the difficulties of landing that will be encountered." Scientists know now that Ranger VII's exploration gives "credence to some theories and discounts other theories."

WANTED: Chris Craft Model K Marine Manifold. Wood, PA 3-6671.



The Atlas-Agena vehicle lifts off its launch pad at Cape Kennedy on July 28 carrying the NASA's 806-pound Ranger VII spacecraft on a lunar impact trajectory. Its six television cameras were turned on July 31 - fourteen minutes before impact - and transmitted back to Earth 4,316 pictures of the Moon.

KENNEDY LIBRARY REPORT

The NASA fund drive for the John F. Kennedy Library has been completed with the forwarding of the checks, pledges, and contributor sheets to the Library. Voluntary contributions in the amount of $18,816.05, including pledges and advance gifts, were made by NASA employees.

The breakdown of contributions by installations is as follows:

NASA Headquarters $7,924.68, Marshall Space Flight Center $2,611.70, John F. Kennedy Space Center $2,122.56, Ames Research Center $1,800, Langley Research Center $1,060.45, Goddard Space Flight Center $925.95, Manned Spacecraft Center $912.47, Lewis Research Center $873.24, Western Operations Office $310, Wallops Station $99, Flight Research Center $75, North Eastern Office $66, Pacific Launch Operations Office $35.

At a ceremony several weeks ago, the Postmaster General, who served as Chairman of the overall Government drive, extended his thanks on behalf of the Kennedy family to all who made a contribution or worked on the drive.

WANTED: Ride from Pine Grove area to W.A. on 7:30 or 8 shift. Rackley, 3326 or 723-2234.

FOR SALE: Kodak BC Flasholder battery condenser, flash attachment, 5-inch diameter polished reflector. McComb, TW8-5203.

FOR SALE: 2-bedroom house with large garage- located near Hilton, Harris, 596-7258 after 5.

WANTED: Ride from North Hampton to W.A. on 7 shift. Wright, 4691.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3, NUMBER 18 LANGLEY RESEARCH CENTER AUGUST 28, 1964

REENTRY HEATING EXPERIMENT LAUNCHED ON SCOUT VEHICLE

A NASA flight experiment to find out how well a spacecraft heat shield material will perform during reentry was successfully launched on a Scout vehicle at 2:06 a.m. EDT August 18 from Wallops Island.

The reentry experiment, devised by scientists of Langley Research Center, was conducted to learn how low-density charring ablator materials withstand the intense heat generated by a spacecraft during reentry.

The experiment had two objectives. In the first, NASA researchers wanted to further the understanding of such materials for future manned and unmanned space flight by comparing flight with ground test data. The selected material is one being considered for use as the Apollo heat shield.

The second objective was to provide a basis for assessment of the material even though the Scout reentry environment will be different and in some important technical respects more severe than the Apollo reentry environment.

The low-density charring ablator material test was the fourth flight in NASA's Scout reentry heating project sponsored by the Office of Advanced Research and Technology.

Information received from radar and telemetry stations will permit determining how well the material withstood the heating when the spacecraft sped through the atmosphere at about 19,000 miles per hour. A tape recorder in the

(Continued on page 5)

AUTUMN LEAVES DANCE

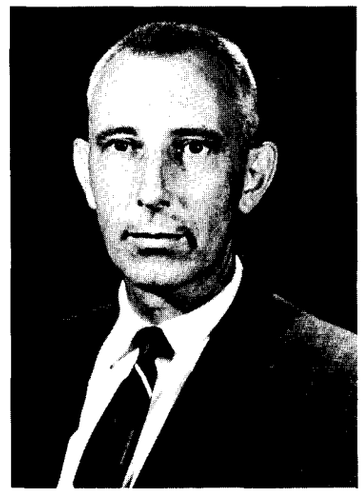
The Activities Association will open the fall social season with an Autumn Leaves Dance on Friday, September 11 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m.

Music will be furnished by The Sportsmen under the leadership of Eddie Fleenor, Light Machine Shop. Two other members of the band are Center employees - Charlie Mendel, Spacecraft Structures Section, featured on the alto sax, and Kenny Seals, Research Projects and Models Section, on the tenor sax. Willie Wise is pianist and Bob Smith is drummer.

Admission will be $2.50 per couple with setups furnished. A limited number of tickets will be sold and no tickets will be available at the door. Group reservations of six or more couples may be made by calling the Activities Building, telephone 4583.

Tickets may be purchased until noon on September 11 from the following persons: Pat Warren, Building 584, telephone 2314; Dick Kurtz, Building 586, phone 2362; Pete Lawson, Building 1232, phone 4538; Ronnie Amole, Building 1232, phone 4489; Carolyn Eby, Building 1195, phone 3254; Sandra Lawson, Building 1251, phone 4420; Pamela James, Building 1244, phone 3461, and Humbert Rockey, Building 1230, phone 4807.

KILGORE APPOINTED HEAD OF UNITED FUND EFFORT



Edwin C. Kilgore

Edwin C. Kilgore, Chief of Flight Vehicles and Systems Division, has been appointed chairman of the Center's eleventh annual United Fund Drive scheduled for September, it was announced this week by Dr. Floyd L. Thompson, Director.

Assisting Kilgore in the campaign will be William B. Mayo, Chief of Mechanical Service, who will be vice-chairman, and Anshal I. Neihouse, Office of the Director, who will be chairman of advanced solicitations.

Kilgore stated that an intensive one-day campaign of all staff members will be held on Friday, September 25. The general solicitation will be preceded by advanced solicitation of key personnel during the week of September 14.

During the drive held last year staff members pledged or contributed a total of $60,869.25 to organizations benefitting under the solicitation program. This represented donations from 94.6 percent of the staff.

Kilgore is a native of Coeburn, Virginia. He graduated from Chattanooga High School in Chattanogga, Tennessee, and received his B.S. degree in Mechanical Engineering from Virginia Polytechnic Institute in 1944.

He started his career with NASA on April 5, 1944 as a Mechanical Engineer in East Engineering Section. He became Assistant Chief of Engineering Service Division on January 29, 1960 and was appointed Chief of Flight Vehicles and Systems Division on May 10, 1962.

(Continued on page 3)

CENTER CHANGES TIME SEPT. 6

Effective at 12 midnight on Sunday, September 6, Daylight Saving Time will end in this area. Accordingly, at midnight September 6, all clocks will be moved back one hour to conform to Eastern Standard Time.

The midnight shift will report for duty at 12 o'clock EST and complete the 8-hour shift at 8:30 a.m. EST. The 11 p.m. and 11:30 p.m. shifts will report to duty on Daylight Time and complete the 8-hour shift on Standard Time.

With the change in time, supervisors and time and attendance clerks are requested to insure that each person working the night shift accounts for a full 8 hours on duty.

Employees called out for any emergency duty will be paid for the actual number of hours worked. This also applies to overtime payment.

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 2375.

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

Langley Researcher is printed and distributed by the Pulibcations Branch.

ANNOUNCEMENTS

WEDDINGS. . .Frankie Lane Waters and George Lawrence, both of Applied Materials and Physics Division, were married on August 7 at St. Mark's Methodist Church. Jimmy Usry, Applied Materials and Physics Division, was best man. . .James Charles Newman Jr., Structures Research Division, took his final vows with Martha Frances Mehan on August 19 in Mississippi. . .Carl A. Trexler, Aero-Physics Division, and Jimette Gladys Gentry, Galax, were married August 23 in the First Baptist Church, Galax.

NEW HEIR. . .Weighing in at seven pounds, nine ounces on August 5 was Ronald Alvin, new son of Inez, formerly of the Patent Office, and Bill Byars, Cost Engineering.

ENGAGEMENT. . .Making plans to desert the bachelor ranks is Frederick J. Hines, Electrical Systems Division. He is engaged to Gaylene Jean Bonnett, Hampton, and plans call for a September wedding.

INDEMNITY PLAN REPRESENTATIVE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, Federal Employees Health Benefit Program, will visit the Center on September 8 from 3 p.m. until 4. Employees having problems or questions concerning the Indemnity Benefit Plan may call Linda Hale, 2323, for an appointment.

BLOODMOBILE. . .The Red Cross Bloodmobile will visit the Center on September 23. 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.

FOOTBALL TRIP. . .The Tidewater Chapter of the North Carolina State College Alumni Association is planning to charter a bus to Chapel Hill for the football game between N.C. State and the University of North Carolina on Saturday, September 19. Persons interested are asked to call Olin Jarrett, 4474, or Charlie Johnson, 4677, by Friday, September 4.

FOR SALE: 17-inch portable Philco TV - $35. Walker, 764-2801.
FOR SALE: 3-bedroom brick home in Hallwood, fenced yard and built-in kitchen. Dudley, 851-1922.
WANTED: 2 or 3 passengers from Norfolk to W.A. on 8 shift. Thompson, 3221.
FOR RENT: Room for 1 or 2 gentlemen. Umberger, CH - 52929.

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 August 31:

Monday - Chicken noodle soup, Spanish pot roast, chicken shortcake, Salisbury steak, fish cakes and cole slaw.

Tuesday - Vegetable-beef soup, roast veal with dressing, grilled pork chops, Polish sausage with corn fritters, tamale pie.

Wednesday - Puree of bean soup, roast beef, barbecued spareribs, fried chicken, cheeseburger.

Thursday - Consomme julienne, grilled rib eye steak, fried fan tail shrimp, veal stew, barbecued sandwich.

Friday - Clam chowder, baked ham with plum-raisin sauce, crab cakes, broiled perch, meat croquettes with white sauce.

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

Tuesday - Split green pea soup, roast ribs of beef, veal cutlet, chicken chow mein over crips noodles or rice, western omelette.

Wednesday - Tomato-barley soup, pot roast of beef, roast pork with applesauce, liver and onions, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, knockwurst and beans, fried chicken, Austrian ravioli.

Friday - Clam chowder, baked Smithfield ham, Salisbury steak, broiled fish, fish cakes and cole slaw.

FOR SALE: Deluxe Porta-crib and mattress. McDonough, 838 1989.
FOR SALE: 1/4 ton air conditioner, $35; Burke and James 2-1/2 x 3-1/4 press camera - RF, no lense, $15; Robot sequence camera - 35mm, $15; Webster tape recorder, $25; transmission for 1960 or earlier Volkswagon, $55. Gowdey, LY 6-3650.

NATIONAL SCIENCE FAIR WINNER VISITS LANGLEY

Virginia Mason Morris, 15-year old student of Columbia High School in Richland, Washington, was a guest of the Langley Research Center recently. Her visit was a prize for winning a NASA certificate in the Space Vehicle category at the National Science Fair-International held in Baltimore, Maryland, in May.

Miss Morris's winning project, using a mouse in a closed ecological environment, showed that animals may live for extended periods on algae for food and breath algae-produced oxygen. She was accompanied to Langley by a teacher of her choice - Mrs. Theodore Deusner, an instructor in aerospace at Columbia High School.

Another National Science Fair-International winner of a NASA certificate in Space Electronics and Communications - David Taylor, 16, of Middletown Township High School in Middletown, New Jersey, made his prize winning trip to Langley with his favorite teacher last month.

Axel T. Mattson, Research Assistant for Manned Spacecraft Projects, represented NASA as one of the judges at the 15th National Science Fair-International, and selected Miss Morris and Taylor from a large number of contestants who previously had won regional or state Science Fair awards in the United States and Canada.

During her tour of the Center, Miss Morris talked with engineers and scientists and saw research in progress here while she inspected the Life Support Systems Development Section of Instrument Research Division, the simulators in the Hangar, the Space Station Office in Applied Materials and Physics Division, the Spacecraft Materials Section in AMPD, and the Unitary Plan Wind Tunnel. The visitors were also shown the film "Voyage to the Moon".

Miss Morris has received a number of science awards. She belongs to her school's Science Club, the Camp Fire Girls, and Civil Air Patrol. Her hobby is sports and she plans to become a marine biologist.

In an effort to help promote interest in science among high school students, the NASA awarded special prizes to a total of twelve exhibitors at the annual fair in Baltimore. The winners, with teachers of their choice, were invited to visit NASA Centers.

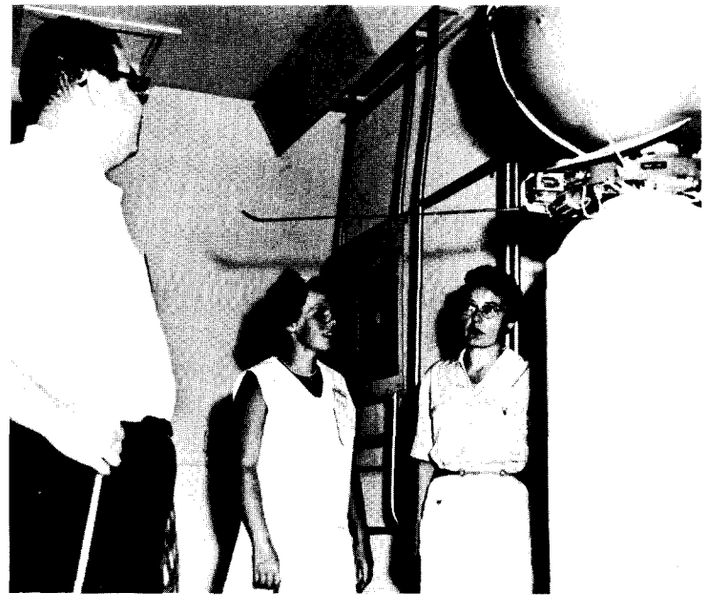
UNITED FUND CAMPAIGN

(Continued from page 1)

Members of the Board of Directors of the Center's United Fund organization are: Vera Huckel, Dynamic Loads Division, chairman; William Conner, Dynamic Loads, vice-chairman; James C. Tingle, Personnel; Upshur T. Joyner, Dynamic Loads; Rufus O. House, Office of Director; Katherine G. Johnson, Space Mechanics Division; John Munick, Procurement Division; Earle F. Stahl, Mechanical Service Division; Kilgore, and Edward A. Howe, Chief of Fiscal Division, who is a permanent member serving in an ex-officio capacity.

FOR SALE: 1963 Volkswagon convertible, $1895. Ransdell, 723 8240.

FOR SALE: 1962 Magnolia mobile home, birch and cedar interior, coppertone appliances. Summerfield, Harwood Mill Trailer Park, Grafton.



Louis A. Teichman, Applied Materials and Physics Division, explains to Virginia Mason Morris, National Science Fair-International winner, and Mrs. Theodore Deusner, teacher at Columbia High School, how Echo I is packaged and launched.

COURSES OFFERED STAFF

An undergraduate credit course in Biology, which is one of the prerequisite courses for the Medical College of Virginia Bio-Medical Engineering program, will begin on September 21. The course will be offered for five hours per week for a period of 12 weeks. Two hours of lextures will be presented at the Langley Research Center each Monday from 1:30 to 3:30 p.m., and three hours of lab work will be given at the College of William and Mary in Williamsburg each Wednesday from 1 to 4 p.m.

The course is designed for physicists and engineers, emphasizing mammalian biology. Basic principles of cellular physiology and gross comparative anatomy are introduced. Experience is gained in gross dissection and microscopy for student familiarization with structural arrangement.

Textbooks for the course are: "Cell Physiology" by Giese, and "Textbook of General Physiology" by Davson.

A non-credit course in Math I - Advanced Engineering Mathematics I, is being offered under the University of Virginia School of General Studies. If sufficient registration is received, the course will be given on Monday and Thursday from 4:45 to 6:45 p.m., starting Monday, September 14.

Employees interested in enrolling in these courses should call the Training Office, 2326.

FOR SALE: 1958 Fiat - $150. DeLauder, 826-1716.

FOR SALE: 1962 40-inch Westinghouse electric range - $125. Wagner, 902 Beach Rd.

FOR SALE: 2 aquariums, 10 and 15 gallons, $7 each. Gibson, 826-2678.

FOR SALE: 1956 Chevrolet, 4-door sedan, 6-cylinder, straight shift, $395. Zender, LY 6-0248.

FOR SALE: 1961 Buick Electra, 2-door hardtop. Hagginbothom, LY 6-0309 after 5 p.m.

SUMMER INSTITUTE IN SPACE PHYSICS VISITS CENTER

A group of students of the Summer Institute in Space Physics visited the Langley Center on August 12 and 13. Left photograph - Dr. Robert Jastrow, Director of the Institute for Space Studies, is shown with one of the students in the Langley Reduced Gravity Walking Simulator. Right photograph - Dr. Jastrow holds a lecture session for the group.

On the evening of August 12, an Eastern Airlines DC-7 landed at Langley Air Force Base. Its 90 passengers had come from Kennedy Space Center where they had spent the day touring the facilities. On the previous day they had toured Marshall Space Flight Center. The passengers were loaded on three buses, with a truck load of baggage, for the short trip to the Hotel Chamberlin.

For the most part, the passengers were young. Sixty-five were students of the Summer Institute in Space Physics, which is conducted by Columbia University under the sponsorship of NASA. Under this program, college undergraduates majoring in the physical sciences and engineering are selected by national competition for the 6-week institute. Of the 65 students, 21 were from abroad representing the following countries: Taiwan (China), England, Germany, France, Italy, Spain, Sweden, The Netherlands, Jamaica B.W.I., Nigeria, and Canada. The remaining passengers were from Columbia University and from the NASA Institute for Space Studies. Dr. Robert Jastrow, Director of the Institute for Space Studies, was in charge of the tour.

On Thursday, August 13, the group spent the morning with a visit to LOLA where William T. Suit, Space Mechanics Division, described the simulator and discussed its use in the lunar program. At the 7- by 10-foot Tunnels Projection Room, G. Calvin Broome briefed the group on the Lunar Orbiter Program. Dr. Jastrow used the occassion to discuss with the group some of the lunar anomalies with the assistance of William H. Michael Jr. and Robert H. Tolson, both of Space Mechanics.

The Lunar Landing Research Facility and the Research Vehicle brought out every camera in the tour. Thomas C. O'Bryan and Max W. Goode, SMD, described the facility and the lunar landing research vehicle. The group completed the tour with a demonstration of lunar locomotion in the Reduced Gravity Walking Simulator by Randall L. Harris, SMD. A call for volunteers brought an enthusiastic response. Dr. Jastrow selected one of the students for the experiment. Amos A. Spady Jr., SMD, and Harris got the young man in harness, gave him instructions.

PROMOTION OPPORTUNITIES FOR STENOGRAPHERS AND TYPISTS

In accordance with the provisions of the Langley Merit Promotion Plan, it is desired to establish lists of eligibles for Clerk-Typists and Clerk-Stenographers for future promotional opportunities under this program.

All stenographers at the GS-3, GS-4 and GS-5 levels, and all typists at the GS-2, GS-3 and GS-4 levels, who have not previously applied and who meet the time-in-grade requirement for promotion and are interested in being considered for promotional opportunities other than those which occur within their own division, are invited to submit their names for the promotion roster by memorandum to John J. Cox, Employment Office, Mail Stop 307.

When vacancies occur, selection will be made from a list of those best qualified for the particular position.

NASA BOWLING LEAGUES

The NASA Duckpin League will start its new season on September 14 and will bowl on Monday nights at 6:30 at the Century Lanes, Buckroe Shopping Center. Persons interested in bowling in the league are requested to call Chuck Whitcomb, 2249, or Mary Edwards, 3234.

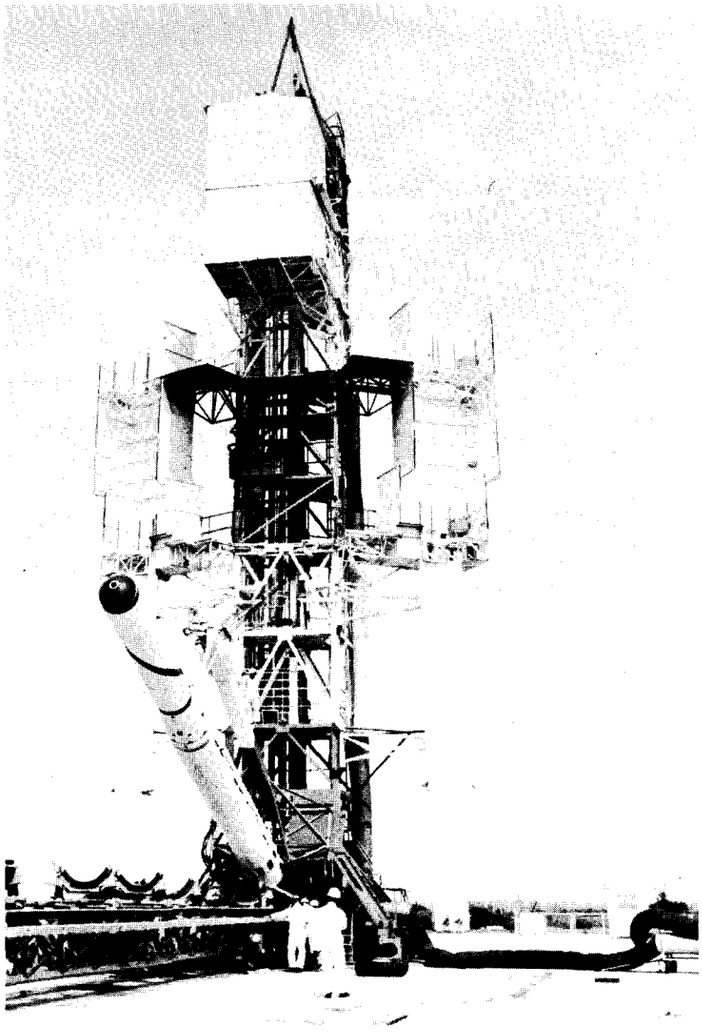
A meeting of all team representatives in the NASA Tenpin League will be held on September 3 at 7:30 p.m. in the Activities Building. Purpose of the meeting will be to assign teams to the respective division, distribute revised constitution and ABC or WIBS sanction cards, and establish division by-laws. Forty teams are presently enrolled and no new teams can be entered.

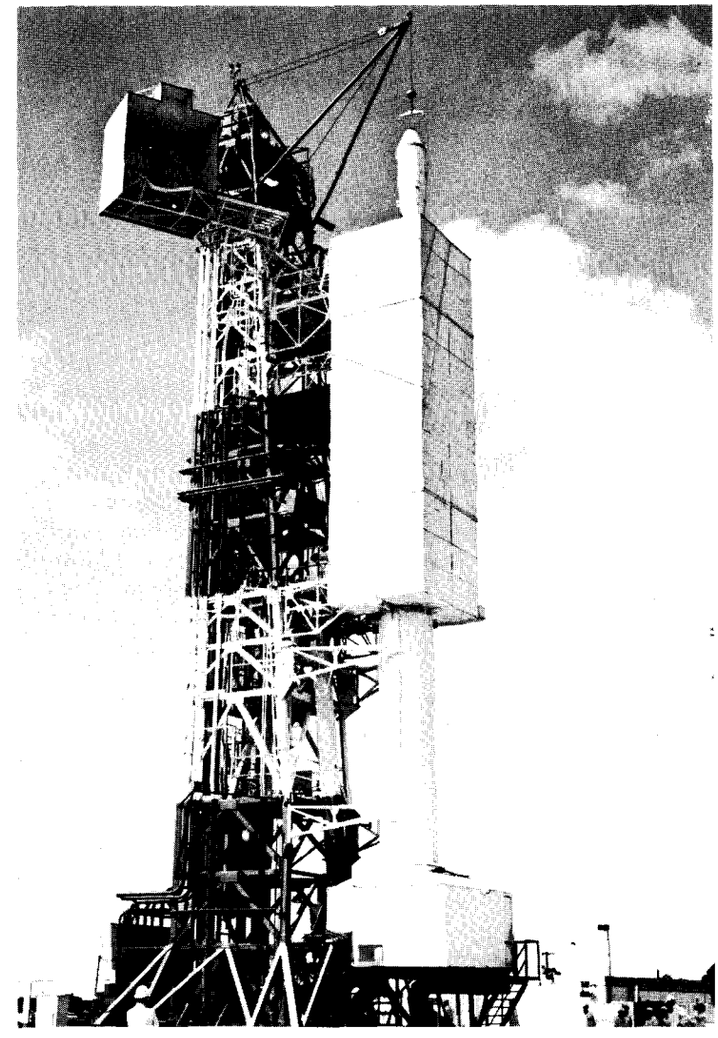
FOR SALE: 1958 Plymouth station wagon, 6-cylinder, straight shift. Hypes, 826-5328.

FOR SALE: 3-bedroom brick split-level home in Mammoth Oak. Vanstory, LY 6-0390.

WANTED: First tenor to sing with gospel quartet. Dudley, 4586.

LOST: "Reference Data for Radio Engineers" No. 621.3841. Grantham, 4766.





NASA successfully launched a 320-pound spacecraft on a ballistic flight August 18 from Wallops Island. Left photo - The Scout vehicle which launched the reentry heating experiment is shown being erected at Wallops. Right photo - The heat reentry experiment, devised by scientists of the Langley Research Center, is shown being mated to Scout.

REENTRY HEATING EXPERIMENT

(Continued from page 1)

spacecraft stored temperature readings and ablation measurements gathered by thermocouples and sensors during a one minute period of communications blackout caused by ionization. After the spacecraft passed through the reentry portion of the flight, the tape recorder relayed the data to ground stations at Wallops Island, Langley Research Center, Bermuda, and ships.

Aircraft in the reentry area recorded the flight on cameras.

The Scout launch vehicle carried the 320-pound spacecraft to an altitude of about 130 miles before the two upper stages and a 17-inch spherical rocket motor propelled the payload down into the atmosphere. Total flight time was 11 minutes. The spacecraft landed in the Atlantic Ocean about 12 miles from the predicted impact point about 1,200 miles down range. There was no attempt at recovery.

NASA scientists will begin immediately to assess the information received from telemetry.

The term "ablation" has come into engineering use during the past ten years. It describes a complex process which takes place on the forward face of a heat shield during the very high energy conditions of atmosphere entry.

Charring ablator heat shields are composed of plastic resin materials reinforced with various added organic or inorganic substances.

Heat shields of charring ablation material protect a spacecraft in several ways. At the beginning of reentry heating they begin to decompose chemically, absorbing some heat in the process. During decomposition, gases are evolved and act as an insulating blanket as they pass over the heat shield surface. Finally, at the surface, a charred layer of coke-like material develops, capable of operating at very high temperatures to radiate heat away from the spacecraft. The uncharred lower layers provide an insulating effect throughout the reentry.

FOR SALE: Bicycle, tricycle and swing. Robinson, 247-1324.

FOR SALE: 100 x 200-foot lot on Mohawk Rd. E. C. Yates, PA 3-9324.

FOR SALE: EICO F.M. tuner and 12-watt amplifier, 12-inch Garrard speaker in walnut cabinet. Teichman, 596-4562.

FOR SALE: 1957 50 x 80-foot Marlette mobile home - $1895. Block, 244-2991.

CANCER INSTITUTE AND NASA UNDERTAKE RESEARCH PROJECT

NASA will cooperate in a one-year medical research project to study the anti-cancer, carcinogenic, and anti-radiation potential of a family of chemicals closely related to plant growth regulators.

The research will be conducted in the Space and Information Systems Division of North American Aviation, Inc., Downey, Calif., under a $198,185 contract with the Public Health Service, Department of Health, Education, and Welfare.

The Public Health Service's National Cancer Institute will provide technical direction for the project, which will be financed through a transfer of funds by NASA as a part of its Technology Utilization program. It is through this program that NASA cooperates with industry and other agencies so that knowledge obtained as a by-product of space research can be developed further and disseminated.

The cooperative project will extend studies made under the NASA research program aimed at protecting man in space. In the earlier studies, Drs. Robert D. Schultz and David Norman of North American's Life Sciences Department initially showed that certain plant growth regulators prolong the life of cancer cells in test tubes, but that by altering these compounds they were able to demonstrate a lethal effect on the cells. Mixtures of the regulators and their related compounds were found even more lethal.

Under the direction of Dr. Hans Falk, Chief of the Carcinogenesis Studies Branch, National Cancer Institute, Dr. Schultz and his associates will now study the effects of a variety of plant growth regulators and their derivatives on tumor cells in test tubes and in laboratory animals. The effects of these compounds on the survival of irradiated normal and tumor-bearing mice will also be investigated.

Intensive study of the ways in which members of this family of compounds interact with normal and tumor cells will, hopefully, provide clues to a better understanding of cancer causation, prevention and treatment as well as the relationship of these compounds to radiation protection.

INCENTIVE CONTRACTING SEMINAR

Top management of Langley Research Center will attend an incentive contracting seminar to be sponsored at Langby NASA on Thursday, September 10.

The day-long session will be conducted by Ralph Nash, George Washington University professor, assisted by Warren K. Linnerooth of the office of procurement at NASA Headquarters in Washington.

The seminar will be one of several similar sessions scheduled during September and October at NASA Headquarters and at the other 12 NASA field centers.

George Friedl Jr., NASA Deputy Associate Administrator, announced that the agenda will include profit motivation in contracts, work definition and incentive structure, effective structuring, relationship of technical control to incentives management and evaluation of incentives with other motivating forces.

FOR SALE: 1963 Amana upright freezer, 18 cubic feet, $350. Mann, 838-2198.

WANTED: Ride from 18 Anne Dr., Swansea Manor, to W.A. on 8 shift. Reed, 3313.

WANTED: Driving combination from Hidenwood to E.A. on 8 shift. Preisser, 2241.

Martha Miller, Analysis and Computation Division, points to the sign advising employees to "Put Part Of The Raise In Bonds." Holding the poster are (from left): E. Barton Geer, Associate Chief of Flight Vehicles and Systems Division; Edward A. Howe, Chief of Fiscal Division; Titus M. Harrison, Electrical Systems Division, and C. Calvin Davis, Mechanical Service Division. Bond authorization cards may be obtained from leave clerks or Payroll Office, phone 2267.

SATELLITE IS NAMED 'PEGASUS'

The name "Pegasus" has been chosen by NASA for a new satellite which will investigate the hazard of meteoroids in space.

The satellites are within the programs of NASA's Office of Advanced Research and Technology. Three of them are being built by Fairchild-Stratos Corp., Hagerstown, Md.

"Pegasus" gets its name from the flying horse of mythology. The satellite has a wing-like panel 96 feet long and 14 feet wide. Pegasus will sweep through space hundreds of miles above Earth and transmit to Earth the penetration of meteoroids on its panels.

For launch aboard a Saturn I rocket the satellite panels will be folded. Once in orbit, the panels will spread. If successful, Pegasus will be among the largest objects in orbit.

Field management of the project is by Marshall Space Flight Center.

TENNIS CLUB NOTICE

A meeting of the LRC Tennis Club will be held on September 1 at 6:30 p.m. at the Activities Building. All members are urged to attend to discuss the possibility of holding a tennis tournament. Discussion will also take place on the present ladder rules and officers for the coming year will be elected.

Members who are unable to attend but who are interested in participating in a tournament are requested to notify Mueller, 4521, Burghduff, 3241, or Kepley, 3461, by September 11.

KNOW YOUR CREDIT UNION

"What's your Credit Union batting average?" If it is not a thousand--if you are not a member and taking full advantage of all the services the Credit Union offers and that you need (or get elsewhere)--maybe you should give the matter some thought. According to Credit Union officials, ninety-nine times out of a hundred the Credit Union is your best bet as the place to save or the place to borrow. And when it isn't, your Credit Union is the first to tell you so.

As a service to employees, Credit Union officials have planned a series of articles covering Credit Union background and philosophy, shares and saving, true annual interest rates, low-cost automobile loans, insurance coverage, how assets are safeguarded, importance of the annual meeting, special conveniences and related matters. Credit Union officials believe that everyone-members and potential members alike-can benefit from such articles and better judge where their best interests lie.

To begin with, the Langley Federal Credit Union is "A cooperative association, organized in accordance with the provisions of the Federal Credit Union Act, for the purpose of promoting thrift among its members and creating a source of credit for provident or productive purposes."

Membership, as in most FCU's, is limited to those with a common bond--in the present instance, place of employment. Here NASA civilians, Air Force civilians and military personnel stationed on the Base are eligible for membership and, through them, their immediate families. Joining is simple. The filling out of a membership card, the depositing of $5 in a share account, and the payment of a 25-cent membership fee entitles one to all the services offered.

Once a member, the transaction of future business is easy. Deposits may be made by mail or in person with the same applying to withdrawals. Loan applications are acted on promptly with most checks disbursed within 24 hours of receipt of the application. A new telephone loan service, primarily intended for those who cannot come to the office, further expedites matters. If warranted, call extension 3445 for this personalized service.

Details concerning other functions of the Credit Union will be covered in future articles. This article is purely introductory. However, if any reader has a question or desires information on some aspect of credit union operation before it can be discussed in these pages, he is invited to call the main Credit Union Office, telephone 4607. The manager will be glad to assist him.

The basic philosophy underlying the whole credit union movement is, "Not for Charity, not for Profit, but for Service."

The next article will deal with "Shares and Saving."

FOR SALE: York air conditioner, 10,000 btu, 115 volts, $175, also rotary lawn mower, $20. Smith, PA 2-0873.

FOR SALE: Premier Spanish electric guitar, heavy duty case and amplifier, $125. Winfree, PA 3-4532.

WANTED: Ride from 315 Washington St., Hampton, to W.A. on 8 shift. Mary Dalin, 4607.

WANTED: Ride or driving combination from Tide Mill Farms to W.A. on 8 shift. Maddalon, 4705.

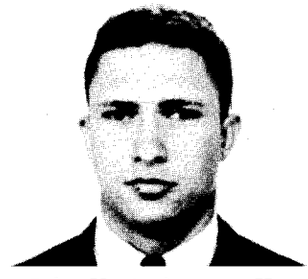
FORMER EMPLOYEES DIE

Wallace I. Dansey, retired employee, died August 16 in Riverside Hospital after a short illness.

Dansey was born July 31, 1895 in King Williams County. He served his apprenticeship as a toolmaker with the American Locomotive Company in Richmond.

He first joined the Center staff on June 19, 1922 as a machinist. He resigned in 1925 and returned in 1929 as a senior machinist. He was assigned to the Lewis Research Center in 1946 and returned to Langley in 1947. At the time of his retirement on April 25, 1956 he was Superintendent of Aeronautical Laboratory Mechanics at Gas Dynamics.

He is survived by his wife, Mrs. Marie C. Dansey, and three stepsons, William B. Cole and Clarence M. Cole of Hampton, and John W. Cole of Charlotte, North Carolina.



John V. Anderson, II

Word has been received at the Center that John V. Anderson, II, who was on military leave from the Center, was killed in an airplane crash on July 13. He was stationed at Laughlin Air Force Base in Del Rio, Texas.

Anderson was born February 3, 1940 in Tuskegee, Alabama. He graduated from Jack Yates High School in Houston, Texas and received his B.S. degree in Engineering from Tuskegee Institute in May 1963. He entered on duty at the Center on June 3, 1963 as an Aero-space Technologist in Analysis and Computation Division and reported for active on May 7, 1964.

He is survived by his father, J. V. Anderson, Sr.; his mother, Mrs. Dora Harris Anderson, both of Tallahasee, Florida, and a sister, Mrs. Louise Anderson Tarver of Syracuse, New York.

PACKERS WIN SOFTBALL TITLE

The Packers won the NASA Slow Pitch Softball Championship with a season record of 11 wins and only 1 loss. Lead the Packer hitters were Marvin Dow with an average of .587, Allen Whitehead with .571, and James Smith with .518. Thayer Sheets and Bill Brewer each had seven home runs. Claud Pittman finished with a pitching record of 8-0, including a one-hitter.

The Packers' only defeat came at the hands of the Greenhorns by a score of 12-8.

IRD and Greenhorns tied for second place with 10 wins and two losses each.

The Packers represented NASA in the Newport News Slow Pitch Softball Tournament. They were defeated in extra innings by a 8-7 score in their opening game in the second round of the tournament.

An all-star team will represent Langley at Lewis Research Center on September 12 for a return game with the Lewis All-Stars.

FOR SALE: 3-bedroom brick rancher with brick garage and 20 x 40-foot swimming pool. Mayo, 838-0008.

FOR SALE: 1960 Oldsmobile Super 88. Brumfield, 723-5158 after 5 p.m.

WANTED: Man to share apartment. Sal Bavuso, 4884.

FOR SALE: New super Sailfish. Allsbrook, 244 6804.

RANGER PAVES WAY FOR OTHER VEHICLES

When Ranger VII slammed into the Moon on its historic picture taking flight July 31, it paved the way for its sister spacecraft in the photographic trio NASA will use to learn everything possible about the Moon before the first man sets foot on it.

NASA will follow the Ranger series with Surveyor, now being built by Jet Propulsion Laboratory, builders of the Ranger, and the Lunar Orbiter, under construction by the Boeing Company.

Ranger is the hard-landing spacecraft which was designed to send pictures back to Earth just before impact as it did so successfully July 31.

Surveyor is a near-sighted, soft-landing vehicle whose television cameras will take pictures after the craft has settled gently on the Moon. It will give scientists detailed surface information Ranger did not obtain.

It will be the Orbiter's job to verify a landing area of sufficient size for the manned mission.

The Orbiter is neither a hard nor soft-lander, but a Moon-circling camera laboratory that takes pictures as it goes and transmits them to Earth.

About 72 hours after launching, the 800-pound Lunar Orbiter will sail into a circular orbit about 575 miles above the Moon.

The man-made satellite will remain in this orbit long enough for Earth command stations to make final course adjustments and take a series of pictures. The craft then will be sent into an egg-shaped orbit and will swing down to 22 miles from the Moon to take a series of sharp, detailed pictures of likely landing spots for manned spacecraft.

On a typical mission, the high-resolution portion of the Orbiter's photographic system could cover an area of 3,000 square miles, clearly showing objects as small as a card table. At the same time, wide-angle shots would cover an area of 16,000 square miles, showing objects eight yards square--about as big as a boxing ring.

The Lunar Orbiter mission will be under the management of Langley Research Center and under the overall direction of the Office of Space Science and Applications.

Boeing in September will begin to assemble the Orbiter spacecraft at its Missile Production Center in Seattle, Washington. Boeing will deliver the first of eight Orbiter spacecraft in 1966.

LOST IN MAIL: Editorial copies and original figures for technical note on Lunar Launch Simulator. Anyone having information should call Space Analysis Branch, 2200.

LOST: Victor adding machine, Serial Number 588253, Inventory Number 51303. Finder please notify the Security Office, 2297.

FOR SALE: 4-bedroom, air conditioned rancher, fireplace, and attached garage in Riverside, $25,000. Churgin, 596-0490.

FOR SALE: Hot Point automatic electric range, $60. Evans, 877-3331.

FOR SALE: 1956 Plymouth with straight shift. Geer, PA - 35842.

FOR SALE: 6-room brick rancher with fenced back yard. Elliott, LY 6-9766.

WANTED: Utility trailer. Gilliland, 826-2068.

FOR SALE: Boy's 26-inch and girl's 20-inch bicycles. Sealey, 826-2679.

Donald E. Stewart

Edward T. Maher

Anthony Fontana

W. Leon McIntosh

4 RECEIVE CASH AWARDS

Four employees recently received cash awards under the the Center's Incentive Awards Program.

A Special Service Award was presented to Donald E. Stewart, Research Models and Facilities Division.

Receiving Sustained Superior Performance Awards were Edward T. Maher, Chief of Administrative Services Division; Anthony Fontana, Applied Materials and Physics Division, and W. Leon McIntosh, Mechanical Service Division.

The citations presented to each recipient read as follows:

Stewart - "For providing enthusiastic direction and coordination of a major portion of the displays for the 1964 OART Inspection."

Maher - "For his diligence and perseverance in organizing and directing a major part of the operational phases of the 1964 Langley Research Center - Office of Advanced Research and Technology Inspection."

Fontana - "For his outstanding initiative, originality, versatility, technical ability, perserverance, and responsibility demonstrated during the development and flight testing of a solar orientation control system."

McIntosh - "For his outstanding leadership and for valuable technical contributions in conceiving and installing an automatic pressure control mechanism in the 8-Foot Transonic Pressure Tunnel."

FOR RENT: Room for gentleman in Wythe. Bowen, CH - 55207.

WANTED: Alternate drivers from Stuart Gardens to W.A. on 8 shift. Becker, 4535.

Langley Researcher

VOLUME 3, NUMBER 19 LANGLEY RESEARCH CENTER SEPTEMBER 11, 1964

Dr. Floyd L. Thompson, Langley Director, is shown speaking at a recent ceremony at the Smithsonian Institution's Hall of Electricity, Museum of History and Technology, on the occasion of the presentation by NASA of an Echo I canister and folded inflatable balloon. The canister is an exact duplicate of one which was carried aloft by a Delta launch vehicle from Cape Kennedy more than four years ago. In the actual Echo I launch, the two halves of the metal canister separated in space, the inflatable balloon-- 100 feet in diameter-- unfolded and grew to full size, and began circling the earth at a height of 1,000 miles in an orbital pattern which is still continuing. For display purposes, the two halves of the canister-- shown on the platform at left-- are separated by a plexiglas cylinder to show how the folded balloon was packed at launch. The Echo I spacecraft was developed by the Langley Research Center. Other communications satellites presented to the Smithsonian for display at the Museum of History and Technology included Relay and Syncom.

AUTUMN DANCE TONIGHT

The Activities Association's fall social season will open tonight with an Autumn Leaves Dance from 9 p.m. until 1 a.m. at the Activities Building. Music will be furnished by The Sportsmen under the direction of Eddie Fleenor of Light Machine Shop.

Admission will be $2.50 per couple with setups furnished. Group reservations of six or more couples may be made by calling the Activities Building, telephone 4583.

Tickets may be purchased from the following persons: Pat Warren, Building 584, telephone 2314; Dick Kurtz, Building 586, phone 2362; Pete Lawson, Building 1232, phone 4538; Ronnie Amole, Building 1232, phone 4489; Carolyn Eby, Building 1195, phone 3254; Sandra Lawson, Building 1251, phone 4420; Pamela James, Building 1244, phone 3461, and Humbert Rockey, Building 1230, phone 4807.

KILGORE NAMES DIVISION CHAIRMEN FOR CAMPAIGN

Edwin C. Kilgore, Chairman of the Center's United Fund campaign, announced that an advanced solicitation of top staff officials will open the Center's annual United Fund effort. Advanced solicitation will get underway on Monday, September 14. A general one-day solicitation of staff members will be held on September 25.

Assisting Kilgore in the campaign will be William B. Mayo, vice-chairman; Anshal I. Neihouse, chairman of advanced solicitations; Edward A. Howe, treasurer; Helen Willey, East financial chairman, and Barbara Durling, West financial chairman.

Kilgore has announced the appointment of the following Division chairmen for the drive:

Office of Research Direction, Robert MacLachlan; Aero-Physics, James R. Sterrett; Analysis and Computation, Richard Morris; Applied Materials and Physics, John M. Riebe; Dynamic Loads, D. William Conner; Flight Mechanics and Technology, Lucy White; Full-Scale Research, H. Norman Silvers; Instrument Research, William B. Jones; Research Reports, Wesley T. Berryman; Space Mechanics, James B. Whitten; Structures Research, Walter F. Lindsey.

Office of Chief, Engineering and Technical Services, Marvin Forrest; Electrical Systems, James A. Maloney; Flight Vehicles and Systems, E. Barton Geer; Mechanical Service, Robert H. Turner; Plant Maintenance, Dale Emswiler; Research Models and Facilities, Harold Crate.

Office of Assistant Director for Administration, Edward T. Maher; Administrative Services, Glenn Ford; Fiscal, Forrest H. Rexrode; Personnel, Frederick P. Heath; Procurement, Raymond T. Moore; Photographic, Lloyd Scott; Cafeterias, Tracy Phelps, and Langley Federal Credit Union, William H. Pickens.

Assisting Neihouse in the advanced solicitations will be:

Office of Director, Charles C. Shufflebarger; Flight Reentry Programs Office, George Recant; Scout Project Group, Abraham Leiss; Aero-Physics, Lindsey I. Turner; Analysis and Computation, Thomas B. Andrews; Applied Materials and Physics, Paul R. Hill; Dynamic Loads, Dennis J. Martin; Flight Mechanics and Technology, Joseph W. Wetmore; Full-Scale Research, Eugene R. Guryansky; Instrument Research, Raymond M. Hansen; Research Reports, Henry A. Fedziuk; Space Mechanics, William H. Phillips; Structures Research, John R. Dawson.

Office of Chief, Engineering and Technical Services, Marvin Forrest; Electrical Systems, John E. Knemeyer; Flight Vehicles and Systems, E. Barton Geer; Mechanical Service, William B. Mayo; Plant Maintenance, Milfred E. Cook; Research Models and Facilities, Harold I. Maxwell.

Office of Assistant Director for Administration and Administrative Services, Edward T. Maher; Fiscal, Edward A. Howe; Personnel, Charles F. Barnett; Photographic, Lloyd Scott, and Procurement, Sherwood L. Butler.

Division solicitors will be announced in the next issue.

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 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDINGS. . .Sarah C. Jones, Dynamic Loads Division, and Robert S. Rogallo, Aero-Physics Division, were married on August 23 at St. Andrew's Episcopal Church in Newport News. Ushers were John D. Shaughnessy, Applied Materials and Physics Division, and Robert G. Kyle, Full-Scale Research Division. . .Wedding bells rang on Saturday, September 5 when Maryanne Routten, Security Office, and Reginald Manning Holloway, Electrical Systems Division, took their final vows at the Fox Hill Central Methodist Church. Gayle Routten, Training Office, was maid-of-honor and William C. Holloway, Mechanical Service Division, served as best man for his son. Jean Drummond, Security, was mistress-of-ceremonies.

NEW HEIR. . .Word has been received at the Center that Kay Gabel, Structures Research Division, became the mother of a son on August 31. Marion B. Seyffert, Assistant Chief of Mechanical Service Division, is the proud grandfather.

SERVICE PLAN REPRESENTATIVE. . .Beverly Beale, Government-wide Service Plan representative, will visit the Center on September 16 from 2 p.m. until 3. Employees having problems concerning their Government-wide Service Benefit Plan may call Linda Hale, 2323, for an appointment.

ENGAGED. . .Ralph W. Will, Applied Materials and Physics Division, has become engaged to Carolyn Jane Lilly of Mt. Crawford. No date has been announced for the wedding.

VOLLEY BALL. . .Plans are being made to organize a NASA Volley Ball League. Play will start in the early fall and persons or teams interested in playing are requested to call Floyd Howard, 3431, or David McDougal, 4457.

TENNIS NOTICE. . .A tennis tournament sponsored by the Langley Research Center's Tennis Club will be held on September 19 and 20. Persons interested in entering are requested to call Jack Reynolds, Tournament Director, 4562, or Darrell Anderson, 4405. Appropriate trophies will be awarded the winners.

WANTED: Ride from Victoria Boulevard and Armistead Avenue to W.A. on 8 shift. Brumfield, 4457.

NOTICE: Persons interested in riding a bus from Norfolk to W.A. on 8 shift are requested to call W. A. Tuck, UL 5-5816, Norfolk.

For The "REST" of Your Life!

CAFETERIA MENU

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

Monday - Chicken-noodle soup, Swiss steak, chicken and dumplings, broiled ham slice, chili dog, hot dog.

Tuesday - Puree of bean soup, half-pound chopped steak with gravy, corned beef brisket, stuffed pepper, franks and beans.

Wednesday - Minestrone soup, pot roast of beef, baked lasagna, fried chicken, grilled cheese sandwich.

Thursday - Vegetable-beef soup, grilled steak, deep-fried scallops with tartare sauce, roast pork with applesauce, Irish omelette.

Friday - Clam chowder, roast ribs of beef, stuffed flounder, broiled fillet of perch, barbecued sandwich.

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

Monday - Cream of tomato soup, roast veal with dressing, grilled pork chops, spaghetti with meat sauce, tamale pie.

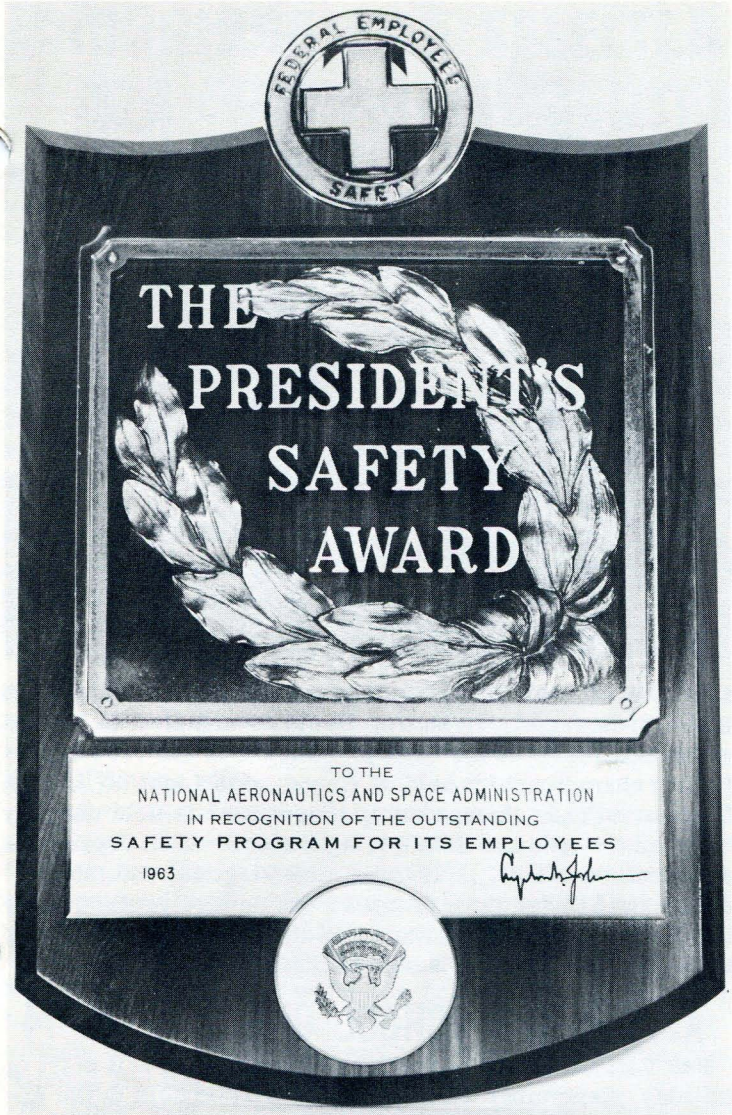
Tuesday - French onion soup, Spanish pot roast, fried fan-tail shrimp, liver and onions, chili con carne.

Wednesday - Clam chowder, sliced turkey with dressing and cranberry sauce, shrimp Newburg, beef stew, cheese omelette.

Thursday - Vegetable-beef soup, grilled steak, beef stroganoff on noodles, fried chicken, macaroni and wieners.

Friday - Clam chowder, baked ham, broiled halibut steak, fried fillet of flounder, baked hash.

WANTED: Passengers to South Texas October 1. Leo, 868-9631 after 5 p.m.



Shown in the photograph on the left is the President's Safety Award which was recently granted to NASA for the year 1963. Each field station received a plaque for its part in this award. In the right photograph Duane McSmith (center), Safety Engineer, holds the plaque which was presented to him by Dr. Floyd L. Thompson, Director. Looking on is James C. Tingle (right), Head of Employee Services Section, Personnel Division.

AIAA TO HEAR GEORGE HAGE

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will meet on Wednesday, September 23 at the Warwick Yacht and County Club.

George Hage, Chief Engineer, Boeing Company, will speak on "The Lunar Orbiter." Hage is eminently qualified to discuss the Lunar Orbiter Project. As Chief Engineer, he has overall technical responsibility for the project, from design of the spacecraft to reconstruction of the lunar photographs. His presentation is designed to be of interest to all AIAA personnel, whether or not they are involved in the Orbiter Project, as well as non-technical people.

A social hour will be held at 6 p.m., followed by dinner at 7 and the meeting at 8. Wives and guests are cordially invited to attend.

For reservations call Laurence Enderson, 596-6702; Bill Michael, LY 5-0463, or Harleth Wiley, LY 6-4427, before Friday evening, September 18.

WALLOPS PLANS OPEN HOUSE

For the third successive year, Wallops Station will be open to the public for a self-guided, "do-it-yourself" tour on Saturday and Sunday, September 19 and 20.

The gates will be open to the public from 11 a.m. until 6 p.m. Eastern Daylight Time (10 a.m. to 5 p.m. Eastern Standard Time), both days.

Visitors will be permitted to tour some facilities on the Main Base as well as the launch sites on Wallops Island. The Main Base and Wallops Island are about 10 miles apart. To view both places will take two or three hours. Visitors will not be permitted to get out of their cars on the Island, but will be provided parking space at the Main Base.

A variety of launch vehicles and models will be on display, both on the Island and at the Main Base. Visitors will also see the launch pads, rocket storage structures, long range tracking radars, weather towers, blockhouses, assembly shops and related facilities.

As a special attraction this year, a group of 12 or more space science exhibits will be on display in a hangar on the Main Base. These will include a number of full-scale rocket models, samples of actual flight hardware, a group of satellite and spacecraft models flown at Wallops, and several animated exhibits with electrical displays.

Those taking the tour may go either to the Main Base or to Wallops Island first. Instruction pamphlets will be distributed at both gates.

A combined total of nearly 25,000 persons visited Wallops Station--some from as far away as California, Florida and Nebraska--during similar inspections conducted in October 1962 and September 1963.

WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851, or Norfolk 587-9023.

WANTED: Ride from Pine Grove area to W.A. on 7:30 or 8 shift, also ride from W.A. to E.A. or N. King St. at 6:45 p.m. on Monday and Thursday. Karen Rackley, 3325 or 723 2234.

FOR SALE: Pekingese pups. Boykin, 838-1428.

FOR SALE: 1956 12 hp Elgin outboard motor - $90. Southall, LY 6-7344.

FOR SALE: 6-room redecorated house in Stuart Gardens, $12,650. Pilny, 838-2801.

FOR SALE: Girl's 20-inch bicycle - $15. Sealey, 828-2679.

KNOW YOUR CREDIT UNION

Interested in a share-the-wealth program? Put or take? Just see your Langley Federal Credit Union. On the "putting" side, according to Credit Union officials, it is heartwarming the extent to which NASA employees do, in fact, "share-their wealth" through membership in the Langley Federal Credit Union. Air Force participation may account for slightly over half of the outstanding loans, but the capital required to finance loans is solidly in NASA hands. Almost $2,500,000 - 64 percent of all shareholdings - is credited to NASA accounts.

Presently, there are two major types of share accounts. One, the regular accounts of prime members (those eligible for membership in their own right by virtue of employment on Langley Air Force Base), two, the family accounts of individuals who gain their eligibility for membership by being in the immediate household of a prime member and sponsored by him. The regular account must come first. Members of immediate households gain and keep eligibility for membership only through an active prime member. Loans against family accounts are limited to the amount of shares held.

Either of these types of account may be joint. That is, shares are issued in joint tenancy to the owner-member and to any other individual in his immediate household designated by him. Both sign a Joint Share Account Agreement but the designated joint-owner is not automatically a member of the Credit Union since he is not normally charged a membership fee. Joint owners have the right of survivorship and either may deposit or withdraw funds without the signature of the other.

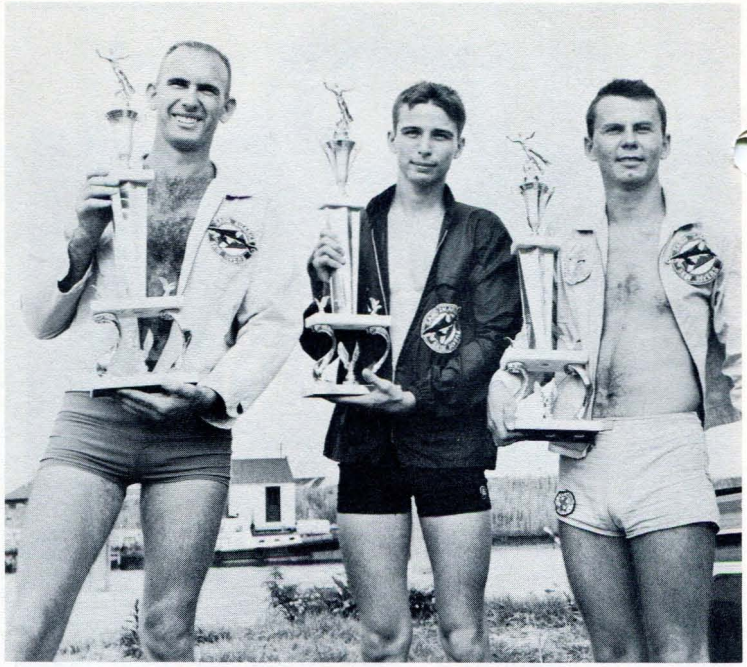
Currently, there is no limit on the amount that may be deposited at any one time other than the overall limitation of $10,000 in any one account. And once deposited, unless the member has a loan involving the Credit Committee, withdrawal is on demand. Dividends, as established by the Board of Directors, have been at the 5 percent level for the past three years. Funds must be on deposit on December 31 to earn dividends. Anything withdrawn before that date loses its entitlement. Share-pledge loans are an escape hatch worth investigating before making substantial last quarter withdrawals.

There are certain other facts to be kept in mind in connection with any long-range savings program. One item is the fact that only full $5 shares earn dividend credit. In other words, with a $939.92 share balance only $935 is accruing interest. Another fact is that deposits made by the fifth of any month earn from the first of that month. And, finally, there is the fact of share life insurance. Under this program, insurance on the member's life matches his share holdings up to $2000 until the age of 55. Then there is a 25 percent drop in coverage each 5 years until all insurance disappears at the age of 70. Insurance will be the subject of a future article. The next article will discuss the much needed common denominator for various interest rates and percentage claims: a true annual interest rate.

WANTED: Alternate driver from Stuart Gardens to W.A. on 8 shift. Hamilton, 4879.

WANTED: Ride from Dresden Drive area to W.A. on 7:30 shift. Wyatt, 4446.

FOR SALE: 2 tires and 4-lug wheels, size 5.60 x 13. Wyatt, 245-1676.



Lewis Wilkinson (left), Fabrication Shop, Ed Proctor, and Bill-Cordle (right), Research Projects and Models Section, were members of the first place team in the 1964 spearfishing championships held at Brandywine Light off Lewes, Delaware. This championship tournament is held annually between the Atlantic Skin Diving Council which represents diving clubs in D.C., Maryland, and Virginia, and the Middle Atlantic Underwater Council from Pennsylvania. Twenty three-man teams were entered in the contest. The winning team is from the local Sand Sharks Skin Diving Club.

APPRENTICE SCHOOL OPENS SEPT. 14

The Fall Semester of the Apprentice School will start on Monday, September 14 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 - Blueprint Reading, W. E. Morris; Basic Electricity, J. E. Gerringer; Physics I, G. C. Moen; College Algebra, Irving Abel, and Physics I, F. A. Kern.

Tuesday - Physics II, J. J. Mathis; Industrial Electronics, R. H. Coultrip; Electronic Measurement Instrumentation, A. B. Alcock; Physics II, V. G. Collins, and Engineering Drawing III, O. E. Schrader.

Wednesday - Engineering Drawing I, C. P. Eichelberger; Mathematics (E and E) III, C. N. Robeson; Algebra, R. B. Holt; Engineering Drawing I, J. G. Hudson; Algebra, J. A. Walker, and Plastics I, C. L. Wray.

Thursday - Essentials of Radio II, A. L. Jones; Machinery's Handbook III, S. E. Devan; Transistors I, R. O. Staib, and Strength of Materials I, R. M. Moore.

Friday - A. C. Fundamentals II, J. A. Coleman; Strength of Materials II. R. M. Boykin; Industrial Electronics I, C. C. Berry, and Integral Calculus, R. B. Grow.

CALCULUS COURSE OFFERED

A four-semester hour credit course in Calculus I is being offered by the University of Virginia extension. The class will meet on Saturday, September 19 at 9 a.m. in Building 1348. For further information call Kenneth Margolis, 2359.

FOR SALE: Two 24 and 30-inch gas stoves. Lee, 722-6762.

CAMBRIDGE SITE SELECTED FOR ELECTRONICS CENTER

James E. Webb, NASA Administrator, has informed Mayor Edward A. Crane of Cambridge, Massachusetts, that a 29-acre site offered by that city has been selected for NASA's new Electronics Research Center. Webb advised the Mayor in a letter in which he listed several contingencies which must be resolved before final plans can be made.

Dr. Winston Edward Kock, Vice-President of Research at the Bendix Corporation, Detroit, will head the Center. Dr. Albert J. Kelley, Director of Electronics and Control Division of NASA's Office of Advanced Research and Technology, has been named Deputy Director.

The site is in the Kendall Square area of Cambridge immediately north of Massachusetts Institute of Technology and is in close proximity to Harvard. The center will be bounded on the north by Binney Street, on the south by Broadway, on the east by Third Street, and on the west by the Grand Junction Railroad.

The decision resulted from a four-month study of 160 proposed sites in the Greater Boston area by a NASA committee. After this number was reduced to 22 possible sites, Webb consulted with Cambridge officials concerning the Kendall Square site.

Commenting on the selection, Webb said, "It offers a real opportunity for cooperative planning in area development between the City of Cambridge, MIT, NASA and the business community which can work to the benefit of all as the needs for NASA and the city are realized."

Webb pointed out that the site is immediately adjacent to a 13-acre triangle which the City plans to develop for commercial use. He cited the development of the two locations as an excellent example of long-range community planning and improvement.

Dr. Kock said, "I am extremely pleased with the selection of the site, located in the midst of the area's universities, because it will be an added attraction to the Center's scientists and engineers who wish to study and consult at those institutions."

The Center is being formed to give NASA the technical competence needed to work closely with industry and universities throughout the country in electronics research necessary for the support of future space exploration. Its facilities will give project managers technical support in very advanced areas of electronics similar to that now available to them for research in propulsion, aerodynamics, and space vehicle systems.

The program of the new Center will be supplemented by supporting efforts of other NASA centers throughout the country, and these centers in turn will draw upon the research results obtained by ERC.

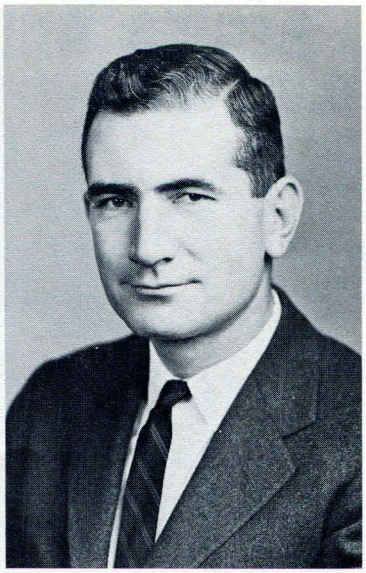
In developing a master plan for the Center, high priority will be given to devising a coordinated timetable for the relocation of occupants of buildings which must be removed in phase with NASA construction requirements.

Selection of the Cambridge site leaves undetermined where a NASA auxiliary suburban site will be located. Webb said that decision will be made at a later time. The auxiliary site is required to carry out special research that can be more advantageously conducted in a less densely populated area.

The Electronics Research Task Group has moved from NASA Headquarters to the North Eastern Office, located at 30 Memorial Drive, Cambridge, Mass. The group will remain at the interim Cambridge location until about mid-October, while a nearby new building is prepared. The group has 30 staff members.

The Center offices will then be located in leased space at 575 Technology Square in Cambridge. These quarters will be the Center's home for at least a year.

Dr. Winston Edward Kock



Dr. Albert J. Kelley

CIVIL SERVICE EXAMS OPEN

Applications for the positions of Trainee, $1.94 per hour, Mathematics Aid, $4004 and $4480 a year, and Mathematics Technician, $5000 a year, are being accepted by the Board of U.S. Civil Service Examiners, Langley Research Center.

No experience is required for the Trainee position but applicants must pass a written aptitude test. Trainees assist skilled workers in various Wage Board positions while being trained for advancement or more difficult work. The closing date of the examination is September 30.

For Mathematics Aid GS-3($4004), a year of experience and passing a written test are required. The test includes questions in Arithmetic and Algebra. Completion of high school, including 1/2 year in Algebra with a total of two years in Mathematics and Physics may be substituted for the year of experience.

For Mathematics Aid GS-4($4480), two years of experience are required and for Mathematics Technician GS-5 ($5000), three years of experience are required. No written test is required for these two grades. High school and college Mathematics may be substituted for the required experience. Copies of the examination announcement and application forms may be obtained from the Board of Examiners, NASA, Langley Research Center, Hampton, Va.

WANTED: Ride from far side of James River Bridge to E.A. on 8 shift. Newcomb, 2215.

WANTED: Alternate drivers from Southampton area to W.A. on 8 shift. Keith, 4581.

WANTED: Passengers from Newmarket and Forest Park to W.A. on 7:30 shift. Fred King, 4691.

WANTED: Driving combination from Newmarket to W.A. on 8 shift. Robertson, 4895.

REGIER AND ELDER DIE

Arthur A. Regier.

Arthur A. Regier, Assistant Chief of Dynamic Loads Division, died apparently by drowning early last Monday at Milford Haven, Mathews.

Regier was born January 26, 1909, in Woodville, California. He received his B.S. degree in Electrical Engineering from Kansas State College in 1935.

He worked for Shell Oil Company and Halliburton Oil Well Company before joining the Center staff in April 1938.

In 1950 he was named head of the Vibration and Flutter Branch of the Dynamic Loads Division. In April 1959 he was promoted to Assistant Chief of the Dynamic Loads Division.

Regier's research contributions have received wide acclaim, particularly in supersonic flutter and aircraft noise. Many of his major contributions represent landmarks in the field or have led the way in opening new fields of research. They include pioneering work in isolating the significant parameters in stall flutter, in obtaining the design criterion for avoiding propeller stall flutter, measurement of skin friction drag at supersonic speeds, the first experimental program for flutter at transonic and supersonic speeds, analysis of and remedies for effects of propeller noise on fuselage structures, and new techniques for laboratory vibration research.

He was author or co-author of more than 30 technical reports on research conducted at the Center.

He was an associate fellow of the American Institute of Aeronautics and Astronautics, the Acoustical Society of America, and the Research Society of America.

Surviving are his wife, Mrs. Dorothy Regier; two daughters, Mrs. M. R. Hoef of Weyland, Massachusetts, and Mrs. M. M. Gough of Monterey, California, and a son, Alan A. Regier of Newport News.

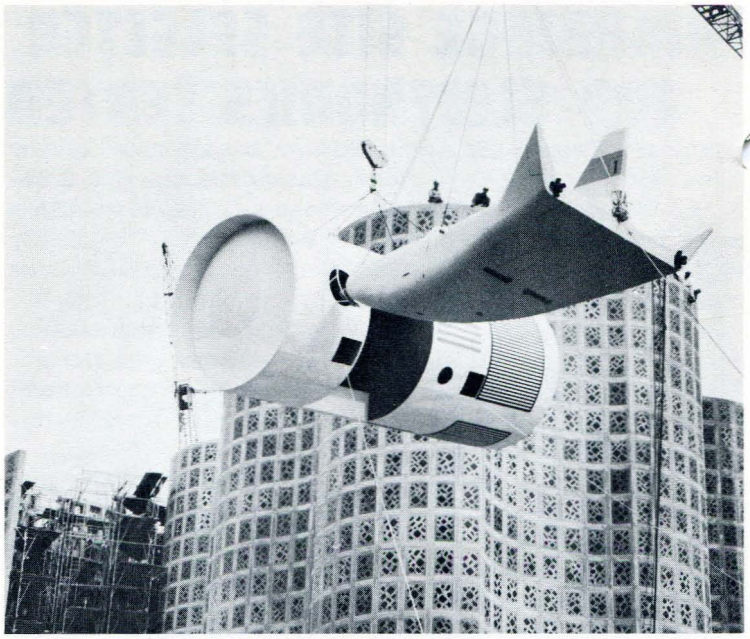
James W. Elder, who retired from the Center in 1961 as a Planner and Estimator in the Mechanical Service Division, died last Monday in Dixie Hospital after a short illness.

Elder was born April 25, 1891 in Boston, Massachusetts. From 1909 to 1912 he served his apprenticeship as a machinist in New York, Pennsylvania and Massachusetts. He served in the U.S. Army from December 15, 1917 to June 28, 1919 and worked as a toolmaker, machinist and instrument maker before joining the Center staff on October 16, 1926 as a toolmaker. He retired on April 26, 1961.

He is survived by his wife, Mrs. Lina S. Elder, and a son, Theodore H. Elder, Flight Vehicles and Systems Division.

FOR SALE: 1960 Opal station wagon. Burbank, 838-0329.
FOR SALE: 1952 Ford V-8, 2-door sedan, also Olds trombone. Thornton, PA 2-1854.

FOR RENT: Room for 1 or 2 gentlemen. Rollins, 868-5961.
FOR SALE: 1958 Plymouth, 4-door, V-8 engine, straight shift. Armistead, 826-0829.



Spectators at the New York World's Fair recently got an unexpected glimpse of the future when several tons of space ships, including a large model of the Langley-developed HL-10 entry vehicle, were hoisted 130 feet into the air as part of the installation of the Hall of Science "Rendezvous in Space" Spectacular. The million dollar production, set to premiere this week, is sponsored by the Martin Company, builders of the Titan II-Gemini space vehicle. Directed by Academy Award winner Frank Capra, the show features an actual orbital rendezvous mission high over the heads of the audience inside the unusual now permanent science museum's Great Hall. The cylindrical space laboratory measures 30 feet by 15 feet and its resupply ship, the HL-10, is 20 feet long.

MAGAZINE FEATURES MODELMAKERS

Langley modelmakers are the subject of a feature article in the current issue of the "Pattern Makers' Journal," describing some of the many contributions made by NASA modelmakers in devising new or modified methods of constructing research models and payloads.

The article is illustrated by 24 photographs and Albert R. Philips, Langley employee who is president of the Pattern Makers' Association of Newport News and vicinity, is featured on the cover.

The local Pattern Makers' Association was granted exclusive recognition for a craft unit by Langley on December 5, 1963.

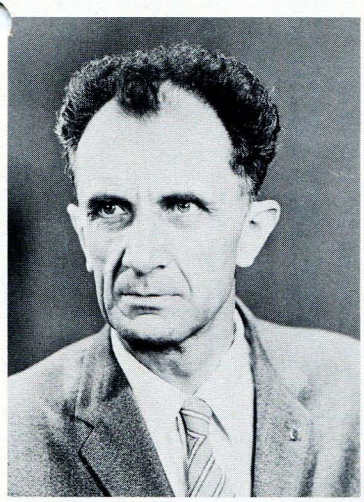
COURSE OFFERED EMPLOYEES

Training officials have announced that a non-credit course in Vacuum Technology is being offered to staff members. The course is designed for technician and vacuum system operators. Pre-requisites are high school Algebra and some knowledge of Trigonometry and Physics

The course will run for 12 weeks and will be taught on Tuesday afternoons from 4:15 to 6:45. Paul R. Yeager, Instrument Research, will be instructor. The course will start as soon as a sufficient number of students have enrolled. The approximate cost will be $21 including tuition and textbook.

Persons interested are requested to contact the Training Office, 2326.

DR. ADOLF BUSEMANN RETIRES AFTER 17 YEARS AT CENTER



Dr. Adolf Busemann

Dr. Adolf Busemann, Research Staff Scientist assigned to the Office of the Director, retired September 8 after serving over 17 years at the Center.

Dr. Busemann was born April 20, 1901 in Luebeck, Germany. He attended high school in Luebeck and completed his undergraduate and graduate work at the Technical College at Braunschweig, Germany, graduating as an engineer in 1924 and receiving his doctorate in engineering in 1925. He started his career as an engineer at the Kaiser Wilhelm Institute (now the Max Planck Institute) in Goettingen, Germany, and later became its chief engineer. While conducting research for six years, Dr. Busemann concurrently studied for his venia legendi under Dr. L. Prandtl, whose renown as a scientist and wind tunnel designer led to the construction for his research activities of the Kaiser Wilhelm Institute for Fluid Mechanics.

In April 1931, Dr. Busemann began a four-year period as a lecturer on the subjects of heat transfer, hydrodynamics in the Engine Laboratory of the Technical College at Dresden, Germany, under Professor Dr. Richard Mollier. Returning to Braunschweig in 1935 and until the Allied occupation ten years later, he served as chief of the Gas Dynamics Division of the Aeronautical Research Laboratory and of its rocket test facility near Fassberg.

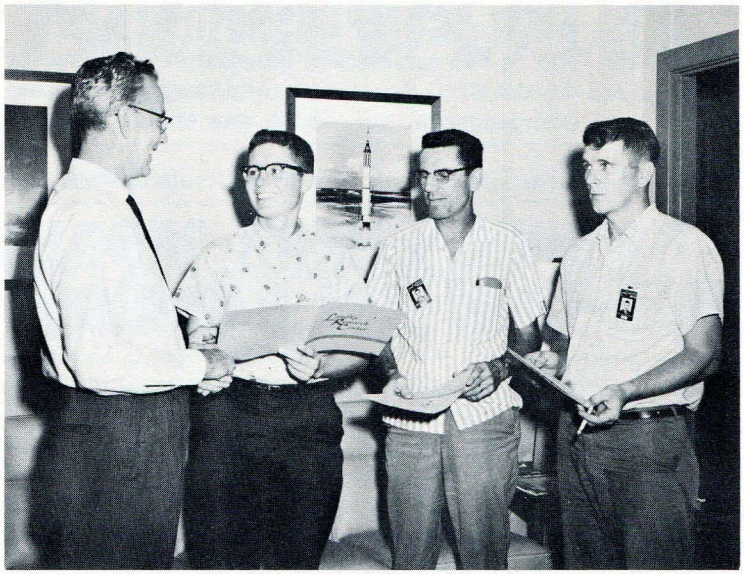
Following a period as a research consultant in England during 1946 and 1947, Dr. Busemann accepted an invitation in 1947 from the United States Government to come to this country and continue his career as a research scientist. At Langley Research Center, he conducted original research in magnetohydrodynamics and aerodynamics, and acted as a consultant on gas dynamics problems and related subjects. He has written more than 100 technical papers which have been published.

Last year he was on sabbatical leave from the Center, during which he served as a Visiting Professor of Aerodynamics at the University of Colorado, Boulder, Colorado. He taught a course in compressible flow.

Dr. Busemann was one of two German scientists invited to deliver technical papers at the Volta Congree on high-speed aerodynamics held in Rome, Italy, in 1935. His paper was the first to propose the use of swept wings in the design of high-speed aircraft. He was elected a foreign member of both the Max Planck Association for the Advancement of Science, Germany, and the Academy of Science in Turin, Italy. He received the Carl Bosch Award for Advancement in Aeronautical Science in 1944.

LOST: Boy's 1964 Newport News High School class ring. Geer, PA 3-5842.

WANTED: Driving combination from Riverdale to W.A. on 7:30 shift. Everhart, 4879.



Three employees recently received cash awards under the the NASA Incentive Awards Program. Receiving awards from William B. Mayo (left), Chief of Mechanical Service Division, are (from left): David R. Mason, George C. Gray, and Mickey R. Gardner. Mason and Gardner shared an $85 cash award for their joint suggestion on "An improved method for conducting crack propagation tests at -109 degrees F." Gray received a $30 cash award for his suggestion entitled "Wrench, bearing lock nut."

GENERAL MCKEE JOINS NASA

General William F. McKee, former Vice-Chief of Staff of the U.S. Air Force, was sworn in September 1 as NASA's Assistant Administrator for Management Development.

Gen. McKee, a four-star General, retired August 1 with over 35 years of service. He will be responsible for the review and development of recommendations concerning major management matters and will report directly to James E. Webb, NASA Administrator.

"We feel most fortunate that we were able to persuade General McKee to continue to give of his services to the Government--this time in a top management capacity with NASA," Webb said.

"He will contribute much to the development of the national space capability," Webb added, "And his decision benefits not only NASA but also the Nation."

General McKee, a 1929 graduate of the U.S. Military Academy at West Point, was presented the First Annual Distinguished management award of the Air Force Association in 1957 for his outstanding contributions in Air Force logistics assignments.

A native of Chilhowie, Virginia, he was originally commissioned in the Coast Artillery Corps and served in Coast Artillery assignments from 1929 to 1942 when he was assigned to Army Air Force Headquarters.

Before his appointment as Air Force Vice-Chief of Staff in 1962, General McKee carried out with distinction various domestic and overseas assignments in Air Force Transport and Logistics Command Operations.

He has been awarded the Nation's second highest award, the Distinguished Service Medal, three times. He is a past president of the Armed Forces Relief and Benefit Association.

FOR SALE: 1964 Chevrolet Corvair Monza. Mahanes, LY-6-6605.

NEW DUAL COMPENSATION ACT

This is the first of two articles on questions and answers as prepared by the Civil Service Commission concerning the new Dual Compensation Act, which was enacted August 19, 1964.

1. Q. In general, what would the Dual Compensation Act do?

A. It would codify all the various laws pertaining to dual compensation and dual employment into one statute. It would establish simplified policies on civilian employment of retired military personnel and on the holding of two or more civilian positions.

2. Q. What limitation would be placed on dual compensation under the new law?

A. The limitation provides that a retired regular officer of the uniformed services who holds a Federal or D.C. Government civilian position will receive the full salary of the civilian position plus the first $2,000 of his military retired pay, plus one-half of any remainder of his retired pay.

3. Q. Will the retired pay of reserve officers and enlisted men be reduced under the new law?

A. No. Retired reserve officers and all retired enlisted men will continue to be exempt from any dual compensaation limitation.

4. Are any retired regular officers exempt from the dual compensation limitation?

A. Yes. Any regular officer is exempt whose retirement was based on disability resulting from injury or disease received in line of duty as a direct result of armed conflict or disability caused by an instrumentality of war and incurred in the line of duty during a period of war.

5. Q. What about retired regular officers who are holding Federal or D.C. Government civilian positions on November 30, 1964, the day immediately preceding the effective date of the Dual Compensation Act?

A. They may elect to come under the limitations of the Dual Compensation Act or continue under whatever limitations, if any, that are applicable to them on the day immediately preceding the effective date of the Dual Compensation Act.

6. Q. Does the dual compensation limitation apply to a retired regular officer who accepts a temporary, part-time, or intermittent appointment?

A. The limitation does not apply for the first 30 days of such an appointment.

7. Q. Does the Dual Compensation Act place any restriction on the appointment of retired members of the uniformed services?

A. Yes. A retired member of any of the armed forces may be appointed to a civilian position in or under the Department of Defense during the 180 days immediately following the date of his military retirement only if:

(1) The Secretary of the military department concerned authorizes his appointment and, if the position is in the competitive civil service, the Civil Service Commission approves; or

(2) The minimum rates of basic compensation for the position have been increased under section 504 of the Federal Salary Reform Act of 1962; or

(3) A state of national emergency exists.

8. Q. What information is required in connection with the authorization?

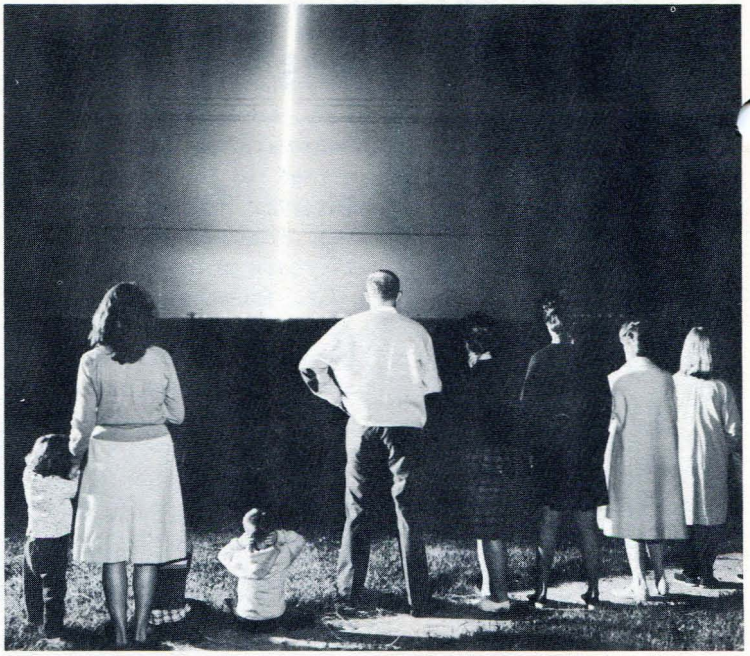
A. Any request for such an authorization and approval must be accompanied by a statement which shows that:

(1) Full consideration, in accordance with placement and promotion procedures of the military department concerned, was given to eligible career employees.

(2) If selection is by other than certification from a civil service list of eligibles, the vacancy has been publicized to give all interested candidates a chance to apply.

(3) Qualification requirements for the job have not been written in such a way that the retired member will be given an advantage.

(4) The job has not been held open pending the member's retirement.



This is the launch of the Scout reentry heating experiment which brought smiles to the staff of the Langley Research Center and a message of congratulations from Dr. Raymond L. Bisplinghoff, NASA Associate Administrator for Advanced Research and Technology. In a letter to Dr. Floyd L. Thompson, Langley Director, Dr. Bisplinghoff expressed his appreciation to "all the Langley people whose contributions added up to a job well done" on both the reentry experiment and the launch vehicle. The eyes of Eastern Shore residents follow the rocket's trail as the Scout begins its successful flight on August 18. The fact that lift off did not occur until 2:06 a.m. EDT did not deter the spectators as they watched from a safe distance near Wallops.

ISA MEETS SEPTEMBER 23

The Tidewater Virginia Section of the Instrument Society of America will meet on September 23 at the Holiday Inn.

Frank C. Quinn, Assistant Manager of Hygrodynamics, Incorporated, will speak on "Why Consider Humidity."

A social hour will be held at 6:30 p.m. followed by dinner and the meeting at 7:30. For further information contact C. G. Marple, 3483.

FOR SALE: 18-foot sailboat with dacron sails, 12 hp engine, stainless steel rigging, fiberglas. Puster, CH 5-5118.
FOR SALE: 1963 MG 1100. Linda Lee, 826-5792 after 5.
FOR SALE: Kag tenor banjo - $40. Gowdey, LY 6-3650.
FOR SALE: 1956 Rambler station wagon. King, CH 7-3817.
FOR SALE: 21-foot Belvin cabin boat with inboard Willys Jeep motor, marine clutch. King, CH 7-3817.

Langley Researcher

VOLUME 3, NUMBER 20 LANGLEY RESEARCH CENTER SEPTEMBER 24, 1964

PHILLIPS NAMED TO ERC POSITION

Franklyn W. Phillips has been named Assistant Director for Administrative Operations at the new NASA Electronics Research Center, Cambridge, Mass.

Phillips, a career civil service employee and veteran NACA-NASA executive, has been serving as Director of the NASA North Eastern Office which will be absorbed within the new organizational structure of the Electronics Center.

In his new position as Assistant Director, Phillips will report to Dr. Winston E. Kock, Director. Phillips will be responsible for administrative matters directly concerned with the Center's operations. These include procurement, personnel affairs, management analysis, administrative support, and technical information.

Phillips joined the National Advisory Committee for Aeronautics, NASA's predecessor, in 1941 at the Langley Research Center. The following year he transferred to the Lewis Research Center where he engaged in engineering research on aircraft engine materials.

He joined the NACA headquarters in Washington in 1945 and for 13 years was directly associated with research programs on aircraft and rocket structures.

When NASA was established in 1958, Phillips was appointed special assistant to the Administrator, Dr. T. Keith Glennan and he served in the same capacity with the present NASA Administrator James E. Webb from February 1961 to August 1962. In this position he participated in many policy and management decisions affec ing the whole NASA management structure. He was named Director of the North Eastern Office in August 1962.

ONE-DAY SOLICITATION SET FOR TOMORROW IN DRIVE

Tomorrow a corps of over 300 solicitors will contact each employee in an effort to complete the Center's United Fund effort in an intensive one-day campaign, according to Edwin C. Kilgore, Chairman of the Center's drive.

The pace for the Center's effort was set this week when the advanced solicitation of key personnel was conducted under the direction of Anshal I. Neihouse, Office of the Director.

Neihouse reported that as of press time on Tuesday, advanced gifts had reached a total of **$22,092.** This represents an average donation of $49.42 from 447 staff members. Neihouse 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.

Last year staff members contributed or pledged a total of $60,869.25 to the drive. This represented donations from 94.6 percent of the staff.

Kilgore stated that the goal this year is $60,000 or better. He pointed out that he is confident that the Langley staff will live up to its reputation of being a leader in the community effort. He also declared that pledges have always meant the success of such as a drive and he urged employees to use the pledge system as quarterly payment spread out over the year permit an employee to make a more generous contribution.

Kilgore reminded staff members that, although he is

(Continued on page 5)

A meeting of advanced solicitors and division chairmen was held last week in preparation for the Langley Center's United Fund campaign. Left photograph - Attending the meeting were (from left): Edwin C. Kilgore, chairman of the Center's drive; H. Wescott Cunningham, chairman of the Federal Division; Roger Lucy, chairman of the Peninsula United Fund drive, and Charles J. Donlan, Langley Associate Director. Right photograph - Dr. Floyd L. Thompson, Langley Center Director, launched the Center's campaign with his donation to solicitor Charles C. Shufflebarger. Looking on is Anshal I. Neihouse, chairman of advanced solicitations. The staff will be solicited tomorrow.

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 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DIAPER LINE. . .Weighing in at seven pounds, seven ounces on September 6 was Heather Anne, new daughter of Patricia Reagon, Aero-Physics Division. Proud grandparents are Virginia and Wayne Glenny, both of Procurement Division. Announcing the birth of a seven pound, eleven ounce son on September 10 is Larry L. Harvey, Electrical Systems Division. Robert H. Turner, Mechanical Service Division, is the proud grandfather and the great grandfather is Harold R. Turner, retired Safety Engineer. . .Celebrating the birth of a seven pound, ten ounce daughter, Karen Sue, on September 2 is Patrick L. Corbin, Structures Research Division.

NEW BRIDE. . .Wedding bells rang on September 12 when JoAnne Watts, Structures Research Division, took her final vows with William Hudgins in Tabor City, North Carolina.

ARCHERY CLASS. . .Plans are being made by the Activities Association to organize an Archery Class with a qualified instructor. Persons interested are requested to call Vernon Rogers, 4526.

HEWES TO APPEAR ON TV SHOW

Donald E. Hewes, Head of Spacecraft Research Branch, Space Mechanics Division, will demonstrate the Lunar Walking Research Device on the TV show, "I've Got A Secret", on Monday, September 28 at 8 p.m. over channel 3. Steve Allen is master-of-ceremonies for the show.

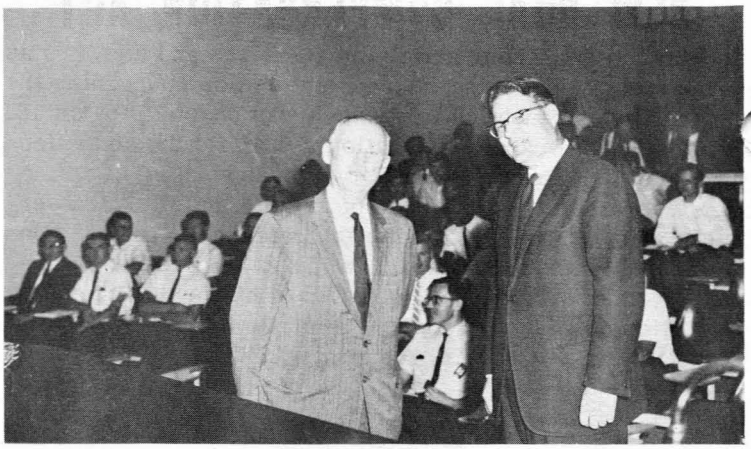
OGO CONTINUES TO SEND DATA

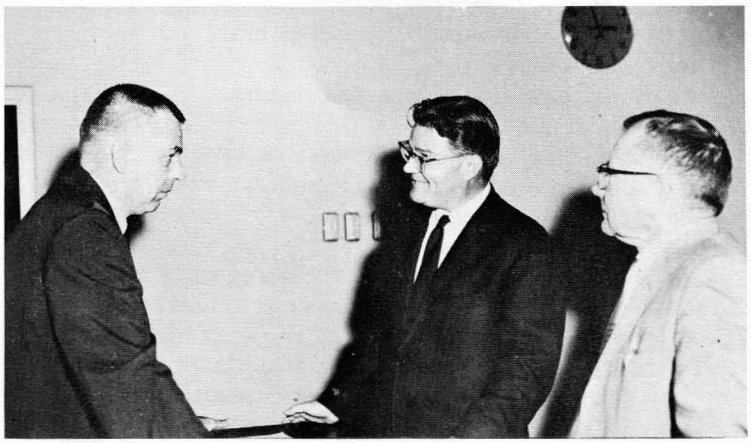
Project officials at NASA report that the OGO I satellite continues to respond favorably to ground commands in its spin-stabilized orbit around the Earth.

NASA's Goddard Space Flight Center conducted an interrogation through the Rosman, N.C., tracking station September 10 and 15 experiments were turned on to confirm their operation.

Because the solar panels are not locked onto the Sun and signals received were weaker than previously received, the spacecraft solar panels were successfully commmanded to turn 42 degrees into a more favorable Sun angle thus insuring satisfactory power levels.

Launched from Cape Kennedy September 4, two of OGO's experiment carrying booms did not deploy properly. One of the booms obscured the Earth seeking sensor which meant OGO could not be placed in an Earth satibilized orbit.





The first registration of graduate students to the Virginia Associated Research Center (VARC) was held last Friday at the College of William and Mary. Top photograph - Dr. Davis Y. Paschall (left), President of the College of William and Mary, is shown with Dr. John E. Duberg, Langley Assistant Director. Bottom photograph - Dr. Duberg talks with William H. McFarlane (right), Director of VARC, and Dr. Melvin A. Pittman, Head of the Physics Department at William and Mary. The registration at William and Mary offered graduate students an opportunity to register in VARC in Physics. Most of the students were employees of Langley Research Center.

POSITION OPEN IN WASHINGTON

NASA Headquarters is seeking qualified candidates for the position of AST, Technical Management, GS-13, with the Office of Inventions and Contributions Board.

The incumbent analyzes petitions of NASA contractor for waiver of patent rights and the evaluations and comments received from NASA field representatives with respect thereto, and prepares proposed findings of fact and recommendations for or against the granting of the requested waivers for consideration by the full board.

Interested candidates should send their application to the Personnel Operations Office, NASA Headquarters, Code BH, Washington, D.C., Attention: B. K. Kennedy.

FOR SALE: Regal automatic coffee urn, 20-30 cup capacity - $12. Bainbridge, 3312.

WANTED: Driving combination from Windsor Great Park to E.A. on 8 shift. Armstrong, 2254 of 877-2082.

FOR SALE: 1958 Impala hardtop. Baynes, 851-2091.

WANTED: Home for kittens. Leybold, 851-3120.

NEW DUAL COMPENSATION ACT

This is the second article on questions and answers as prepared by the Civil Service Commission concerning the new Dual Compensation Act, which was enacted August 19.

Q. Does the Dual Compensation Act affect the reduction-in-force rights of retired military personnel?

A. Yes. A retired member of any of the uniformed services who is entitled to veteran preference under section 2 of the Veterans' Preference Act of 1944 will be placed in the veteran preference subgroup of his tenure group for reduction-in-force purposes only if:

(1) His retirement was based on disability resulting from injury or disease received in line of duty as a direct result of armed conflict or disability caused by an instrumentality of war and incurred in the line of duty during a period of war; or

(2) His service does not include 20 or more years of active military service; or

(3) He was employed in a Federal or D.C. Government civilian position on November 30, 1964.

Q. In computing the length of total service for reduction-in-force purposes of employees who are retired members of the uniformed services, is time spent in active service in the armed forces included?

A. If an employee is in one of the categories noted in the first question, his total length of time in active service in the armed forces is included. If he is not in one of these categories, only his length of time in active service during any war, or in any campaign or expedition for which a campaign badge has been authorized, is included.

Q. Does the Dual Compensation Act affect the crediting of the active military service of a retired member of the uniformed services for purposes of annual leave accrual?

A. Yes. Active military service of a retired member of any of the uniformed services is creditable in determining years of service for annual leave purposes only if:

(1) His retirement was based on disability resulting from injury or disease received in line of duty as a direct result of armed conflict or disability caused by an instrumentality of war and incurred in the line of duty during a period of war; or

(2) On November 30, 1964, he was employed in a civilian position to which the Annual and Sick Leave Act applies; or

(3) Such service was performed in the armed forces during any war, or in any campaign or expedition for which a campaign badge has been authorized.

Q. How does the Dual Compensation Act affect those retired temporary commissioned officers and temporary warrant officers recently ruled by the Comptroller General to be employed or receiving retired pay in violation of the dual compensation laws?

A. They will be relieved of repaying to the Government the amounts considered overpayments under the Comptroller General's decision.

Q. What is the new limitation with respect to holding more than one civilian position?

A. Generally, a person holding more than one civilian position will be entitled to receive basic compensation for not more than 40 hours of work in any one calendar week (Sunday through Saturday).

Q. What is the effective date of the Dual Compensation Act?

A. The relief provisions are effective upon enactment. All other provisions are effective on December 1, 1964.

Q. What past laws does the Dual Compensation Act supersede?

A. Over 50 different laws are repealed or amended. Three of these which are basic and have had Government-wide application are:

The 1894 Dual Office Holding Act, which prohibited the Federal civilian employment of many highly qualified retired regular officers.

The 1916 Dual Compensation Act, which prohibited the receipt of compensation from more than one civilian office when the combined amount exceeded $2,000 per annum.

The 1932 Dual Compensation Act, which provided a $10,000 ceiling on combined retired pay and civilian salary.

Raymond M. Hansen

Harry W. Carlson

TWO EMPLOYEES RECEIVE AWARDS

Two employees recently received cash awards under the Center's Incentive Awards Program.

A Special Service Award was presented to Raymond M. Hansen, Head of General Research Instrumentation Branch of Instrument Research Division. Receiving a Sustained Superior Performance Award was Harry W. Carlson, Full-Scale Research Division.

The citations presented to each recipient read as follows:

Hansen - "For his conception of a Space Radiation Effects Laboratory and the development within NASA of a capability to exploit such a laboratory, both of which have become a reality as a result of his strong and effective leadership."

Carlson - "For his research leading to the accurate prediction and analysis of aircraft sonic boom characteristics."

PROFESSOR TO VISIT CENTER

Dr. Robert W. Truitt, Head of the Department of Mechanical Engineering, North Carolina State University, will visit the Langley Center on Friday, October 2.

Employees wishing an interview with Dr. Truitt should call the Training Office, 2326, for an appointment.

FOR SALE: 7-room split-level house on fenced corner lot. Glenny, 826-4524.

FOR SALE: Buscher cornet. Crayton, 838-2025.

FOR SALE: Sears 9 x 12 tent - external frame type, also Volkswagon roof carrier rack - fits sunroof or sedan models. Pezdirtz, 877-1800.

EVENTS SCHEDULED FOR OCTOBER AT ACTIVITIES BUILDING

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 D.V.S. Party	2 Supervisors' Club Party	3 DANCE 9 p.m. - 1 a.m. Terry and The Pirates
4	5 Department Meeting	6 Bridge Club Model Club	7 8-Foot Party	8 PAYDAY GAME NIGHT 8 p.m. - 10 p.m.	9 EICS Party	10 Reentry Physic Party
11	12	13 Bridge Club	14	15 Volley Ball	16 Apprentice Graduation	17 High-Temperature AMPD Party
18	19 OFFICIAL Technical Scientists	20 OFFICIAL MORL Conference Bridge Club	21 Volley Ball	22 PAYDAY GAME NIGHT 8 p.m. - 10 p.m.	23 Equipment Service Party	24
25	26 OFFICIAL Technical Scientists	27 Bridge Club	28 Volley Ball	29	30	31 COSTUME BALL 9 p.m. - 1 a.m. Frankie Wells

LUNAR MOVIES AVAILABLE

A series of the remarkable lunar photographs obtained by the Ranger VII spacecraft has been assembled into a seven-minute motion picture to demonstrate the effect of viewing the Moon from an approaching vehicle. Individual pictures used in the film include some which have been widely published as well as others which have had limited distribution. The film includes a sound track commentary on the material presented.

Two projection prints are now available at the Langley Research Center for showing to interested groups both within and outside NASA Requests for outside showings should be sent in memorandum form to the Office of Public Affairs, Mail Stop 154.

NASA TOUCH FOOTBALL LEAGUE

Action has started in the NASA Touch Football League and the scores for the first two weeks were as follows: KNADS 19 - Boozers 15, Bombers 52 - Frosties 18, Dedskins 39 - IRD 19, Packers 25 - Heavy Boys 0, KNADS 38-Frosties 7, Boozers 26 - Bombers 6, Packers 52 - IRD 6, Dedskins 37 - Heavy Boys 31.

Games are played at 9:30 a.m. on Saturdays at Kecoughtan High School. Games scheduled for Saturday are: KNADS vs. Bombers, Packers vs. Dedskins, IRD vs. Heavy Boys, and Boozers vs. Frosties.

FOR SALE: 1960 Opal station wagon. Burbank, 838-0329.

FOR SALE: "Static and Dynamics" by Beer and Johnston - $9. White, 877-3459.

FOR SALE: 1957 Ford Fairlane 500 with Thunderbird engine and straight shift - $495. Evans, PA 2-4676.

CAFETERIA MENU

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

Monday - Cream of potato soup, roast ribs of beef, grilled pork steak, chicken chow mein with rice or noodles, fish cakes and cole slaw.

Tuesday - Tomato-barley soup, country style chopped steak, grilled Canadian bacon with applesauce, fried chicken, Austrian ravioli.

Wednesday - Split green pea soup, grilled steak, barbecued pork chunks, meat loaf, cheeseburger.

Thursday - Vegetable-beef soup, pot roast of beef, chicken pot pie, liver and onions, beef croquettes with white sauce.

Friday - Clam chowder, Swiss steak, broiled fillet of perch, fried fillet of flounder, barbecued sandwich.

The menu for the week of October 5 is as follows:

Monday - Cream of tomato soup, Spanish pot roast, fried scallops with tartare sauce, baked ham with plum-raisin sauce, Western omelette.

Tuesday - Chicken-rice soup, fried clams, grilled pork chops, chicken shortcake, grilled cheese and bacon sandwich.

Wednesday - Puree of bean soup, roast ribs of beef, veal cutlet Parmesan, Polish sausage with corn fritters, hamburger.

Thursday - Vegetable-beef soup, grilled steak, shrimp Newburg, fried chicken, baked hash.

Friday - Clam chowder, roast veal with dressing, stuffed flounder, broiled halibut steak, franks and beans.

WANTED: Ride to Charlottesville Oct. 3. Gudikunst, 4581.

UNITED FUND CAMPAIGN

(Continued from page 1)

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 2292, is East Area financial chairman.

TWIST PARTY AND DANCE

On Saturday, October 3, NASA will resound with refrains of the type unfamiliar to some of the old majestic wind tunnels in the West Area of Langley Research Center.

The occasion will be a dance designed to heap joy in the hearts of the younger people employed at Langley Center and give the more inhibited a chance to sit back and marvel at the physical condition and dexterity of their contemporaries.

Furnishing the strains for this affair will be a band not unfamiliar in this area, Terry and The Pirates. Completting a successful summer engagement at Club Ebb Tide, Terry Ferguson, who is featured as lead vocalist, will start the evening rolling at 9 p.m. and keep it rocking until 1 a.m.

The entire evening will not be alloted to Twist music as the band is equally capable of playing other types of music.

Tickets will go on sale at the Activities Building at 8 p.m. and will cost two dollars per couple.

Even if you don't twist, Terry has been known to put on a continuous show for the enjoyment of all.

"WATER, WATER EVERYWHERE AND NOT A DROP TO DRINK"

The Credit Committe of the Langley Federal Credit Union annually approves loans totaling some $4,000,000. Unfortunately, its committee members are not eligible to partake of this golden stream - and thereby hangs a tale.

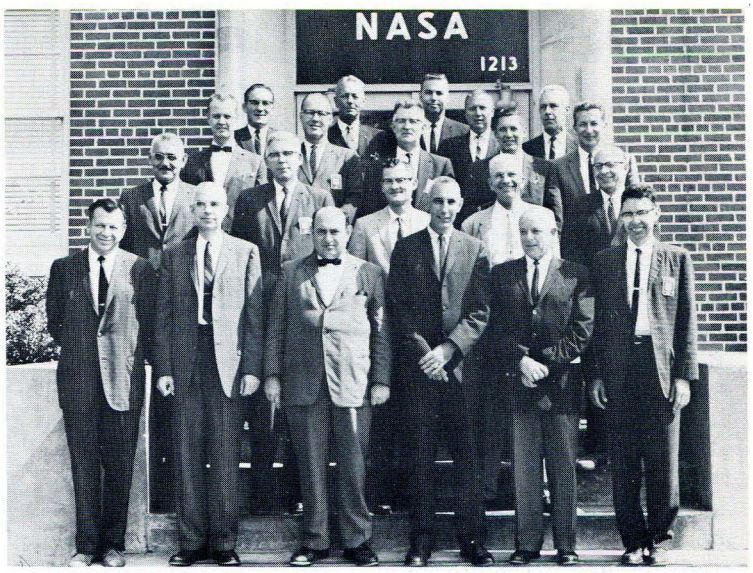
One committeeman found to his sorrow that outside financing of his new automobile cost him an extra $124.24 of which $25.24 was for additional interest and $99 was for loan insurance. Already dedicated, he now preaches the Credit Union gospel with an understandable extra helping of sincerity.

EMPLOY THE HANDICAPPED WEEK

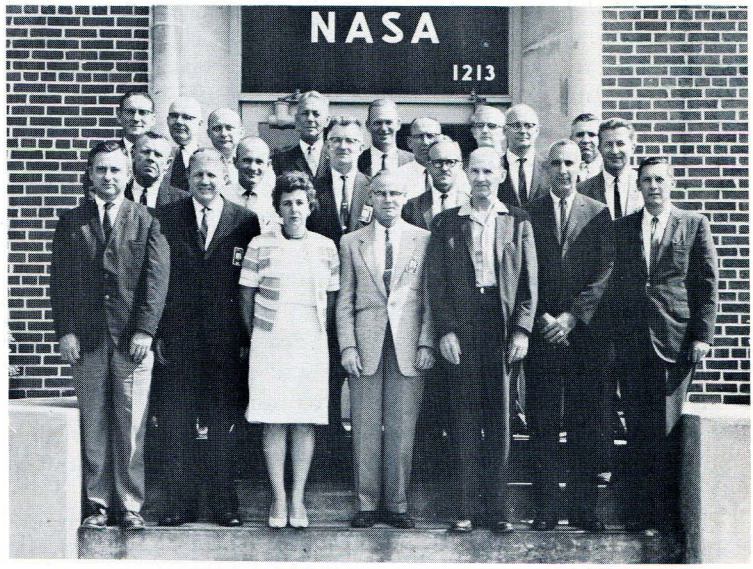
President Johnson has designated the week of October 4 through October 10 as National Employ the Physically Handicapped Week.

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.

Federal activities have proved in more than 195,000 cases that it is good business practice to hire the handicapped.



Advanced gifts solicitors for the United Fund effort. Front row (from left): Henry A. Fedziuk, Lindsey I. Turner, Abraham Leiss, Edwin C. Kilgore, drive chairman; Anshal I. Neihouse, chairman of advanced solicitations, and William H. Phillips. Second row - Milfred E. Cook, Joseph W. Wetmore, Thomas B. Andrews, John R. Dawson, and I. George Recant. Third row - Dennis J. Martin, Harold I. Maxwell, Sherwood L. Butler, David C. Spence, and John M. Riebe. Fourth row - E. Barton Geer, Marvin Forrest, Edward Russell, Edward A. Howe, and Charles C. Shufflebarger.



Division chairmen for United Fund drive. Front row (from left): D. William Conner, Glenn Ford, Lucy White, Lloyd Scott, Walter F. Lindsey, Edwin C. Kilgore, drive chairman, and David C. Spence. Second row - H. Norman Silvers, William B. Jones, Sherwood L. Butler, Dale Emswiler, James A. Maloney, and John M. Riebe. Third row - E. Barton Geer, Robert MacLachlan, Wesley T. Berryman, Marvin Forrest, James B. Whitten, Robert H. Turner, James R. Sterrett, and Forrest H. Rexrode.

FOR SALE: Cocktail table and 4 chairs - Danish modern- $25. Malley, PA 2-2729.

FOR SALE: 1959 Chevrolet Impala convertible - $1,000. Cobb, 596-8240.

NOTICE: Will the person who borrowed "Quantum Theory of Molecules and Solids" Vol. I by Slater please return it to the Library or call John Nealy, 3271.

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

KNOW YOUR CREDIT UNION

Once upon a time, back in grade-school, little Johnnie had some home-work: "If a man borrows $100 for one year and at the end of that time pays back $106, what rate of interest does he pay?" His answer, we hope, was 6 percent. Nowdays, John may not remember similar answers to other problems such as how many hours it takes three men to dig which ditch, but his thinking is still conditioned by that 6 percent. Any reply less than that figure (to a query on interest rates), gets an almost automatic nod of approval; any reply over it is greeted, at best, with dark suspicion; and any reply not directly comparable - such as 1 percent of the unpaid balance each month- leaves him at a loss. This, at least, is the opinion of experts in the field - and they deplore it. Their point is that today there are many ways of calculating interest, that rarely are such methods understood, and that even more rarely is a direct comparision of results valid.

The difficulty, they contend, is that the business of credit has come so far since the days of John's youth that the eternal verities, if any, have fallen by the wayside. Any rate quoted is only as good as the basis of its calculation and does not in itself carry a guarantee of being the cheapest. So complicated has the matter become with the newer "add-on", "discount", and "unpaid balance" methods of calculating interest rates, that Senator Paul Douglas of Illinois has felt it necessary to sponsor a "truth-in-lending" bill for consideration by the Congress.

This bill would require all merchants of credit - including Credit Unions - to state interest rates in terms of simple annual interest. Then the borrower could choose, with assurance, the contract that was most favorable to him. In the meantime, there is only one sure method of weighing various credit claims: multiply the amount of each payment by the number of payments; subtract the original (cash) buying price; and then compare the remainder (actual interest cost in dollars) with that of any other plan similarly calculated.

However, pending the doubtful enactment of Senator Douglas' bill and as a preliminary to the "moment-of-truth" outlined here, let the following facts and figures guide you on your next trip to the "wonderland of credit":

If 12 month's interest is added to the original amount and the total is repaid in 12 equal monthly installments:

A 5 percent figure is 9.1 percent in Simple Annual Interest.

If 12 month's interest is subtracted from the original amount and the first figure is repaid in 12 equal monthly installments:

A 5 percent figure is 9.5 percent in Simple Annual Interest.

If interest is charged only on the unpaid balance each month:

A 3/4 percent figure is 9 percent in Simple Annual Interest.

A 1 percent figure is 12 percent in Simple Annual Interest.

A 1-1/2 percent figure is 18 percent in Simple Annual terest.

A 2-1/2 percent figure is 30 percent in Simple Annual Interest.

Remember these comments apply only to the calculation and comparison of interest associated with the basic article or service being purchased. In addition, in any type of financing, there are usually "fringe" considerations which can easily be determining factors in the selection of a course of action. Two important ones are inherent in the questions (1) "How much extra will loan life insurance cost me?" and (2) "May I pay-on or pay-off my loan at anytime without penalty?" The best answers, of course, are "Nothing" and "Yes".

Young autograph seekers besiege NASA Astronaut Neil Armstrong at the New York World's Fair. Armstrong recently visited the Fair's Space Park, a free exhibit of the biggest array of rockets ever assembled.

COURSE OFFERED EMPLOYEES

A course in Met.E. 4012, Metallurgical Engineering, will be offered under the sponsorship of the Virginia Polytechnic Institute beginning October 6. The class will meet on Tuesdays and Fridays.

Lectures will cover behavior of single and multi-phase alloys under stress and effects of strain energy on solid state reactions. Instructor will be Dr. Donald Ulrich and the textbook to be used will be "Mechanical Metallurgy" by Dieter.

In order to enroll, the student must have been accepted for graduate study at Virginia Polytechnic Institute and meet the prerequisites for the course. Employees interested should call the Training Office, 2326.

ROY N. HAUGHTON RETIRES

Roy N. Haughton, Plant Maintenance Division, retired from the Center on September 8 with over 23 years of Federal service.

Haughton was born January 23, 1895 in Phoebus. He served in the U.S. Army from July 19, 1918 to July 23, 1919. Before starting his career with NASA he worked for the Veterans Administration at Kecoughtan and the Quartermaster Corps at Fort Monroe. He joined the Center staff on October 6, 1942.

WANTED: Ride from Deer Park Apartments to W.A. on 8 shift. Hillebrand, 3274.

FOR RENT: 6-room unfurnished house in Nicewood. Manning, LY 6-3537 after 5 p.m.

FOR SALE: Rollaway folding bed, 39 inches wide - $15. Scher, LY 6-1604.

FOR SALE: 14-foot Wolferine boat with Mercury Mark 75 outboard motor and trailer. Diggs, PA 2-4637.

WHITE RAT LAUNCHED FROM WALLOPS

NASA recently sent a white rat aloft on a modified Arcas sounding rocket. The launching took place at Wallops Island.

Mounted on a couch in a specially-designed small animal payload compartment in the nose cone of the rocket, the rat was lofted to an altitude of 114,000 feet. After launch, the female "mousetronette" was given the name of Miss WIBE (Wallops Island Biological Experiment).

At apogee the payload was separated from the Arcas booster, a parachute deployed, and the live animal container floated safely down to the surface of the ocean. With the aid of flotation and recovery devices, the payload package was picked up by a helicopter a few minutes later about 20 miles offshore. Miss WIBE--resting comfortably on her couch and apparently unharmed--was returned within an hour after launch to Wallops Station for observation and analysis. Total flight time for the "mousetronette" was 25 minutes.

Bio-medical data--such as heartbeat and body temperature of the rat and pressure and temperature in the capsule--were telemetered to ground stations during the flight.

This successful test was the culmination of several months of careful and painstaking preparation in the design, development, and fabrication of the small animal payload, integrating the payload and recovery apparatus with the Arcas vehicle system, and testing the capsule and vehicle performance in several dummy flights.

This developmental work was conducted by a team of engineers and technicians at Wallops Station, under the direction of Larry J. Early. Dempsey B. Bruton was the Wallops Project Engineer, responsible for coordinating launch, tracking, and recovery operations. A second launch of a white rat is expected to be conducted in the near future.

Designated the Bio-Space Technology Training Program, the project is under the general direction of NASA's Office of Space Science and Applications with Dr. Richard E. Belleville acting as Program Manager.

Purpose of the project is to assist biological experimenters in evaluating the engineering and operational aspects of space flight research.

The Arcas meteorological rocket, built by Atlantic Research Corporation, Alexandria, Va., is normally used to carry payloads for obtaining data on winds, temperature, pressure, and density up to 250,000 feet. It is 4-1/2 inches in diameter, 5 feet long, weighs 66 pounds, and is powered by a solid propellant. Including the nose cone and payload, the configuration for the flight was nearly 9 feet long and weighed 82 pounds.

POSITION OPEN FOR STENO

The Office of International Programs, NASA Representative, Paris, France, is seeking qualified candidates for the position of Secretary-Stenographer, GS-7.

This position requires that the candidate speak, read and write French very fluently.

Interested applicants should send their applications to the Personnel Operations Office, NASA Headquarters, Code BH, Washington, D.C., Attention: B. K. Kennedy.

WANTED: Driving combination from vicinity of Northampton (816 Arlington Terrace) to W.A. on 8 shift. O'Neal, 4895.

WANTED: Home for kittens. Wright, LY 6-9666.

A large sign, showing the amount Center employees contribute daily during the United Fund drive, has been installed at the West Gate. Standing in front of the poster are (from left): Anshal I. Neihouse, chairman of advanced solicitations; Edwin C. Kilgore, chairman of the Center's drive; William B. Mayo, vice-chairman of the drive, and W. Cecil Burtner, Model Finishing Shop, who made the sign.

OFFICE COSTS SHOW NEED FOR ECONOMY

A recent study of office costs throughout the country's business establishment by a large equipment firm came up with some arresting figures. The study showed it costs: $2 to dictate, type and mail a business letter; 6.5 cents a year to keep a carbon copy on file; $3,110 a year to create and maintain an ordinary 4-drawer file; $1,000 a year to waste 30 minutes a day of a $20,000 a year executive's time. In addition, the study disclosed it is 60 percent cheaper to prepare a handwritten memo than a typed or dictated one. Also, it takes 2,000 sheets of paper for most firms to back up one employee in their payroll department, and 65 percent of all paperwork is wasted. Regardless of how office operating figures in this Federal Agency stack up with the private sector, now's the time for every employee to strive for more efficient and economical operation of his job.

FOR SALE: Baby furniture including bed, stroller, carriage, etc. Haynie, 595-2008.

FOR SALE: 19-foot camping trailer, self-contained water and gas system - $900, also 14-foot ski boat - $325. Dennis, 868-6270.

FOR SALE: 1963 10 x 50-foot, 2-bedroom Pacemaker with washing machine and new living room furniture. Pay small equity and assume payments. Newman, 214 Wythe Creek Rd., Lot 4, Poquoson.

HEALTH BENEFIT PLANS CHANGED

Most of the health benefits plans participating in the Federal Health Benefits Program will increase their premium or benefits or both for the contract term which begins November 1964.

Most employees will pay the higher premiums, since the majority of them are covered under the high option of the government-wide service plan (Blue Cross-Blue Shield) and the indemnity system (Aetna Insurance Company).

Participants in the high option of the service plan will pay an additional $2.05 each biweekly pay period for self and family protection, sending the premium to $7.88 from the current $5.82; and an extra 81 cents for self only, resulting in a premium of $2.72 instead of the $2.11 charged now.

The indemnity plan will change its high option premium to $7.73 from $5.64 for self and family, a rise of $2.09; and the self-only category will go to $2.84 from $1.82, an adjustment of $1.02.

Neither of these two major plans will make any changes in the low option costs or benefits.

The indemnity plan has decided on no changes in high option benefits, but the service plan has made benefit changes to be effective along with its higher premiums in the high option.

To inform employees of the changes, if any, in the individual plan, the Civil Service Commission has prepared pamphlet BRI 41-117 entitled Information About Plan Changes Effective November 1964. A copy of the pamphlet will be distributed to each enrolled member before November 1. Employees are urged to check the information in it regarding their own plan to see it if has changed and if so in what respect. The present brochure plus the BRI 41-117 constitutes an up-to-date statement of the benefits and rates of the plan. Employees are requested to keep the BRI 41-117 with their brochures. A revised brochure for the plans will not be distributed.

If the rates of the plan are being increased, the effective date for the increased deductions from salaries will be November 8.

Employees will also receive a revised edition of pamphlet Standard Form 2809A, The Federal Employees Health Benefits Program. This pamphlet is normally given only to new employees. However, it has recently been revised to reflect recent changes in the health benefits law and regulations. Each employee will be given a copy so that he will have the latest information about the health benefits program. A table in the SF 2809A shows the opportunities to enroll or change enrollment.

The Civil Service Commission has scheduled an unlimit- open season for February 1965, during which eligible unenrolled employees may enroll in a plan and enrolled employees and annuitants may change plans, options, or type of enrollment from self only to self and family.

FOR SALE: 1964 Valiant V-8 convertible, 4-speed transmission. Watson, 722-2182.

FOR SALE: 3-bedroom brick rancher in Forrest Park. Pay equity and assume 4-3/4 percent G.I. loan. Ford, 826-3458.

WANTED: Ride from Pine Grove area to W.A. on 8 shift. Karen Rackley, 3325 or 723-2234.

FOR SALE: Custom trailer hitch for 1961-63 Tempest, also two 6.70 x 15 snow tires (tubeless). Davey, 898-5664.

A full-scale model of the Saturn V rocket booster that will one day launch American astronauts on flights to the Moon dwarfs an employee at NASA's Michoud Operation in New Orleans. The engineering prototype, measuring 33 feet in diameter and 138 feet in height, will aid in the manufacture of future Saturn V test and flight boosters. One of the boosters five F-1 engines, which will generate a total of 7.5 million pounds of thrust, is shown in position on the aft end of the vehicle. Ten Saturn V first stages will be built for NASA at Michoud by the Boeing Company.

ECHO I AIDS FRENCH SURVEYORS

The most brilliant space ambassador in the world is four years old, and showing signs of age, but the giant balloon satellite ECHO I still has enough polish to be useful, according to reports from France.

The French National Geographic Institute this summer, according to reports, took photographs of ECHO I in order to join the triangulation systems of France and Algeria. The photographs, taken simultaneously from precisely located camera stations in France and Algeria, show the highly visible track of ECHO I against background stars. The objective was to locate accurately the satellite telemetry and tracking stations being built across Europe and Africa for use in their own space programs by the French and the European Space Research Organization (ESRO).

Because of its bright appearance as it moves in a night sky. ECHO I has for years served as the most tangible evidence of the U.S. space program to peoples around the globe for whom "satellite" was only a word. It has probably been seen by more people than any other man-made object, and newspapers still print timetables of its nightly passes for amateur space trackers.

In the four years since it was launched, the aluminum-coated balloon has been worn by its travels in space, and its Mylar skin has lost the smooth shape with which it once accurately reflected radio signals as the forerunner of such communications satellite as Relay and Syncom. How- the brainchild of Langley Research Center still shows brilliantly enough in the night sky to serve in the French triangulation project.

WANTED: Baby crib. Trusty, 877-3217.

FOR RENT: Rooms with twin beds for 4 gentlemen. Mrs. Gardner, PA 2-4970 after 5:30 p.m.

NASA HISTORICAL ARCHIVES
NO.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 3-NUMBER 21 LANGLEY RESEARCH CENTER OCTOBER 9, 1964

STAFF DONATES RECORD TOTAL TO UNITED FUND

As of press time on Wednesday, Center employees and contract employees assigned to the Langley Center had set an all-time high record in the United Fund effort by contributing or pledging a total of $62,966.88. This represented $61,651.88 from Center employees for 93.3 per cent participation and $1,315 from contract employees.

Edwin C. Kilgore, Chairman of the Center's drive, stated that a number of employees have not been solicited and the final total is expected to go well over the $63,000 mark.

Kilgore pointed out that the splendid cooperation of the staff and contract employees assigned to Langley has made this generous response possible and shown a willingness to work together for a worthwhile community endeavor.

He urged division chairmen to send in their final reports to the financial chairmen as soon as possible so the drive can be closed.

The following divisions and groups reported 100 per cent participation: Lunar Orbiter, MORL, Research Reports Division, Office of Chief of Engineering and Technical Service, Plant Maintenance Division, Office of Assistant Director for Administration, Administrative Services Division, Personnel Division, Procurement Division, Resident Engineers, NASA Exchange Cafeterias, General Dynamics Ling-Temco-Vought, Inc., LTV Personnel on contracts NASI-3683 and NASI-3916, and other contract employees.

DR. MCFARLANE TO ADDRESS JOINT MEETING ON OCTOBER 15

Dr. William H. McFarlane, Director of the Virginia Associated Research Center (VARC), will be guest speaker at a joint meeting of the American Institute of Aeronautics and Astronautics and the Engineers' Club of the Virginia Peninsula on Thursday, October 15 at 8 p.m. at the Thomas Eaton School, 151 Marcella Drive, Hampton. Dr. McFarlane will speak on "New Dimensions in Graduate Training and Research."

The Virginia Associated Research Center at Newport News was created in 1962 and is expected to be in full operation by mid-1965 as a unique, cooperative venture in space-age science and technology. Jointly sponsored by the College of William and Mary, the University of Virginia, and Virginia Polytechnic Institute, the center will operate under contract with NASA through the Langley Research Center.

Prior to his recent appointment as Director of VARC, Dr. McFarlane was Director of the Virginia State Council of Higher Education. A native of Chicago, Illinois, he attended secondary schools in Virginia and received his B.A. and Ph.D. degrees from the University of Virginia. He serves on a number of academic and other advisory groups and is a member of Phi Beta Kappa and Omicron Delta Kappa honorary fraternities.

FOURTEEN LANGLEY APPRENTICES TO GRADUATE ON OCTOBER 16

Dr. Seymour L. Wolfbein

Fourteen apprentices will be presented certificates for completion of their apprenticeship at the Center's Twenty-Second Annual Apprentice Graduation exercises at 1:30 p.m. on Friday, October 16 at the Activities Building.

Dr. Seymour L. Wolfbein, Director of the Office of Manpower, Automation and Training, U.S. Department of Labor, will be guest speaker. He will be introduced by Robert J. Lacklen, NASA Director of Personnel, Washington, D.C.

Dr. Floyd L. Thompson, Director, will preside at the exercises. The invocation will be delivered by Rev. Chester L. Brown, pastor of the Hampton Baptist Church. N. Edward Hicks will speak for the graduating class.

Special music will be furnished by the Tactical Air Command Band under the direction of Captain Carl W. Costenbader. Chief Warrant Office Eugene A. Dieter is assistant director. The certificates of completion will be presented by S. Walter Hixon Jr., Supervisory Employee Development Officer.

A native of New York City, Dr. Wolfbein received his B.A. degree from Brooklyn College and his M.A. and Ph.D. degrees from Columbia University. He has been with the U.S. Department of Labor since 1942 and was appointed to his present position in July 1962. His major areas of work have been with employment and unemployment developments and occupational information for career guidance, as well as automation, training and retraining.

Dr. Wolfbein was recipient of the Columbia Alumni Award of Honor in 1954 and the Distinguished Service Award of the U.S. Department of Labor in 1955 and 1961.

The graduates and their trades are shown on Page 3 of this issue of Langley Researcher.

COSTUME BALL OCTOBER 31

The Activities Association will sponsor a Halloween Costume Ball on Saturday, October 31 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m. to the music of The Sportsmen.

Prizes will be awarded for the best costumes and no one will be admitted to the dance unless he is in costume.

Tickets will be three dollars per couple including set-ups. The place tickets may be purchased will be announced in the next issue of Langley Researcher.

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 2375.

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 birth of a daughter, Cara Denise, on October 2 is Carroll Rowland, Guidance Systems Research. . .Weighing in at eight pounds, two ounces on September 28 was W. Thomas Jr., new son of W. Thomas Bundick, Lunar Orbiter Project Office. . .Passing out cigars and candy is Robert Howell, Structures Research Division. He became the father of a son on September 24. . . Another proud father is Richard Lyeth, Electrical Systems Division. His new daughter arrived on September 24. Announcing the birth of a daughter on September 26 is John L. Shores Jr., Instrument Research Division. . .Still more babies. Announcing the arrival of a daughter on September 26 is James R. Kelly, Flight Mechanics and Technology Division.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on October 13 from 3 p.m. until 4. Beverly Beale, Government-wide Service Plan representative, will be here on October 21 from 2 p.m. until 3. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

CENTER ROMANCE. . .Dan Cupid scored a victory when Marna M. Harlow, Space Mechanics Division, announced her engagement to William H. Cordle Jr., Research Models and Facilities Division. The wedding will take place on November 14 at the First Lutheran Church, Norfolk.

RIFLE CLUB. . .All persons interested in small bore league rifle shooting or in a program for junior shooters are urged to attend a meeting of the NASA Rifle Club on October 16 at 7:30 p.m. in Building 1253. Further information may be obtained from M. E. Cook, J. A. Penland, or Harold Crate.

BEE KEEPERS. . .Employees interested in bees are invited to attend the Honey Bee School which started on October 13 at 7:30 p.m. at the Hilton Christian Church. A registration fee of $10 covers the cost of a textbook. For further information call Ray Womble, 826-1275.

FOR SALE: 10-room house with 14 acres of land. German, LY 5-0118.
WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Ed Hudgins, 4851.
FOR SALE: 3-bedroom brick rancher in Hallwood. LoGioco, 838-0638.

OVER FOR A TOUCHDOWN

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 12:

Monday - Tomato barley soup, beef stroganoff on egg noodles, roast pork with applesauce, fried chicken livers, macaroni and wieners.

Tuesday - Cream of potato soup, half-pound chopped steak, baked lasagna, shrimp gumbo, chili con carne.

Wednesday - Cream of tomato soup, half-pound T-bone steak, baked Smithfield ham, fried chicken, cheese omelette.

Thursday - Vegetable-beef soup, roast beef, chuckwagon steak with onion gravy, spaghetti with meat sauce, chili dog, hot dog.

Friday - Clam chowder, Spanish pot roast, broiled fillet of perch, fried fillet of flounder, baked hash.

The menu for the week of October 19 is as follows:

Monday - Chicken-noodle soup, roast veal with dressing, grilled ham slice, chicken chow mein, fish cakes.

Tuesday - Puree of bean soup, roast ribs of beef, grilled pork chops, knockwurst and beans, tamale pie.

Wednesday - Consomme julienne, sliced turkey and dressing, corned beef brisket, liver and onions, Austrian ravioli.

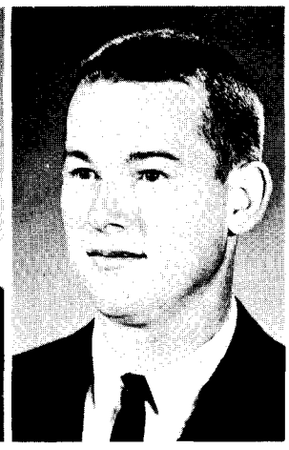
Thursday - Vegetable-beef soup, half-pound T-bone steak, fried shrimp with cocktail sauce, meat loaf, barbecued sandwich.

Friday - Clam chowder, Swiss steak, broiled halibut steak, fried fillet of flounder, Western omelette.

FOR RENT: Upstairs apartment in Sussex Apartments. Clark, PA 3-7102.
WANTED: Driving combination from Riverdale Plaza Apts. to W.A. on 7:30 shift. Mascitti, 4581.
FOR RENT: Room with twin beds for 1 or 2 gentlemen. Rollins, 868-5961.

FOURTEEN APPRENTICES GRADUATE OCTOBER 16

William H. Clarke
Washington, D.C.
Electrician
Gen. Elect. Service



I. Quinby Collier, Jr.
Newport News, Virginia
Electrician
Gen. Elect. Service

John A. Guy
Portsmouth, Virginia
Exper. Elec. Mech.
Qual. Assurance Sup.

Charles T. Hall
Wichita Falls, Texas
Exper. Elec. Mech.
Spacecraft Inst. Dev.

N. Edward Hicks
Granite Falls, N. C.
Exper. Elec. Mech.
Com. Research

Robert L. Reaser
Jersey Shore, Pa.
Exper. Machinist
Heavy Machine Shop

Thurman L. Robbins
Brunswick County, N. C.
Exper. Machinist
Heavy Machine Shop

Carroll W. Rowland
Waynesville, N. C.
Exper. Elec. Mech.
Guidance Sys. Res.

John H. Soule
Brooklyn, New York
Exper. Elec. Mech.
Gas Para. Meas.

James E. Spencer
Hampton, Virginia
Electrician
Gen. Elect. Service

Charles W. Stump
Dayton, Ohio
Exper. Elec. Mech.
Instruments Standards

William C. Tennis
Newport News, Va.
Exper. Metal Worker
Fabrication Shop

Leonard T. Twigg
Cumberland, Md.
Exper. Elec. Mech.
Inst. Physics Research

Victor E. Wilson
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

NASA TO EXPLORE MARS

NASA will launch two Mariner space vehicles in the fourth quarter of this year to begin the first step by the United States in the exploration of Mars with unmanned spacecraft.

This is the most complex mission to be attenpted to date in the U.S. unmanned space program.

Objectives for the two Mariners will be to explore interplanetary space between Earth and Mars and to validate new engineering techniques that will be used for the first time.

The decision to launch two spacecraft on the same mission was dictated by the difficult engineering task that the Mars mission represents and by the necessity of using untried engineering advancements to achieve any probability of success.

The two Mariners will be prepared simultaneously on separate launch pads because of the relatively short opportunity for a Mars launch. The second spacecraft will be launched as soon as is practical after the first. The period in which a spacecraft can be launched to Mars lasts only a few weeks and occurs only once every 25 months.

An Atlas-D/Agena-D combination will be used to launch the Mariners. Maximum performance demands have been placed on these vehicles for this mission.

Management and technical direction for the Mariner Project is assigned by NASA's Office of Space Science and Applications to the California Institute of Technology, Jet Propulsion Laboratory. This includes responsibility for the spacecraft, space flight operations, and deep space tracking and communications. The Atlas Agena-D launch vehicles are under direction of Lewis Research Center and will be launched by Goddard Space Flight Center's Launch Operations from Cape Kennedy.

Scientific equipment on the Mariners will report on radiation, magnetic fields, and micrometeorites in interplanetary space.

The Mariners are designed to return television pictures and other measurements of Mars when they pass the planet. An attempt will be made to gather information on Mars' atmosphere.

Future exploration of Mars will require landing a capsule on the surface to perform biological experiments. Designing such a capsule requires accurate information on the density of the Martian atmosphere. Present scientific estimates vary over a wide range.

Collecting data on the Martian atmosphere will be done by selecting a spacecraft trajectory that will cause the spacecraft to pass behind Mars and be hidden from Earth. Prior to the Mariner passing behind the planet, the tracking signal transmitted from the spacecraft will pass through the Martian atmosphere. The effects of the atmosphere on this radio signal will yield information on the varying density of the Martian atmosphere. One or both of the Mariners may perform this experiment.

It is expected that the proximity of Mars to the asteroid belt may produce a higher incidence of micrometeorites than was the case in the flight of Mariner II from Earth to Venus in 1962. Part of the exploratory nature of the first Mars mission will be to determine if micrometeorites constitute a serious hazard in flights to Mars.

The first Mars mission also will yield important data on space navigation over great distances and on the capability of powering a spacecraft by converting sunlight to electricity during a mission in which the Sun-spacecraft distance is steadily increasing. The Mars Mariners will be equipped with four solar panels as compared with two for Mariner II and the Ranger lunar impact spacecraft.

The Agena space booster is raised into the launch service tower on Pad 13 at Cape Kennedy. This Agena, being placed atop the Atlas already in the tower, will send the Mariner spacecraft to Mars. Two shots, the most complex to be attempted to date in the U.S. unmanned space program, will be made by NASA later this year.

Unprecedented distances in space are involved in this mission. At launch, the Mariners will be aimed along a 350-million-mile-long path between the orbits of Earth and Mars. At the time the spacecraft comes closest to Mars, the planet and Earth will be about 150 million miles apart.

The Mariner Mars spacecraft will weigh about 570 pounds. They will have a span of 22 feet with panels extended and a height of 9-1/2 feet. Flight times vary, relative to day of launch, from 7-1/2 months to 8-1/2 months with an additional three weeks of flight beyond the planet needed to return data.

This mission will use the following technical advancements for the first time:

1. High frequency radio communication. The communication distance of more than 150 million miles compares with 53.9 million miles achieved for the 1962 Mariner II Venus mission.

2. A midcourse guidance rocket engine that can be fired twice. Earlier spacecraft guidance engines have not had a re-start capability.

3. First use of the Agena-D second stage and first use of the Atlas-D with many improvements.

4. First use of the star Canopus for spacecraft attitude reference.

Duration of the mission requires that the Mariners survive in space for a minimum of nine months. The longest previous life-time requirement for a U.S. deep space probe was three and one half months for the Mariner II Venus mission.

KNOW YOUR CREDIT UNION

Here are a couple of items, according to officials of the Langley Federal Credit Union, which every credit union member should always keep in mind.

As a starter, let's give some consideration to those new cars for 1965. Ah, autumn! Leaves turning, wine-in-the-air, and tempting displays of the latest models on every hand. It's mighty easy to get new car fever. Even easier to sign-up -- insurance premiums and time payments, ownership papers and all the rest of it. But do yourself a favor and don't gallop through such an important matter.

Remember, a car is a big investment. Do some serious shopping before you take the plunge. Figure what you can afford and decide on what you want. Then look around. A big trade-in does not necessarily mean the best deal. Always look at the actual net cost to you and then go on to such considerations as the cost of insuring the loan and the penalties, if any, involved in an early pay-off. Take your time and you can have that new car along with a feeling of deep satisfaction, confident that you got it on the best of all possible terms.

Now let's start saving for the 1968 models or that vacation trip, or what have you. It's the habit that counts! Some folks think it's mighty hard to save a dollar. But a dollar can be saved, even if it's done by adding up pennies, nickels, and an occasional dime. The main thing about it is regularity. Put something in shares each pay day. Or, if you're paying on a loan, add a dollar or so and specify that it go to savings. Whatever may be the best method for you, start right away, and get the "saving habit." If you haven't tried it, you'll be surprised how little amounts - deposited regularly - add up. And once you have the "habit," the battle is well on the way to being won.

But whether you're buying a car or saving for one, keep your credit union in mind, Weigh its rates and services against those offered by other agencies and choose the plan that best serves your interests based on all the facts. Most members seem to feel that substantial dividends on the one hand and low interest rates on the other make a combination that is pretty hard to beat - particularly when backed by share-life insurance (up to $2000) and loan-life insurance (up to $10,000) at no extra cost.

148 EMPLOYEES DONATE BLOOD

The Bloodmobile visited the Center on September 23 and employees donated a total of 148 pints of blood.

Richard J. Moberg and Charles E. Edmiston completed their quota for five gallons and Joseph Siefring and Joseph Italiano reached the four-gallon mark.

Three-gallon pins were presented to Paul Fuhrmeister and Robert Mulac. Completing their quota for two gallons were Edward Bradshaw, Edward A. Howe, Roger Butler and Benjamin Caum. Harold V. Stanley received a one gallon pin.

Assisting during the visit were Dr. J. A. Cross and Dr. Michael G. Dewey.

The next and final visit for the calendar year will be on December 9. Persons interested in joining the Center's blood program may register by calling East Dispensary, telephone 2243.

FOR SALE: Ornamental gourds. Sinclair, 838-2562 after 5.

FOR SALE: 10-room and 2-bath house on 85 x 205-foot lot at 94 Hampton Roads Ave. Anglin, PA 3-4993.

TWO EMPLOYEES RETIRE

Howard F. Ogden

Howard F. Ogden, Head of Research Facilities Service Section E, Mechanical Service Division, is retiring today with a total of almost 23 years of Federal Service.

Ogden was born July 11, 1901 in Carterville, Illinois. He attended public school in Carterville and the Rhal Automotive School in Chicago, Illinois. He served in the U.S. Army from July 19, 1919 to June 20, 1922. He worked as an automobile mechanic in Illinois and California before joining the Center staff on October 9, 1944 as an Aeronautical Laboratory Technician at the 8-foot Tunnels Branch. In 1960 he was appointed Assistant Head of Wind Tunnel Service Section and was named to his present position April 1, 1963.

In 1962 Ogden received a cash award for an invention entitled "Static Pressure Probe" and today he will receive a Sustained Superior Performance award for "his demonstrated sustained superior dedication, leadership and technical contributions resulting in significant improvements of facilities and operations, together with maintenance of complex equipment and instrumentation."

William T. Kelly, Wood Modelmaker in the Model and Pliant Structures Shop Section, Mechanical Service Division, retired September 30 with over 24 years of Federal service.

He was born September 11, 1894 in Superior, Wisconsin. He graduated from Superior Central High School and attended Superior Vocational School where he studied patternmaking and mechanical drawing.

He entered on duty at the Navy Yard in Charleston, South Carolina on July 31, 1940 and transferred to the Langley Center on April 29, 1946 as a Patternmaker.

SYNCOM IN PRECISE ORBIT

Syncom III, the world's first stationary satellite, is in such a precise orbit that its rotational speed matches that of the Earth almost perfectly.

The Earth revolves at the rate of 1436.068 minutes each day, while Syncom revolves at 1436.158. This means Syncom is only five seconds off a perfect match with the Earth's rotational speed. The Earth does not rotate completely each 24 hours, but each 23 hours, 56 minutes, 4.09 seconds.

The spacecraft is "on-station" at 180 degrees. It's position over the Equator is relatively motionless at the 22,300 mile altitude. It drifts less than a mile and a half a day or 1/100th of a degree. At the same time its position over the Equator, inclined .095 degrees means it drifts north and south less than six miles a day.

Syncom III's apogee is 22,311 miles and the perigee is 22,164 miles.

WANTED: Ride from Ivy Farms and Brentwood area to W.A. on 8 shift. Decker, 3370.

WANTED: Driving combination from Portsmouth to W.A. on 7:30 shift. Wynn, 4766.

HOW GEMINI DOCKING WILL BE ACCOMPLISHED

What's up? Dock. That's the space version of the familiar gag line. To be more accurate it's the Gemini version.

Gemini is NASA's two-man space capsule upon which scientists are concentrating their greatest effort this year. The object: to learn just how much man can do in space and how well he can do it.

Gemini astronauts will have two jobs:

1. Orbital rendezvous-the difficult, never before attempted task of locating another rocket while in orbit, and then "docking" or hooking on to it.

2. A whole series of experiments to learn the physical and mental effects of weightlessness, limited movement, and restricted diet on men whizzing through space for as much as two weeks at a time.

The Gemini capsule is designed to stay in space for that long in order to serve as a research and training vehicle for lengthy flights in the future.

It looks much like the Mercury spacecraft, and is being built by McDonnell Aircraft, builders of the Mercury. Only one-fifth larger, at 5,000 to 6,000 pounds it will be more than twice as heavy. It will have half again as much room inside, but with the extra supplies and equipment that must be carried for long-duration rendezvous missions, the astronauts are sure to find that "two's a crowd" in Gemini.

The extra size and weight of the Gemini vehicle are made possible by the use of a more powerful booster rocket in the program - the Air Force Titan II.

Unmanned tests of the new capsule began last April 9 when Gemini-Titan I was launched at Cape Kennedy. The second test, GT-2, is coming up soon and the first manned orbits have been rescheduled for the first quarter of 1965.

A veteran space traveler--Virgil (Gus) Grissom--and a rookie astronaut--John W. Young--will fly the first mission. Grissom was America's second astronaut in space. Young is a former Navy test pilot.

The first Gemini rendezvous and docking mission is scheduled for the fifth flight, and it will work like this:

From a pad at Cape Kennedy, a "target" satellite--an Agena rocket--will be sent into orbit by an Atlas booster.

About 24 hours later, when the Agena's orbital path brings it back over the launch site, the Gemini astronauts will blast off aboard the Titan II to an orbit close to the target. The second launch must be made within a narrow time "window" of four hours if the two satellites are to come within range.

Radar systems in the Gemini will bring it to within 20 miles of the Agena target. Guided by a bright flashing light it carries, the astronauts will begin visual tracking. They will use small control jets in their craft to move close to the Agena.

Even though both satellites speed through space at more than 17,000 miles per hour, the relative difference in their speeds as they approach will be only one or two m.p.h.

When the two rockets are in line just a few feet apart, the Gemini pilots will fire their small-thrust jets again to make the contact, shoving the nose probe on their ship into a collar on the Agena. Instrumentation and control lines will connect automatically.

Once linked with the Agena, the astronauts will be able to fire its rocket engine and fly off on an exploratory mission as much as 10,000 miles from Earth. Or they can use it to move from one orbit to another around the Earth, to get in position to land at a particular spot.

Suited up for a mission simulation training session are prime pilots for NASA's first Project Gemini flight, astronauts Virgil Grissom (left) and John W. Young.

At the end of their long stay in space, the Gemini pilots will cast off from the Agena and fire retrorockets that act as space "brakers." As their spacecraft slows from orbital speed, it will drop toward the Earth and enter the atmosphere in a long, fiery arc, just like the Mercury capsules.

WATERMAN NAMED CONSULTANT

Dr. Alan T. Waterman of Washington, eminent physicist and former director of the National Science Foundation, was sworn in recently as a consultant to the NASA by James E. Webb, NASA Administrator.

A native of Cornwall-on-Hudson, New York, Dr. Waterman holds a bachelor, master and doctorate degrees from Princeton University and a number of honorary degrees from other colleges and universities. He served as deputy chief and chief scientist in the Navy Department's Office of Naval Research from 1931 to 1948.

Before joining the Navy Department, he taught at the University of Cincinnati and was associate professor of physics at Yale University. A World War I veteran, he is a widely known scientist and has been active in civilian as well as military research and development activities.

He is a former member of the President's Science Advisory Committee, the National Aeronautics and Space Council and the Federal Council for Science and Technology.

He is the recipient of a number of military and civilian scientific awards for distinguished service.

WANTED: Home for 18-month-old female dog. Druen, 826-1371.

WANTED: Ride from Milstead Rd., Maxwell Gardens, to E.A. on 8 a.m. to 5 p.m. shift. Blackmon, CH 5-6178.

STAFF COMMENDED FOR BOND EFFORT

In a recent letter received at the Center, James E. Webb, NASA Administrator, congratulated staff members for their part in the recent U.S. Savings Bond drive. The Center has 70.5 percent of its employees participating in the Payroll Savings Plan.

Webb stated, "A NASA Payroll Savings Honor Roll and Awards Program is being promulgated in which each organizational activity having employee participation of 50 per cent or more will receive recognition in the form of a citation or banner for appropriate display..."

Webb continued, "The payroll savings program provides a positive way to help ourselves and to be active partners with our Government in maintaining National strength and in contributing to financial stability. These benefits warrant serious thought on the part of each NASA employee in considering the National and personal values received from participating in the Payroll Savings Plan."

IEEE MEETS OCTOBER 20

The Hampton Roads Section of the Institute of Electrical and Electronic Engineers will meet on October 20 at the Norfolk Yacht and Country Club. The meeting will be a joint meeting with the Hampton Roads Engineers Club.

Thomas A. Saunders III, Washington Representative of the Space and Defense Sciences Department of the Research Division of the Allis-Chalmers Manufacturing Company, will be guest speaker. His subject will be "Fuel Cells."

Saunders received his B.S. degree in Electrical Engineering from the Virginia Military Institute in 1958 and joined Allis-Chalmers in 1961. He spent three years working with the electrical industry and recently joined the marketing effort of the Research Division.

The exact time of the meeting will appear in meeting notices which will be mailed to members.

For reservations call Frank Senft, 3461, or Cary Spitzer, 3446.

LECTURE SERIES PLANNED

A lectures series on Probability Theory and Random Processes is scheduled to be presented by Dr. C. V. Aucoin, Head of the Mathematics Department at Clemson University, during the weeks of October 19-23 and November 2-6.

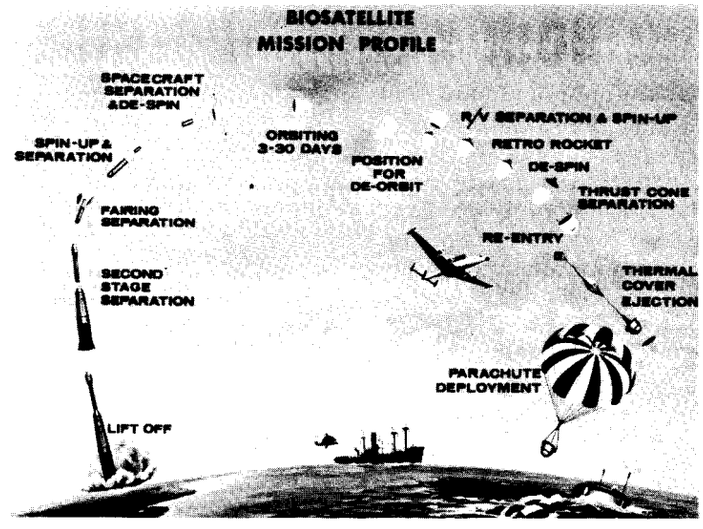
The course will start with elementary considerations of probability theory and random scalars and proceed to consideration of random vectors, random processes and the Central Limit Theorem. The lectures will be given each afternoon from 1:15 to 4:15 in Room 111, Building 586.

Staff members interested in attending the lecture series should contact the Training Office, telephone 2326.

NASA TOUCH FOOTBALL LEAGUE

After four weeks of play in the NASA Touch Football League, five teams are tied for first place with 3 wins and 1 loss each. Scores for the last two weeks of play were as follows: Bombers 11 - KNADS 0, Boozers 25 - Frosties 0, Packers 32 - Dedskins 20, IRD 26 - Heavy Boys 20, KNADS 12 - IRD 6, Boozers 37 - Heavy Boys 7, Dedskins 26 - Frosties 18, Bombers 34 - Packers 26.

Games are played at 9:30 a.m. on Saturdays at Kecoughtan High School. Games scheduled tomorrow are: KNADS vs. Dedskins, Boozers vs. Packers, Frosties vs. IRD, and Bombers vs. Heavy Boys.



A critical experiment helping the NASA prepare for its second-generation manned orbital flights is the Biosatellite program. Actually a recovery capsule, the Biosatellite will be launched into orbit in this fashion for a period of three to 30 days, carrying frogs, sea urchins, bread mold and other material which will help determine and define for astronauts the hazards of prolonged space flight.

BIOSATELLITE MISSIONS PLANNED

Sometime in late 1965 or early 1966 a drifting package of frog and sea urchin eggs, bread mold, pepper plants, amoeba and other tiny associates will be snatched from midair over the ocean.

The package - a recovery capsule - will be snared with its parachute and hauled aboard an aircraft to end the first orbiting of a Biosatellite by NASA.

With their days of high living ended, the biological specimen will have made space history by contributing important information on the hazards to astronauts of prolonged flight.

The Biosatellite program, managed by Ames Research Center, is a second-generation series of critical experiments. Earlier biological studies made in orbiting spacecraft helped NASA prepare for the nation's initial manned space flights.

As manned activities in space extend to longer missions, more information on the biological effects of the space environment is needed.

Biologists from industry, universities and government submitted to NASA 175 experiments that could be tested. Fourteen experiments will be aboard the first Biosatellite.

Among the first-trip passengers will be wheat seedlings, embryonic beetles, fruit flies, male wasps, flowering plant, and bacteria in which latent viruses reproduce themselves.

The 1,200-pound Biosatellite will investigate problems of radiation and weightlessness, the interaction of both, and biological rhythms - cycles of activity and growth common to living organisms.

FOUND: Silver chain bracelet with disk with HST - found in Building 1221. Gauvin, 4406.

WANTED: Ride from Armistead Ave. and Victoria Blvd. to E.A. on 7:30 shift. Illey, 2377.

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

UNITED FUND CAMPAIGN

Division	Percentage	Total
Office of Res. Direction	97.3	$2496.00
Project FIRE	95.7	755.00
Lunar Orbiter	100	847.00
MORL	100	205.00
Scout	59.3	642.00
Aero-Physics	88.4	3325.00
Analysis and Computation	88.8	2431.00
AMPD	89.8	3933.25
Dynamic Loads	93.6	4176.00
FMTD	91.4	2595.00
Full-Scale Research	97.0	4111.00
Instrument Research	82.7	6113.50
Research Reports	100	993.50
Space Mechanics	95.6	2293.00
Structures Research	92.3	3407.96
Off. Chief, Eng. and Tech. Serv.	100	1005.00
Electrical Systems	92.0	2417.10
FVSD	95.7	2611.00
Mechanical Service	96.5	7164.57
Plant Maintenance	100	1363.50
RMFD	95.5	2599.00
Off., Asst. Dir. for Admin.	100	534.00
Administrative Services	100	999.50
Fiscal	98.2	1567.00
Personnel	100	830.50
Photographic	97.6	706.00
Procurement	100	1510.50
Resident Engineers	100	20.00
Langley Center Total	93.3	$61,651.88
NASA Exchange Cafeterias	100	216.00
General Dynamics and Ling-Temco-Vought, Inc.	100	90.00
Employees-Central Electric Co.	100	100.00
Local Company Representatives: John Allen and Harold L. Neely of North American Aviation; Stuart Brown and D. R. Chambers, Consolidated Electrodynamics Corp.; Lee Collegeman and Robert Eisenhard, Boeing Co.; Ellis Davis, Garrett Corp.; Joel Emanuel and Paul Kennard, Hughes Aircraft; Ben Favre, McDonnell Aircraft; Carl Hanson, Douglas Aircraft; Shirley Hawk and Robert Wright, General Dynamics; E. M. Russell and Judy Van Landingham, LTV Astro; R. T. Smith, Lockheed Aircraft, and Louis Kanegis, Martin-Gracey Corp.	100	292.00
LTV Personnel at LRC on contracts NASI-3683 and NASI-3915	100	617.00
GRAND TOTAL		$62,966.88

FOR SALE: 30-inch Tappan gas stove - $75. Tuck, 851-1882 after 5 p.m.

FOR SALE: New G.E. vacuum cleaner - $30. Milton, PA-36348.

FOR RENT: 5-room house at 107 S. Curry St., Phoebus. Lowe, PA 2-0179.

NASA BOWLING LEAGUES

Mexicali Restaurant leads League A in the Tenpin League with 13 wins and 3 losses. Top scores for the week were rolled by Max Williams with a 224 game and Henry Lee with a 592 set.

LEAGUE A

Mexicali	13	3	Hornets	8	8
Devious	11	5	Alley Cats	8	8
Short Circuits	10	6	Electronic Shop	6	10
Phantoms	9	7	Raiders	5	11
Unitary	9	7	Payloads	5	11
Flyers	9	7	Frame Ups	3	13

Spare Parts lead in League C with 12 wins and 4 losses. High scorers were Jane Oehman with a 232 game, Joanne Owens with a 604 set and Joe Poslik with a 237 game and 647 set.

LEAGUE C

Spare Parts	12	4	Strike Outs	9	7
Barristers	11	5	METS	6	10
Question Marks	11	5	Dopesticks	6	10
Dillys	11	5	Gliders	5	11
Alley Oops	10	6	Bowling Belles	4	10
Analogs	10	6	Lunar Tics	4	10
ACD	10	6	Greenhorns	3	13

Light Machine No. 1 leads in the NASA Duckpin League with 12 wins and 4 losses. Top scores for the week were rolled by Mary Edwards with a 115 game and 304 set and Jim McCann with a 142 game and 363 set.

Light Mach. 1	12	4	Rebel Bombers	6	10
Tigers	11	5	Light Mach. 2	6	10
Strike Outs	9	7	Ten Spots	4	12

CAFETERIA NOTICE

An official conference, sponsored by the American Institute of Aeronautics and Astronautics, will be held in the Activities Building on Wednesday, October 14 from 9 a.m. until 1 p.m. A large number of persons attending the conference are expected to use the West Cafeteria starting at 1 p.m.

West Area employees are urged to arrange their lunch periods so as not to interfere with the time allotted for the visitors.

WANTED: Girl to share house in Hallwood, Helen Mulcahy, 851-3686.

FOR SALE: 9 x 20-foot cotton rug with foam pad - avocado green. Olstad, 595-0206.

WANTED: Two alternate drivers from Newmarket to W.A. on 8 shift. Hobson, 3303.

WANTED: Ride or driving combination from Chesapeake and LaSalle Avenues to W.A. on 7:30 shift. Rollins, 3207.

WANTED: Ride from Marlbank to W.A. on 8 shift. Crockett, 898-6155.

FOR SALE: 1/2 acre wooded lot in Edgehill, York County. Fecondo, 898-5027.

FOR SALE: Kenmore automatic washing machine, 10 years old - $30. Voros, 877-3050.

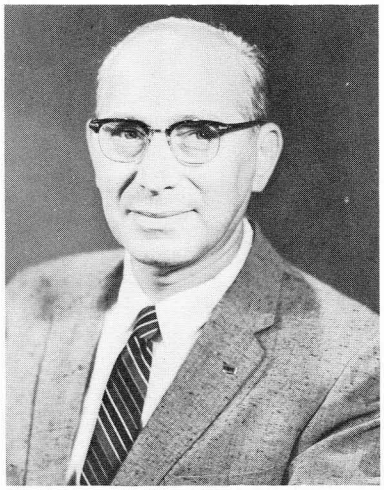
NOTICE: Will anyone who saw a person take a Craftsman's tool box from an NASA truck parked near Building 1194 please call H. R. Snyder, 4626.

WANTED: Driving combination from Stuart Gardens-Christopher Shores area to W.A. on 8 shift. Hamilton, 4877.

Langley Researcher

VOLUME 3, NUMBER 22 LANGLEY RESEARCH CENTER OCTOBER 23, 1964

I. E. GARRICK PRESENTED NASA EXCEPTIONAL SERVICE AWARD



I. Edward Garrick

I. Edward Garrick, chief of the Dynamic Loads Division, has been given the NASA's Exceptional Service Award "for sustained outstanding contributions" to the aeronautical and the space sciences during his 34 years of service in the field of research.

The citation, signed by NASA Administrator James E. Webb, recognizes Garrick's "exceptional ability to provide an academic environment and scholarly leadership" which have resulted in noteworthy contributions in many fields of aerospace technology.

An internationally know authority in the fields of flutter and dynamics, Garrick has headed the Dynamic Loads Division for the past 15 years-- directing research in a variety of dynamics problems as they apply to atmospheric and space flight.

Garrick serves as a consultant to government and industry for developing research programs and applying research results in his specialty areas. He has lectured extensively before U.S. and foreign technical organizations, including the advisory group for aeronautical research and development of the North Atlantic Treaty Organization.

He is the author of more than 50 NASA technical publications on research he has conducted at Langley. In addition, he has contributed to the Handbook of Engineering Mechanics and the Encyclopedia of Science and Technology and has written articles for various technical periodicals.

Garrick was selected as the second person to hold the Jerome Clarke Hunsaker Professorship of Aeronautical Engineering at the Massachusetts Institute of Technology, serving during the 1956-57 school year. During this period he presented the 1957 Minto Martin Aeronautical Lecture on "Some Concepts and Problem Areas in Aircraft Flutter." He taught for several years at the local engineering extension center of the University of Virginia and serves as a member of the Langley Research Center graduate study program.

He is a fellow of the American Institute of Aeronautics and Astronautics, the American Physical Society, and the Research Society of America.

Garrick was born in Chicago on March 3, 1910. He received his B.S. degree in Mathematics and Physics in 1930 from the University of Chicago. He attended the University of Chicago graduate school for a year before joining the Langley staff as a Physicist in 1930.

CENTER WINS PUF AWARD FOR OUTSTANDING RECORD

As of press time on Wednesday, Center employees and contract employees assigned to the Langley Center had contributed or pledged a record total of $63,859.88 to the United Fund effort. This represented 106.4 percent of the $60,000 goal. Center participation now stands at 94.3 percent for an average contribution of $15.66.

In recognition of the Center's effort, Roger Lucy, Peninsula Chairman for the United Fund Drive, presented the PUF "Eyeball to Eyeball" award to Edwin C. Kilgore, Chairman of the Center's campaign. The award was presented at the PUF first report meeting where the Langley contribution not only exceeded their $60,000 goal but was by far the largest single contribution reported. Lucy pointed this out to other Peninsula groups as an outstanding example of community service and spirit which is always typical of the personnel at Langley.

Kilgore expressed his appreciation to all Center employees for their generous gifts of money, time, and effort in making this award possible. He stated, "The Center staff can take pride in the area-wide recognition of their continuing spirit of community service."

Kilgore urged division chairmen to send in their final reports to the financial chairmen as soon as possible so the drive can be closed.

Roger Lucy, Peninsula Chairman for the United Fund Drive, presented the PUF "Eyeball to Eyeball" award to Edwin C. Kilgore, Chairman of the Langley Center's United Fund drive, on behalf of the Langley staff. The award was presented at the PUF first report meeting where the Langley contribution not only exceeded the $60,000 goal but was by far the largest single contribution reported. Holding the award is Gloria McDaniel, Kilgore's secretary as United Fund Chairman and as Chief of Flight Vehicles and Systems Division.

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, Room 217, Building 587, telephone 2375.

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 birth of a daughter on October 4 is Guy Mullis, Analysis and Computation Division. . .Ruben L. Jones, Space Mechanics, became the father of a son on October 7. . .Celebrating the birth of a son on October 6 is James Bradford, Applied Materials and Physics. . .Passing out cigars and candy is James A. Holland, Instrument Research. He became the father of a son on October 4. . .Announcing the birth of a son on October 6 is Earl Vanlandingham, Applied Materials and Physics Division.

FLYING CLUB. . .Persons interested in organizing a flying club are requested to attend a meeting at the Activities Building on October 27 at 7:30 p.m. Persons unable to attend may call Amole, 838-0912, or Bumgardner, PA 2-0801.

BOATING COURSE. . .A free eight-lesson course in safe boat handling will be given by the United States Coast Guard Auxiliary Flotilla 61 at 523 Bridge Street, Hampton. The lessons will be given each Monday night at 7:30. Students will be accepted through October 26. The course if for old boatmen as well as new boat owners and non-owners. A certificate will be awarded upon satisfactory completion of the course. There is no age limit.

ROSE WINNER. . .Basil P. Brinkley, Research Facilities Section entered the Garden Clubs of Virginia rose show on October 7 and won 14 ribbons. On October 10 he entered the Tidewater Rose Society's show and won 39 ribbons including the grand sweepstakes silver trophy, a silver trophy for the best collection of grandifloras, and a special award certificate. He also exhibited the best floribunda which won a place in the queen's court.

NASA ISSUES LIST OF PUBLICATIONS

NASA has issued a supplemental list of its Technology Utilization publications dated August 1964 designed to acquaint the public with useful innovations from space research.

The list catalogs 63 Tech Briefs plus a variety of more detailed technology reports, surveys and handbooks published by NASA's Technology Utilization Division.

The list is free and may be obtained from NASA Headquarters, Code ATU, Washington, D.C. 25043.

FOR SALE: Boat trailer suitable for commercial use - compact and easily holds 26-30-foot cabin cruiser - has electric brakes and truck tires. Smith, 851-0973.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 26:

Monday - Chicken-rice soup, roast beef, chicken and dumplings, grilled pork steak with apple sauce, baked hash.

Tuesday - Tomato-barley soup, beef stroganoff on egg noodles, fried scallops, grilled liver and onions, chili con carne.

Wednesday - Puree of bean soup, Spanish pot roast, breaded veal cutlet, Polish sausage with corn fritters, grilled cheese sandwich.

Thursday - Vegetable-beef soup, grilled steak, shrimp Newburg, fried chicken, beef ravioli.

Friday - Clam chowder, roast ribs of beef, broiled fillet of perch, fried flounder, hamburger.

The menu for the week of November 2 is as follows:

Monday - Cream of tomato soup, country style chopped steak and gravy, boiled ham, chicken shortcake Gemini, tamale pie.

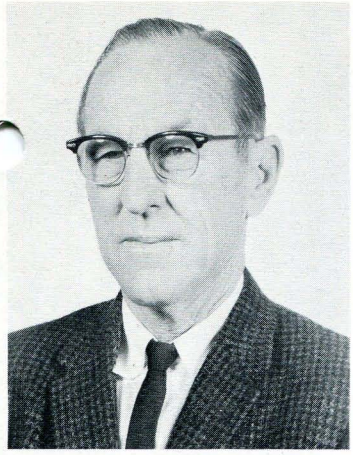
Tuesday - Split green pea soup, sliced turkey with dressing, barbecued pork chunks over rice, Salisbury steak, fish cakes and cole slaw.

Wednesday - Chicken-noodle soup, roast beef, grilled pork chops, fried chicken, macaroni and wieners.

Thursday - Vegetable-beef soup, grilled steak, fried clams, spaghetti with meat sauce, Austrian ravioli.

Friday - Clam chowder, Swiss steak, fried shrimp with cocktail sauce, broiled halibut steak, hamburger.

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



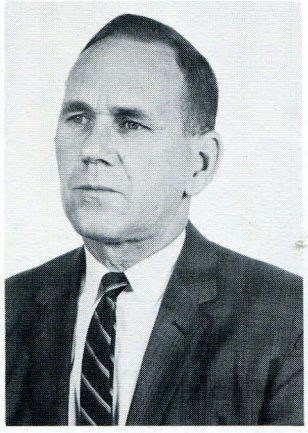
Charles C. Decker

Joseph A. Stora

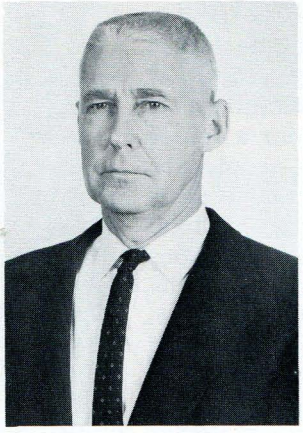
Warren W. Thomas

David R. Woodward

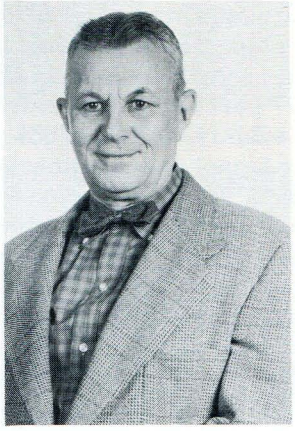
Buford R. Hunt



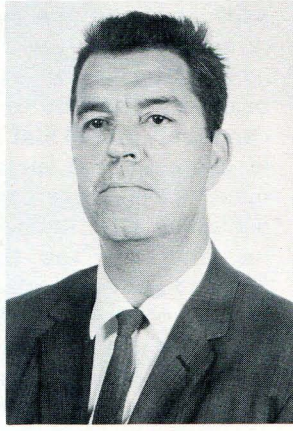
Everette W. Jones



Lester A. Kurtz



Bernard Mattare



Charles Moore III

SERVICE PINS PRESENTED AT ANNUAL CEREMONIES

At the Center's Annual Awards Ceremony held Thursday, one person received a 40-year service emblem, nine were presented 30-year pins and 252 were awarded 20-year service emblems.

Dr. Floyd L. Thompson, Director, presented a 40-year pin to Charles C. Decker, Experimental Facilities Mechanic Foreman, Mechanical Service Division. Decker is a native of Hampton and all of his 40 years of Federal service were with NACA and NASA.

Charles J. Donlan, Associate Director, presented 30-year pins to the following: Joseph A. Stora, Research Models and Facilities Division; Warren W. Thomas, Instrument Research; David R. Woodward, Full-Scale Research; Buford R. Hunt, Mechanical Service; Everette W. Jones, Procurement; Lester A. Kurtz, Fiscal; Bernard Mattare, Mechanical Service, and Charles Moore III, Mechanical Service.

Stora is a native of Ford City, Pennsylvania. His Federal service included a tour of duty in the U.S. Army from 1928 to 1934 and NASA service since July 29, 1940.

Thomas was born in Portsmouth and received his B.S. degree in Electrical Engineering from Virginia Polytechnic Institute. He worked in the Norfolk Naval Shipyard until his transfer to NASA on July 19, 1954.

Woodward hails from Altoona, Pennsylvania. He served in the U.S. Army from 1934 to 1936 and joined the Center staff on December 17, 1936.

Hunt was born in East Benn, North Carolina. He served in the Army from 1934 to 1945, in the Air Force from 1946 to 1955 and entered on duty at the Center on March 1, 1955.

Jones is a native Hamptonian and attended Hampton High School. He worked for the Government Printing Office in Washington, D.C. from 1934 to 1939 and joined the Center staff on August 1, 1939.

Kurtz was born in Montgomery, Pennsylvania. He served in the Army from 1931 to 1956 and worked for the Departments of Air Force and Army from 1956 until he joined the Center staff on May 31, 1960.

Mattare hails from Baltimore, Maryland and joined the NASA on June 11, 1945. His previous Government service was with Aberdeen Proving Ground in Maryland and the Naval Air Station in Norfolk.

Moore was born in Collingdale, Pennsylvania. He served in the U.S. Army from 1943 to 1944 and worked in the Philadelphia Navy Yard from 1934 to 1943. He entered on duty at the Center on November 3, 1944.

EADES TO VISIT CENTER

Dr. James B. Eades Jr., Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Langley Research Center on Thursday, October 29.

Employees wishing to discuss the graduate program with Dr. Eades should call the Training Office, telephone 2326, for an appointment.

FOR SALE: 1956 Mercury, 4-door station wagon - V-8 - $250. Tosti, TR 7-0959.

KNOW YOUR CREDIT UNION

INSTALLMENT BUYING: Today we live in a world of credit. Installment buying has become the major method of making almost all purchases including food. The average family has obligated about 13 percent of its after-tax income for installment payments. Since about half of all families have no such debts, those who do owe much more than the 13 percent - sometimes 25 percent of more. With this volume, it behooves the individual to closely examine interest rates and "carrying" charges. The difference between 1 percent and 1-1/2 percent on the unpaid balance each month is $3.22 per year on $100. Not much, but the sum of such driblets can be an unrecognized answer to the question, "Where does the money go?"

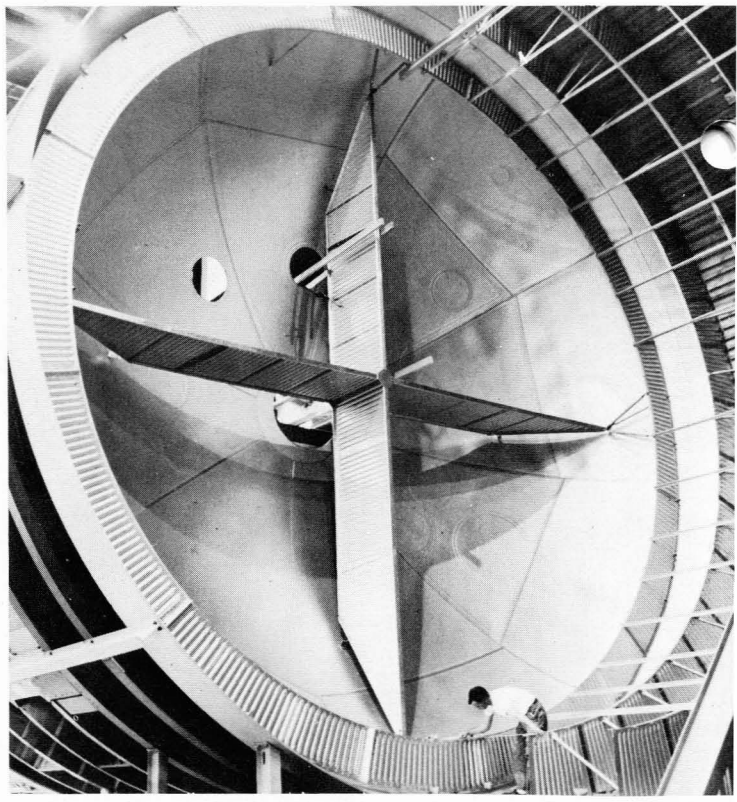
TROUBLE AHEAD? This year's new across-the-board withholding rate for income tax purposes of 14 percent is supposed to yield a rough approximation of the tax liability of most people. But because the final figure is determined by a progressive rate schedule, rising this year in 27 brackets from 16 to 77 percent, a single withholding rate can rarely hit the mark exactly. Officials now fear a deluge of protests next spring from "under-withheld" people who must fork up more cash. A member can save himself from possible grief in one of two ways. One, calculate his total tax for 1964 and then adjust the number of exemptions claimed (for payroll purposes) to compensate for the difference between his "tax" figure and his "withheld" figure. The other is to set up a Credit Union "tax paying program" by saving each pay day (with adjustment for those now passed) the difference between the old minimum withholding rate of 18 percent and the present 14 percent. Either method should assure adequate funds to meet any additional tax liability.

MORE ON INSTALLMENT BUYING: Credit, like fire, can help or hurt. The use a person makes of either determines the end result. Unfortunately, it is not easy to use credit properly. A large part of the difficulty is the increasing employment of installment credit to encourage unwise buying. Remember that the Credit Union is not a seller of "debt" when it publicizes its services and interest rates. Actually, such publicity is an attempt to educate the membership and assure that they are aware of what the Credit Union has to offer. Merchandisers create debt, but lenders of money do not, unless they urge people to spend. This the Credit Union does not do. Through its Education Committee and articles it urges its members to resist "implusive" buying, to plan their expenditures, and to manage their financial resources wisely and well. But when a decision to buy has been made, it urges just as strongly that its members determine exactly how much the use of credit will cost them and compare that cost with Credit Union figures. Usually, Credit Union figures are lower and with the insurance feature represent a much better deal. And that is what the Credit Union is interested in for its members - the best deal possible.

FOR SALE: Gibson electric guitar and amplifier. Shores, 868-9225.

FOR SALE: 3-bedroom brick rancher with carport in Lynnhaven. Hudgins, 826-2155 after 5 p.m.

FOR SALE: Electric stove with deep well and oven rotisserie; G.E. console TV in cherry cabinet; twin bed with corduroy cover. Ransdell, 723-8240.



A cross-shaped baffle, as it will appear in the first stage of NASA's Saturn V space vehicle, looms over the head o an employee at the NASA Michoud Operations in New Orleans. The baffle fits into the bottom of the liquid oxyge and fuel tanks to prevent liquid from swirling as it pou into the outlets of the engines. The installation is part a full-scale engineering mockup of the 7.5 million-pounc thrust booster. Ten of the giant stages will be built a Michoud by the Boeing Company.

VOTING REGULATIONS CITE

It is NASA policy to excuse employees for a reasonabl time, when practical to do so without seriously interferin with operations, for purpose of voting or registering i any election or referendums on a civic matter in thei community. Generally, an employee may be excused fror duty so as to permit him to report for work 3 hours afte the polls open or to leave work 3 hours before the poll close, whichever results in the lesser amount of time of Under unusual circumstances, an employee may be excuse up to a full day.

Employees who may be on official travel on Novembe 3 (for example, those traveling to Wallops Station) an who desire to vote should make immediate application t their respective registrars for absentee ballots.

Application for absentee ballot may be completed at th Registrar's Office, Court House, Hampton for Hampto residents, or the Registrar's Office, City Hall, 118 Mai Street, Newport News for Newport News residents. Ab sentee ballots must be obtained from and returned to th Registrar's Office not later than November 2. Latest dat for filing application for absentee ballot is October 2 however, depending upon where the voter will be, time sh be allowed for mailing ballot to voter and getting it bac to the Registrar by November 2.

No excused absence will be granted for the purpose voting by absentee ballot inasmuch as this can be ac complished by mail.

HIGHLIGHTS OF ACTIVITIES ASSOCIATION'S TWIST PARTY

THE BAND PLAYED

THE YOUNG FOLKS TWISTED

SOME ENJOYED WATCHING

BUT EVERYONE HAD A GOOD TIME

RADIO CONTROL CLUB NAMES OFFICERS

At its October meeting, the South-Eastern Virginia Radio-Control Group elected the following officers for the coming year: President, Earl G. Popp, IRD, Vice-President, W. Hewitt Phillips, Chief of Space Mechanics Division; Treasurer, Jack G. Barbour, Mechanical Service Division; Secretary, Martin E. Leiss, and Corresponding Secretary, Lt. Colonel E. Gene Sprague, USAF.

Club meetings are held on the first Tuesday of each month at 8 p.m. in the Activities Building. 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. Persons interested in radio control model flying are invited to join these activities.

CREDIT UNION NOTICE

As a part of an audit of the Langley Federal Credit Union as of September 30, the Supervisory Committee has mailed statements of account to all members. Members who did not receive statements are requested to notify the Supervisory Committee, P.O. Box 607, Langley Air Force Base, Virginia, or call Arthur W. Carter, NASA extension 4479; Joseph B. Struhar, 4702, or Emanuel Boxer, 4581. Members are requested to check their records and report any errors to one of the above listed names.

In addition to the statements of account, positive verification cards were inserted in the letters to selected groups. Members who received addressed cards with their statements, are asked to furnish the requested information and mail the card as early as possible. No postage stamp is required.

WANTED: Ride from Pine Grove area to W.A. on 8 shift. Karen Rackley, 3325 or 723-2234.

WANTED: Ride to New York City during Thanksgiving. Carole Carey, 723-2234.

WANTED: Ride or driving combination from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.

WANTED: Driving combination from Woodmere to W.A. on 8 shift. Lauer, 3435.

FOR SALE: Girl's 28-inch bicycle and golf cart and bag. Gibson, 826-2678.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 OFFICIAL DEPARTMENT MEETING	3 BRIDGE CLUB 7:45 p.m.	4 VOLLEY BALL 5 p.m.	5 PAYDAY GAME NIGHT $400 JACKPOT 8 p.m.	6 DINNER PARTY LANDING AND IMPACT BRANCH	7 TURKEY SHOOT Football Games at Kecoughtan High School
8 BRIDGE CLUB DINNER PARTY	9 VOLLEY BALL 5 p.m.	10 BRIDGE CLUB 7:45 p.m.	11 HOLIDAY VETERAN'S DAY	12	13	14 DINNER PARTY LUNAR ORBITER PROJECT OFFICE Football Games at Kecoughtan High
15	16 VOLLEY BALL 5 p.m.	17 BRIDGE CLUB 7:45 p.m.	18 VOLLEYBALL 5 p.m.	19 PAYDAY GAME NIGHT $400 JACKPOT 8 p.m.	20 DINNER PARTY EQUIPMENT MAINTENANCE	21 FOOTBALL Kecoughtan High
22	23 AMERICAN SOCIETY FOR METALS MEETING	24 BRIDGE CLUB 7:45 p.m.	25 VOLLEY BALL 5 p.m.	26 HOLIDAY THANKSGIVING	27	28 FOOTBALL Kecoughtan High
29	30		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		

1964 NOVEMBER 1964

Shown above are the events scheduled to take place in the Activities Building throughout the month of November. The football games are played on Saturday at 9:30 a.m. at Kecoughtan High School.

DEVICE FOR RECOVERING SPACE PAYLOADS INVENTED AT LANGLEY

A foam generator developed at the Langley Research Center for possible use in the recovery at sea of instrument payloads returned from space has been patented.

Inventors of the device include Frank M. Ballentine Jr., Flight Vehicles and Systems Division, and the late George F. Look, former chemist in the Applied Materials and Physics Division.

The generator, designed to be attached to rocket-launched instrument packages which scientists plan to recover, mixes chemicals to produce almost instant plastic foam as it parachutes to a water landing-- filling a bag to provide a buoyant inflation medium that permits the payload to float on the surface awaiting recovery.

The plastic foam mixing operation is initiated in flight by a pyrotechnic device which breaks a wall between a resin and a catalyst in the generator.

In conventional payload recovery systems, where a chemically-produced gas is usually employed to inflate plastic flotation bags, there is a danger of losing gas through bag puncture-- with a subsequent loss of the instrument package. The plastic foam flotation technique is immune to bag-puncture hazards.

In its development stage, the foam generator was launched from the NASA Wallops Station by a Cajun rocket and recovered in a successful test of the system; it was operated successfully in several practice parachute drops from a helicopter into a river near the Langley Center; and it has been effectively operated in a vacuum chamber.

SCIENTISTS STUDY PARACHUTES IN FLIGHT TESTS IN NEW MEXICO

Six engineers and technicians have returned to the Center after completing a series of six high-altitude parachute tests at the White Sands Missile Range in New Mexico.

Purpose of the research by the NASA science team was to develop and evaluate parachutes suitable for lowering lightweight meteorological instruments through the atmosphere from altitudes of about 200,000 feet.

The test parachutes, ranging in size from 15 to 23 feet in diameter, were individually packed into rocket nose cones, launched, and deployed at altitudes of about 40 miles. On-board instruments and cameras recorded deployment of the parachutes. In addition, scientific information was obtained through use of ground-based radar and long-range cameras. The on-board instruments and cameras and the six parachutes were successfully recovered.

The information obtained during the flights is currently being analyzed by Langley scientists.

In the test crew were engineers Harold N. Murrow, Dynamic Loads Division; John C. McFall Jr., Applied Materials and Physics Division; Henry Elksnin, Flight Vehicles and Systems Division, and L. J. Davidson, Instrument Research Division; and technicians Billie Short and W. E. Hunt, both of Instrument Research Division.

FOR SALE: 3-bedroom brick and frame rancher with 1-1/2 baths and built-in kitchen. Low equity. 826-0890.

FOR SALE: Baldwin studio upright piano - $250. Evans, 877-3331.

TURKEY SHOOT NOVEMBER 7

The Activities Association's Annual Thanksgiving Turkey Shoot will be held on Saturday, November 7, at the Activities Building.

Matches will start at 9 a.m. and continue until 5:30 p.m. The winner of each match will receive a turkey. No admission will be charged other than 50 cents for each shot.

Firearms will be furnished by the Activities Association or contestants may use their own. The Association will supply 12, 16, and 20-gauge shotgun shells for the shoot. The maximum charge of powder and minimum size of shot should not exceed 3-3/4 drams for powder and number 8 for shot.

The shoot will be supervised by M. E. Cook, NASA Rifle Club, and any ammunition brought to the match must be turned over to the person in charge of ammunition.

In the interest of safety, all contestants are requested to keep the actions of their firearms opened while on the grounds of the Activities area except when on the firing line.

Lunch may be purchased at the bar in the Activities Building.

A number of volunteer workers are needed to assist at the shoot. Persons interested are requested to call M. E. Cook, 4772, or Ray Goodman, 3231.

COSTUME BALL OCTOBER 31

Center socialites are invited to attend a Halloween Costume Ball, sponsored by the Activities Association, on Saturday, October 31 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m. to the music of The Sportsmen.

Prizes will be awarded for the best costumes and no one will be admitted unless he has on a costume. Apple bobbing will also be included in the entertainment.

Tickets will be three dollars per couple including set-ups and they may be purchased from the following persons: Dick Kurtz, Building 586, telephone 2365; Pat Warren, Building 584, telephone 2228; Joe Davenport, Building 1225, phone 4671; George Palko, Building 1232, phone 4489; Betty Tholl, Building 1195, phone 4711, and Herbert Boulter, Building 1230, phone 3446.

Groups of five or more couples may make reservations by calling Bruce Amole, 4583.

HORACE F. PABST RETIRES

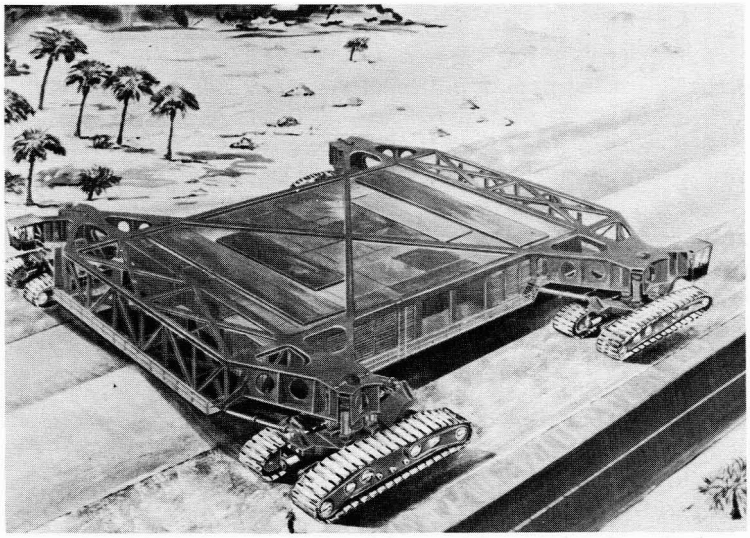
Horace F. Pabst, Mechanical Construction Inspector in the Research Models and Facilities Division, retired from the Center on October 5 after completing over 20 years of Federal service.

Pabst was born January 14, 1918 in Kenosha, Wisconsin. He attended Fairfax High School, Hollywood, California, and served in the U.S. Army from April 4, 1942 to September 12, 1945. He joined the Center staff on September 12, 1947 as an apprentice machinist and graduated from the Apprentice School as a Metal Modelmaker in February 1953.

FOR SALE: Wooded lot in Maxwell Lane area. Darnell, 596-8133.

FOR SALE: 1956 Chevrolet Dragster with 1964-409 engine. Bowen, 851-1418.

LOST: Volume 3 "Ninth International Congress of Applied Mechanics 1956." Return to Library or Matthews, Mail Stop 359.



The world's largest land vehicle is nearing completion at Merritt Island near Cape Kennedy. It is the first of two giant crawler-transporters which will be used to carry Apollo-Saturn V rockets and their mobile launch pads from the Vertical Assembly Building to the launch area, about 17,000 feet away. Basic assembly of the first crawler is approximately 85 percent completed. When finished, the vehicle will weigh about 5.5. million pounds. It will be 131 feet long, 114 feet wide and 20 feet high. Powered by a 5,600 horsepower diesel-electric system, the vehicle will move out of the VAB bearing its 12.5 million-pound burden and begin its one-mile-per-hour journey.

METAL SOCIETY MEETS OCT. 26

The Hampton Roads Chapter of the American Society for Metals will meet on Monday, October 26 at the Virginian Restaurant on West Mercury Boulevard.

The guest speaker, Dr. Michael A. Streicher, will present a talk on "Metallurgical Factors in Corrosion of Metals." He will discuss the effect of heat treatment on the micro-structure and aqueous corrosion of stainless steels and nickel-base alloys.

Dr. Streicher received his B.S. degree in Chemical Engineering from Rensselaer Polytechnic Institute, his M.S. degree from Syracuse University and his Ph.D. from Leigh University.

Since 1949 he has been active in research in the field of chemical metallurgy at the Engineering Materials Laboratory, DuPont Experimental Station, Wilmington, Delaware. His publications include papers on the theory of metal dissolution, intergranular corrosion, passivity and pitting resistance of stainless steels, corrosion inhibition, the development of evaluation tests for stainless steels and nickel-base alloys, immersion plating and conversion coatings on metals.

During 1958-60 he was Chairman of the Corrision Division of the Electrochemical Society and in 1942 he served as Chairman of the Gordon Conference on Corrosion.

Dinner will be served at 6:30 p.m., followed by the address at 8 p.m. For reservations or further information, call H. Herring, 4870, or F. W. Schmidt, 3439.

FOR SALE: 1960 Chevrolet Impala, 2-door sports coupe. Allamby, 838-2582.

FOR SALE: 1952 Chevrolet 1-1/2-ton pickup truck - $175 or best offer. Spear, 273 Gilbert St.

UNITED NATIONS DAY

In the following proclamation, President Johnson has declared October 24 as United Nations Day:

Whereas the United Nations is dedicated to the same noble principles that have made our Declaration of Independence and our Constitution a constant beacon of hope and inspiration for all mankind; and

Whereas the United Nations has for 19 years repeatedly and decisively proved to be an increasingly effective and respected action agency for world peace, progress, and prosperity; and

Whereas the United Nations, through its efforts and through those of its specialized agencies, has greatly benefited the United States and each of its other members, individually and collectively; and

Whereas the United Nations has kindled an ever-increasing recognition and practice throughout the world of those humanitarian principles to which this country has long been dedicated; and

Whereas the United Nations has earned, and is entitled to receive an affirmative expression of, the respect and recognition of this Nation, and of each of its other members, for its inestimable contributions to international peace, justice, and understanding; and

Whereas it is essential that the United Nations be supported, both morally and materially, by us and by all of its other members; and

Whereas intelligent public support of the United Nations by the people of this Nation depends in large measure upon a wide dissemination to our people of significant and accurate information concerning the United Nations; and

Whereas the General Assembly of the United Nations has resolved that October twenty-fourth, the anniversary of the coming into force of the United Nations Charter, should be dedicated each year to making known the purposes, principles, and accomplishments of the United Nations:

Now, therefore, I, Lyndon B. Johnson, President of this United States of America, do hereby urge the citizens of this Nation to observe Saturday, October 24, 1964, as United Nations Day by means of community programs which will demonstrate their faith in the United Nations and contribute to a fuller understanding of its aims, problems, and accomplishments.

I also call upon the officials of the Federal and State Governments and upon local officials to encourage citizen groups and agencies of the press, radio, television, and motion pictures to engage in appropriate observance of United Nations Day throughout the land in cooperation with the United States Committee for the United Nations and other organizations.

In witness whereof, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

TRACKING STATION EXPANDED

A relocation and expansion of NASA's tracking station on Madagascar has been agreed to by the Malagasy Republic and U.S. government.

The station, previously located at Majunga in the island republic, is being relocated in the vicinity of Tananarive and expanded to include equipment for monitoring and communicating with Project Gemini astronauts, and for tracking and recording data from scientific satellites.

Astronauts Edwin E. Aldrin (left) and Elliott M. Lee with Charles J. Donlan, Associate Director, look over the Rendezvous and Docking Simulator now being used to study the docking of LEM, equipped with an over-the-shoulder window, to the full-scale Apollo.

NASA SCIENTIST DISCUSSES RESEARCH FOR REDUCING HYDROPLANING HAZARDS

A technique under study at the Langley Research Center and which offers a promise of reducing the hazards of operating airplanes on water-flooded runways was one of the discussion topics at a meeting of the Flight Safety Foundation held last week in New York.

Walter B. Horne, Dynamic Loads Division, was one of several speakers at the Flight Safety Foundation's four-day International Air Safety Seminar on Hydroplaning. In a paper on "Air Jets - a Possible Solution for Hydroplaning and Other Associated Runway Wetness Problems," Horne reviewed studies under way at Langley's Landing Loads Track research facility.

Hydroplaning, a phenomenon of importance to both airplanes and automobiles, may occur at a certain speed in heavy rain-- the tire riding up on a film of water and acting like a water ski. When a tire hydroplanes, there is a drop in the tire-highway friction available for braking or traction-- and a loss in steering control. Sometimes, a hydroplaning tire stops rotating completely without application of brakes.

In his New York talk, Horne presented preliminary results of a twin-air-jet arrangement placed in front of an airplane tire at the Landing Loads Track. The tire was transported at high speeds on a steel carriage which travels on rails down a concrete runway. The early results indicate that, for a runway flooded to a water depth of three-tenths of an inch, the air blast from the jets cleans the water from the tire path up to speeds of at least 140 miles an hour.

FOR SALE: Two Community Concert tickets for the Roger Wagner Chorale on Nov. 4. Oertel, 229-6842.

WANTED: Bowler for NASA Tenpin League. Poslik, 4811.

FOR SALE: 3-bedroom and den brick rancher in Fairfield area. Bell, 851-1188.

Langley Researcher

VOLUME 3, NUMBER 23 LANGLEY RESEARCH CENTER NOVEMBER 6, 1964

PRESIDENTIAL CITATIONS PRESENTED TO CENTER ORGANIZATIONAL UNITS

At the annual awards ceremony held recently at the Langley Research Center, three Presidential citations were presented to organizational units. The citations were signed by President Lyndon B. Johnson and NASA Administrator James E. Webb and were in special recognition of outstanding contributions to greater economy and improvement in Government operations during the tenth anniversary year of the Federal Incentive Awards Program.

One of the awards was shared by three divisions - the Analysis and Computation Division, headed by Paul F. Fuhrmeister; the Research Models and Facilities Division, of which Harold I. Maxwell is Chief, and the Mechanical Service Division, with William B. Mayo in charge. The award was for the team effort that went into the expeditious development of a new technique for production of large relief maps used as an integral part of a research facility now under construction - the Lunar Orbit and Landing Approach (LOLA) simulator. The facility, which includes large relief maps of certain areas of the Moon, is designed for use in investigating man's ability to perform control tasks related to the orbiting and landing approach phases of the lunar mission.

Another award went to the Instrument Construction Shop Section for the economical and effective application of a vacuum furnace brazing technique in the construction of

(Continued on page 5)

At recent ceremonies Dr. Floyd L. Thompson (center), Director, presented Presidential citations to several organizational units. Receiving the awards on behalf of the groups concerned were (from left): William H. Phillips, Chief of Space Mechanics Division; William B. Mayo, Head of Mechanical Service Division; Thomas B. Andrews Jr., Assistant Chief of Analysis and Computation Division, and Harold I. Maxwell, Chief of Research Models and Facilities Division.

CENTER DONATES RECORD TOTAL TO FUND CAMPAIGN

Edwin C. Kilgore, Chairman of the Center's United Fund Campaign, stated that the final report showed that staff members, contractors and representatives of local companies assigned to the Center donated or pledged a record total of $64,285.38 to the effort.

This figure represented a total of $62,817.88 from 4026 Center employees for 95.4 percent participation and an average contribution of $15.60. Contract employees donated $1,467.50 to the effort which was 913.2 percent over their contributions last year.

Of the money collected, $1340 was designated by contributors for other areas.

The following groups or divisions reported 100 percent participation: Lunar Orbiter Project Office, MORL Studies Office, Scout Project Office, Research Reports Division, Plant Maintenance Division, Research Models and Facilities Division, Office of Assistant Director for Administration, Administrative Service Division, Personnel Division, Procurement Division, Resident Engineers, NASA Exchange Cafeterias, and the Langley Federal Credit Union.

Kilgore expressed his appreciation to the division chairmen, solicitors, and other campaign workers for their time and effort during the drive and to all Center employees for their generous gifts of money which made this a record year of giving at the Center. He stated, "This a splendid example of the traditional teamwork and generosity of all Center employees and is another success in which we may all take pride."

TURKEY SHOOT TOMORROW

Center sharpshooters are reminded that the Activities Association's Annual Thanksgiving Turkey Shoot will be held tomorrow at the Activities Building.

Matches will start at 9 a.m. and continue until 5:30 p.m. The winner of each match will receive a turkey. No admission will be charged other than 50 cents for each shot.

Firearms will be furnished by the Activities Association or contestants may use their own. The Association will furnish 12, 16, and 20-gauge shotgun shells for the shoot. The maximum charge of powder and minimum size of shot should not exceed 3-3/4 drams for powder and number 8 for shot. Controlled shokes for shotguns will be permitted.

The shoot will be supervised by the NASA Rifle Club and any ammunition brought to the match must be turned over to the person in charge of ammunition.

In the interest of safety, all contestants are requested to keep the actions of their firearms opened while on the grounds of the Activities area except when on the firing line.

Lunch may be purchased at the bar in the Activities Building.

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 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDING PLANS. . .Robert L. Bolton, Instrument Research Division, will take his final vows with Lana Dawn Lautenschlager, Newport News, on November 27 at the Chapel of the Centurion, Fort Monroe. . .Making plans for a December wedding is Joyce Ann Alston, Analysis and Computation Division. She is engaged to Charles F. Clemens Jr., Hampton.

ASTRONOMY CLUB. . .Members of the Astronomy Club are reminded that club dues and subscription fees for the magazine "Sky and Telescope" are due. Members are requested to send checks to M. F. McNear, Mail Stop 237.

DIAPER LINE. . .William VonWald, Mechanical Service Division, became the father of an eight pound son on October 28.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on November 10 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on November 18 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

WORLD AFFAIRS. . .A series of 10 lectures on World Affairs will be taught on a once-a-week basis by the Adult Education Division of Hampton High School. Persons interested should call Hampton High School on Monday or Thursday nights.

FOR SALE: Room dehumidifier, 75 meter mobile transmitter-receiver-dynamotor, 15 watt stereo, 12-inch table TV. Limburg, 596-9167.

FOR SALE: Automatic ironer, floor model that folds for storage - $60. Will trade for FM tuner and amplifier. M. Quisenberry, 3483.

FOR SALE: Brick split-level house with 5 bedrooms and 2 full baths - near Todds Lane. John Myers, 826-2333.

FOR SALE: 3/4 ton window air conditioner unit, 110 volts, Philco. Rhyne, LY 5-0523.

LOST: White knit glove in E.A. Rackley, 3325.

WANTED: Ride from Green Oaks to W.A. on 8 shift. Dowdy, 4553.

FOR SALE: Singer sewing machine in walnut cabinet, also Babee-Tenda. Sokol, 826-1596.

WANTED: Ride from Pine Grove to W.A. on 8 shift. Rackley, 3325.

Gilbert A. Cosner, Plant Maintenance Division, has photographic evidence to back up his fish story. Cosner caught this 24-pound citation-size rock fish on October 27 near James River Bridge. The catch measured 38 inches long.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of November 9:

Monday - Tomato-barley soup, baked Smithfield ham, pot roast of beef, chicken croquettes with white sauce, fish sandwich.

Tuesday - French onion soup, roast beef, grilled Canadian bacon, Alaskan shrimp fries, chili dog, hot dog.

Thursday - Vegetable-beef soup, grilled steak, smoked pork sausages with apple sauce, fried chicken, western omelette.

Friday - Clam chowder, half-pound chopped steak, boiled ham, broiled fillet of perch, fried fillet of flounder, spiced luncheon meat.

The menu for the week of November 16 is as follows:

Monday - Puree of bean soup, Spanish pot roast, barbecued spare ribs, knockwurst and beans, meat croquettes.

Tuesday - Split green pea soup, beef stroganoff on egg noodles, baked ham with plum-raisin sauce, liver and onions, chili con carne.

Wednesday - Chicken-noodle soup, roast veal with dressing, shrimp gumbo, fried chicken, grilled cheese and bacon sandwich.

Thursday - Vegetable-beef soup, shrimp plate, grilled steak, ham loaf, deviled crab, macaroni and wieners.

Friday - Clam chowder, roast ribs of beef, ham and macaroni casserole, broiled halibut steak, fried fillet of flounder, cheeseburger.

FOR SALE: 1961 Plymouth - 6-cylinder - automatic transmission. Bush, 595-1692.

LOST: Radiation Lab series "Microwave Transmission Circuits" by Ragan. Charles Laney, Mail Stop 235.

KNOW YOUR CREDIT UNION

October 1, 1962 was a red letter day in the history of the Langley Federal Union - a long-debated insurance program went into effect to the benefit of the membership. Under this program, credit union members enjoy at no out-of-pocket cost Share Life Insurance, Loan Life Insurance, and Loan Disability Insurance.

Share Life Insurance is insurance on the life of the member and matches his share balance up to $2000 in the event of his death between the ages of 6 months and 55 years. At age 55, coverage drops to 75 percent, to 50 percent at age 60, to 25 percent at 65, and ceases entirely at age 70. Loan Life Insurance pays loan balances, singly or in combination, up to a maximum of $10,000 provided the member is under 70. And finally, Loan Disability Insurance pays loan balances up to $10,000 in case a member is permanently and totally disabled before the age of 60. Obviously, to be covered by any of the plans, members must have performed their regular duties either on October 1, 1962 or some date subsequent thereto.

To date members and/or their families have benefited from the payment of claims totaling $20,403. Of this amount, $14,919 went to pay-off outstanding loan balances and $5,484 went to match shares. In this connection, it is the member's responsibility to insure that the coverage under Share Life Insurance is on the desired individual. Until recently, in the case of joint accounts, both names appeared on the plastic account identification plate. The individual insured was the one whose name was on top. This still holds but now only one name is cut on new plates - that of the insured member. Any possibility of confusion or conflict in records is eliminated. For the older accounts, however, now would be a good time for joint owners to check their plates to be sure that the top name is that of the individual on whom coverage is desired.

There are several ways the benefits from the insurance program can be increased. One way is to always keep them in mind. On any sizable loan - an automobile loan for instance - loan insurance at no-out-of-pocket cost is a decided plus in favor of doing business with the credit union. Another way is to watch your share balance. Anytime it climbs over $2,000 it is well to re-evaluate your insurance position. Any member of your immediate family is eligible to have an insured account. A third way is to watch your age. When it reaches 55 Share Life Insurance benefits begin to decrease. Maybe 100 percent matching of shares with your wife/child the insured party might be preferable. Another plan is to use the Share Life Insurance (instead of commercial insurance) to provide needed cash in case of the death of a dependent such as a wife or child. There is no extra cost to you for this insurance.

Finally, whenever possible borrow against shares for needed funds rather than withdrawing them. That way you keep the maximum possible Share Life Insurance in effect and at the same time enjoy the benefits of Loan Life Insurance. Besides, a regular schedule of repayment more than likely pays off the loan faster than you would rebuild your share account. For example, a member age 36 needs $2,000 for a new automobile. If he has this amount in shares, it would be to his advantage to borrow $2,000 and pledge his shares. He would get a preferred rate of interest - 3/4 of 1 percent - up to 60 months to pay instead of 36. His dividends over a three-year period should more than pay his interest and he has insurance protection both ways. If he died the day after he obtained the loan, his loan would be paid in full and his estate would have a new automobile. His estate would also benefit from Share Life Insurance which matches the $2,000 in shares with $2,000 in insurance

Alverta H. Barnes

Irene B. Collins

TWO EMPLOYEES RECEIVE AWARDS

Two employees recently received cash awards under the Center's Incentive Awards Program.

Sustained Superior Performance Awards were presented to Alverta H. Barnes, Procurement Division, and Irene B. Collins, Fiscal Division.

The citations presented to each recipient read as follows:

Mrs. Barnes - "For her complete devotion to the duties of her position and the outstandingly cooperative manner in which she performs these duties."

Mrs. Collins - "For assuming supervisory duties during her supervisor's absence and at the same time performing her regularly assigned duties in an outstanding manner."

DENNISON APPOINTED TO ERC

James T. Dennison has been named Director of Technology Utilization at NASA's Electronics Research Center in Cambridge, Massachusetts, it was announced by ERC Director Dr. Winston E. Kock.

Dennison, who joined NASA in Washington in May 1963 as a consultant, assumed his new duties November 1. He has been serving as acting director of the Technology Utilization division at NASA's Washington headquarters.

The Technology Utilization program of NASA identifies, evaluates and disseminates space age technology for science and consumer industry.

From September 1934 to July 1942 and from September 1945 to April 1963, Dennison held various management positions with the Dennison Manufacturing Co., Framingham, Mass. He was Director of Research and Engineering and was also on the Board of Directors. From February 1944 to July 1945 he worked in the Radiation Laboratory of Massachusetts Institute of Technology.

Dennison was born July 17, 1912, in Roxbury, Mass. He earned his B.A. degree in Mathematics from Harvard University in 1934. He has been a member of the Industrial Research Institute, Boston Research Directors Club, and the American Management Association.

NASA TO SELECT SCIENTIST-ASTRONAUTS FOR FUTURE SPACE FLIGHT MISSIONS

NASA will recruit 10 to 20 scientist-astronauts for the nation's future manned space flight missions.

The recruiting process will begin at once, with a Dec. 31 application deadline. Selection of this first group of scientist-astronauts is to be completed by next spring.

A vast scientific frontier is being opened to direct scientific exploration by man. Observations made by scientist-astronauts will provide new information on the solar system and on man's ability to perform effectively in prolonged space flight.

The Office of Space Science and Applications and the National Academy of Sciences have cooperated in developing the scientific criteria for the selection process and the Academy will conduct the screening for scientific qualification of the applicants. The Office of Manned Space Flight and the Manned Spacecraft Center will be responsible for all other aspects of selection criteria and screening.

On April 16, the National Academy of Sciences was requested to participate in establishing scientific criteria for scientist-astronauts by Dr. Homer E. Newell, Associate Administrator for Space Science and Applications, in a letter to Dr. Harry H. Hess, Chairman of the Academy Research Council Space Science Board.

The scientist-astronaut program is open to scientists in scientific, medical or engineering specialties or in any combination of those specialties. To be eligible for the scientist-astronaut program, an applicant must:

1. Have been born on or after August 1, 1930; be a citizen of the United States; and be no taller than six feet.

2. Have (a) a Bachelor's degree and (b) a Doctorate in the natural sciences, medicine or engineering, or the equivalent in experience.

3. Have transcripts of academic records sent directly to Scientist-Astronaut, Post Office Box 2201, Houston, Texas 77058, from all institutions of higher education which he has attended.

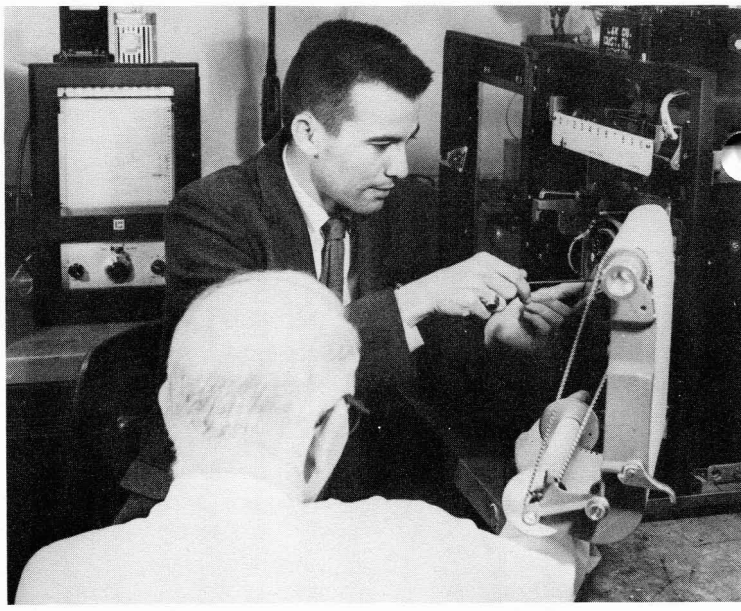
4. Have scores in the graduate record examinations sent by Educational Testing Service, Princeton, N.J., directly to Scientist-Astronaut at the same Houston address. (Note: Examinations will be given January 16, 1965. Completed application and examination fee must reach Educational Testing Service by December 31, 1964. In the event that an applicant has not taken graduate record examinations and plans to take the January 16 examination, he should note on his application that scores from that examination will be forwarded directly to Scientist-Astronaut, Houston, by the Educational Testing Service.)

5. Submit a Standard Form 57, Federal Employment Application Form, available at any U.S. Post Office.

6. Submit a Standard Form 89, Report of Medical History, obtainable at any U.S. Post Office. This form should be signed by both the applicant and his physician.

7. Submit Standard Form 78, Certificate of Medical Examination, Part A to be completed by applicant and Part B, Questions 1 through 21, to be completed by his physician. This form also is available at local post offices or offices of the Civil Service Commission.

All applicants should address their applications, postmarked no later than midnight, December 30, 1964, to Scientist-Astronaut, Post Office Box 2201, Houston, Texas 77058.



Willie E. Wright Jr., (in back), Electrical Shop, Electrical Systems Division, recently graduated from a special two-week course in industrial instrumentation held at the Leeds and Northrup Company Training Center in Philadelphia. He is shown receiving directions for operating an electronic recorder from Royal A. Dresher, instructor. Wright was one of a number of students from all parts of the United States who took the course. The instruction included studies in gas analysis equipment and temperature measuring instruments.

MUELLER HEADS GEMINI PROGRAM

NASA has announced that Dr. George E. Mueller, Associate Administrator for Manned Space Flight, has assumed the role of acting director of the Gemini Program.

As acting director of the Gemini Program, Mueller has responsibility for direct management of that program as well as his overall responsibility for management and administration of the entire NASA manned space flight program.

George M. Low has been acting director of the Gemini Program since November 1963. Low, former Deputy Associate Administrator for Manned Space Flight at NASA Headquarters, has been deputy director of the Manned Spacecraft Center since February 1964.

William C. Schneider will continue as deputy director of the Gemini program.

After preliminary screening, certain applicants will be asked to submit additional material including published or unpublished scientific and engineering reports; essays on field experience, research activities, or hobbies related to space missions; and individual thoughts on scientific objectives for manned missions in space.

Before final selection as astronauts, applicants will receive a thorough physical examination and will be required to take part in a limited space simulation program. The simulation program will serve to familiarize them with the space environment and determine, to a degree, their ability to withstand the stresses of launch, space flight and re-entry.

Selected applicants who are not already qualified pilots will be given individual flight training necessary to qualify them as pilots of high performance aircraft and helicopters.

IQSY SPACE EXPERIMENTS PLANNED

Forty or more scientific experiments will be launched from a mobile sea-going platform next year as part of the sounding rocket program being conducted during the International Quiet Sun Year (IQSY) 1964-65.

NASA plans a three-month expedition, using a converted aircraft transport, to launch sounding rockets through areas of the upper atmosphere and ionosphere that cannot be reached by land-based rockets.

Expedition project management is assigned to Wallops Station. Project manager is G. S. Brown, Assistant Chief of the Wallops Range Engineering Division.

The International Quiet Sun Year is a period of minimum solar flare and sunspot activity. Experiments are being conducted by scientists throughout the world to study IQSY phenomena. Expedition data will be correlated to their findings.

The experiments in the sea-going expedition will be carried aboard solid-fueled Mike-Apache and Nike-Cajun sounding rockets capable of lifting 50-pound payloads to altitudes exceeding 100 miles. In addition, there will be about 34 Acras and Hasp weather rockets fired.

About 10 experimenters are expected to take part in the studies, representing universities, other federal agencies and NASA field centers. Each will fly a number of experiments. Selection and design of payloads have begun.

Exact locations of the launches at sea are still to be determined but a number of experiments will be flown in the region of the magnetic equator in the eastern reaches of the South Pacific Ocean.

The launch platform will be one of a class of World War II escort aircraft carriers about 500 feet long and 80 feet wide, converted to serve as an aircraft ferry. It will be furnished and staffed with civil service personnel by the U.S. Navy's Military Sea Transport Service under contract with NASA.

Mobile equipment will be positioned on the ship for launching and tracking experiments. Tentative plans call for a shakedown cruise this fall to test out equipment and operational procedures. The ship to be used for that cruise will be the U.S.S. Croatan.

Fifteen to twenty instrumented trailers, five rocket launchers and a number of tracking antennas will be required on the ship. The equipment will constitute a self-contained mobile launching and tracking facility capable of being operated on land or ships and which can be transported by air, rail, highway or water.

POSITIONS OPEN IN WASHINGTON

NASA Headquarters is seeking applicants to fill two Merit Promotion Program vacancies. One opening is for an AST, Communications Program Management, Electronic Engineer (General), GS-855-14 in the Office of Space Science and Applications, Communication and Navigation Programs Division, Advanced Technology Branch. The other vacancy is for an AST, Fields and Particles, GS-1330-14 in the Office of Space Science and Application, Physics and Astronomy Programs, Physics Branch.

Persons interested may obtain additional information from the Employment Office, telephone 2233.

FOR SALE: 3-bedroom, family room Cape Cod house - below appraisal - nothing down and $89 per month. Martin, 877-2078.

SEPTIMUS E. EDMONDS RETIRES

Septimus E. Edmonds

Septimus E. Edmonds, a Painter Leader in Construction and Repair Section, Plant Maintenance Division, retired from the Center on October 30 with a total of over 24 years of Federal service.

Edmonds was born October 11, 1894 in Calvert County, Maryland. He served in the U.S. Army from June 1918 to June 1919. He worked ten years for the Chesapeake Steamship Co. in Baltimore, Maryland, before starting his Government career. He entered on duty with the Quartermaster Corps, Fort Eustis, on May 14, 1941 and transferred to the Langley Center on August 28, 1944.

NASA TOUCH FOOTBALL LEAGUE

At the end of the first round in the NASA Touch Football League, the standings are as follows:

Team	W	L	T	Team	W	L	T
KNADS	6	1	0	Dedskins	3	4	0
Boozers	6	1	0	Frosties	2	4	1
Bombers	5	2	0	IRD	1	5	1
Packers	3	4	0	Heavy Boys	1	6	0

The second round of play will be divided between two divisions as follows:

First Division: 1. KNADS, 2. Boozers, 3. Bombers, 4. Packers.

Second Division: 5. Dedskins, 6. Frosties, 7. IRD, 8. Heavy Boys.

The second round schedule is as follows:

November 7	1-4H(4)	2H-3(1)	5H-8(2)	6H-7(3)
November 14	1-3H(3)	2H-4(4)	5-7H(1)	6-8H(2)
November 21	1H-2(2)	3H-4(3)	5H-6(4)	7-8H(1)

H means home team - numbers in parenthesis denote field number.

PRESIDENTIAL CITATIONS

(Continued from page 1)

instruments for use in laboratory and flight research. The section is part of the Machine Branch of the Mechanical Service Division.

The Space Mechanics Division, headed by William H. Phillips, was honored for the concept and application of a cable support system for Langley's Rendezvous Docking Simulator which operates suspended from the high ceiling of NASA's flight hangar. The use of a cable support instead of the rigid-frame support system usually employed in such a facility resulted in a great savings to the Government.

WANTED: Ride from Marlbank Farm-Edgehill area to W.A. on 8 shift. Shirley Crockett, 4458.

FOR SALE: 33-foot Owens sedan cruiser, 100 mph Twin Screw, completely equipped - $6800. Bayliss, Slip 42, Hampton Roads Mariner.

FOR SALE: 50-gallon G.E. table top water heater. Lucy, 596-4470.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8 BRIDGE CLUB DINNER PARTY	9 VOLLEY BALL 5 p.m.	10 BRIDGE CLUB 7:45 p.m.	11 HOLIDAY VETERAN'S DAY	12 CAMERA CLUB MEETING	13 DINNER PARTY RESEARCH PROJECTS & MODELS	14 DINNER PARTY LUNAR ORBITER PROJECT OFFICE Football Games at Kecoughtan High
15	16 VOLLEY BALL 5 p.m.	17 BRIDGE CLUB 7:45 p.m.	18 VOLLEYBALL 5 p.m.	19 PAYDAY GAME NIGHT $400 JACKPOT 8 p.m.	20 DINNER PARTY EQUIPMENT MAINTENANCE	21 FOOTBALL Kecoughtan High APPRENTICE ALUMNI PARTY
22	23 AMERICAN SOCIETY FOR METALS MEETING	24 BRIDGE CLUB 7:45 p.m.	25 VOLLEY BALL 5 p.m.	26 HOLIDAY THANKSGIVING	27	28 FOOTBALL Kecoughtan High

Shown above are the events scheduled to take place in the Activities Building throughout the month of November. The football games are played on Saturday at 9:30 a.m. at Kecoughtan High School.

PARIS REPRESENTATIVE NAMED

The appointment of a NASA representative in Europe to advance cooperative space interests has been announced by NASA.

Gilbert W. Ousley, formerly special assistant for international program activities at the Goddard Space Flight Center, will take up his new duties this month. He will be attached to the U.S. Embassy in Paris as NASA representative under the direction of the Office of International Programs.

Ousley will handle NASA relations with Western European regional and national space organizations in cooperative projects and other joint space science activities. He also will serve as a point of contact for scientific and technical information of space activities here and in Europe.

Assignment of a NASA representative in Europe reflects the growing importance and volume of the agency's international programs in that area. Joint projects for scientific satellites engineered and financed in Europe and to be launched by NASA are underway in England, France, and Italy. An agreement recently was reached between NASA and the nine-country European Space Research Organization for two additional satellite projects. Other joint projects to date have involved 69 different countries in cooperation with NASA.

Ousley is a native of Washington, D.C., and a graduate of the University of Maryland. Ousley, 32, transferred from the Naval Ordnance Laboratory to Goddard in 1959, where he was a project engineer in the Spacecraft Systems and Projects Division. He has had extensive experience in spacecraft and space vehicle engineering. He expects to receive his doctoral degree soon.

FOR SALE: 1963 Stingray coupe, 4-speed transmission, 300 hp. Drewry, 723-5744.

WANTED: Fifth driver from Southampton to E.A. on 8 shift. Adcock, 2249.

FOR SALE: 1962 Volkswagon. Peterson, 838-1485.

WANTED: Two alternate drivers from Norfolk to W.A. on 7:30 shift. Hudgins, 4851, or Norfolk 587-9023.

FOR SALE OR RENT: 1963 2-bedroom Pacemaker with washing machine. Newman, 868-9909.

BASKETBALL NOTICE

An organizational meeting of the NASA Basketball League will be held on Tuesday, November 10 at 7 p.m. in the Activities Building.

All teams planning to enter the league must have a representative present at the meeting. For additional information, call Charles Clarke, 2238, or Kal Grunwald, 2374.

BOOKS FOR SALE: "Astronomical Techniques" by G. P. Kuiper, "Markings and Camouflage Systems of Luftwaffe Aircraft in World War II" by Karl Ries, "Principles of Geology" by Gilluly, "Basic Electrical Engineering" by Fitzgerald and Higginbotham, "Classical Electrodynamics" by Jackson, "Theory of Elastic Thin Shells" by Goldenveizer, "Nonconservative Problems of the Theory of Elastic Stability" by Boltin, "Mechanics of Materials" by Agres and Palmer, "General Meteorology" by Byers, "Relaxation Methods" by Allen, "Architectural Specifications" by Sleeper, "Perspective on Teaching" by Thomas, Kinney, Coladaric and Fielstra, "Introduction to Logic and Scientific Methods" by Cohen and Nagel, "Atomic and Molecular Processes" by Bates, "Experimental Chemistry" by Sienko and Plane, "Brief Course in Analytics" by Hill and Linker, "Oral Communications for the Layman" by Vaughan, "Iliad" by Homer, "Sheetmetal Pattern Drafting and Shop Problems" by Daugherty and Powell, "Basic Concepts and DC Circuits" (Philco Corp.), "Electronic Instrumentation" by Prensky, "Mathematics of Physics and Modern Engineering" by Sokolnikoff and Redheffer, "Cell Physiology" by Giese, "Textbook of General Physiology" by Davson, "Laboratory Manual of Mammalian Anatomy and Physiology" by Grollman, "Elements of Partial Differential Equations" by Sneddon, "Partial Differential Equations of Mathematical Physics" by Webster, "Servomechanism and Regulating System Design" by Chesnut and Mayer, "Viscous Flow Theory, Vol. I-Laminar Flow" by Pai, "Mechanical Metallurgy" by Dieter, "Vector Analysis" by Phillips, and a Pickett and Eckel N3ES Slide Rule. NASA Exchange, 2326.

WANTED: Ride from Apple Avenue to E.A. on 8 shift. Young, 2201.

FOR SALE: M.G.A roadster - $500. Barritt, CH 5-1754.

NASA BOWLING LEAGUES

Mexicali Restaurant leads Group A in the NASA Tenpin League with a record of 28 wins and only 4 losses. Top scores for the week were rolled by Bob Sommer with a 231 game and Buddy Grist with a 593 set.

Odd Balls lead in Group B with 24 wins and 8 losses. Top bowlers for the week were Alton Moore with a 231 game and Irving Weinstein with a 625 set.

Leading Group C are Analogs with 25 wins and 7 losses. Following in a close second is ACD with 24.5 wins and 7.5 losses. Taking top scoring honors were Frank O'Neil with a 244 game, Sidney Hall and Gary Giles with a 633 set each, and Doris Hodge with a 223 game and 617 set.

GROUP A

Mexicali	28	4	Short Circuits	15	17
Flyers	22	10	Hornets	12	20
Unitary	20	12	Frame Ups	12	20
Phantoms	18	14	Alley Cats	12	20
Electronic Shop	18	14	Payloads	10	22
Devious	17	15	Raiders	8	24

GROUP B			GROUP C		
Odd Balls	24	8	Analogs	25	7
Ranch House	20	12	ACD	24.5	7.5
Cee Pees	18.5	13.5	Barristers	23	9
Misfits	18	14	Question Marks	22	10
Ivy Farms Shell	18	14	Spare Parts	17.5	14.5
A-OK's	17	15	Dillys	17	15
Flight Engineers	16	16	Greenhorns	15	17
Galaxies	15	17	Alley Oops	15	17
Malfunctions	15	17	Mets	15	17
HMS	13.5	18.5	Strike Outs	13	19
Beats Me	13	19	Dopesticks	13	19
Pinwigglers	13	19	Bowling Belles	11	21
Ten Benders	12	20	Lunar Tics	7	25
Spare Oops	10	22	Gliders	6	26

Light Machine Shop No. 1 leads in the NASA Duckpin League with 25 wins and 7 losses. Top bowling honors went to May Lou Wood with a 106 game, Helen Stubblefield with a 297 set and John Dupere with a 132 game and 354 set.

Lt. Mach. 1	25	7	Ten Spots	13	19
Tigers	23	9	Strike Outs	10	22
Lt. Mach. 2	15	17	Rebel Bombers	10	22

PROFESSOR TO VISIT CENTER

Dr. A. R. Kuhlthau, Professor of Aerospace Engineering at the University of Virginia, will visit the Langley Center on Tuesday, November 10 to discuss the graduate program in Aerospace Engineering.

Employees wishing an appointment with Dr. Kuhlthau should call the Training Office, telephone 2326.

QUALITY INCREASE REPORT

In the Federal Salary Reform Bill of 1962 provisions were made to grant Quality Step Increases to General Service (GS) employees who were performing their duties at a high quality level.

During Fiscal Year 1964, NASA granted 933 Quality Increases of which Langley granted 88 to its employees.

FOR SALE: Girl's 24-inch balloon-tire bicycle - $10. Mulac, LY 6-0666.

FOR SALE: Two Early American love seats with foam cushions - $50 for both. Butler, PA 2-8454.

This photograph of the Hoover Dam, which was taken by Clyde Hayes, President of the Langley Camera Club, won second place in the 1963 "Photographer of the Year" contest.

CLUB OF THE MONTH

This is the first in a series of articles spotlighting the clubs in the Langley Activities Association. Each month a club will be featured to help inform Center employees of the activities which are available to them. The featured club this month is the Langley Camera Club.

Are you an avid picture snapper? Do you like dark rooms? Are you a shutter-bug? Does companionship with people of similar interests appeal to you. If yes answers these questions, then the Langley Camera Club should be of interest to you.

This club devotes its time and talents to the many facets of photography. Competition is the key word to be used when describing activities of the club. The most recent contest has been one for color slides. Seven trophies are awarded each year plus a "Slide of the Year" and Photographer of the Year" awards.

A dark room is presently being planned so that members may learn and teach the art of developing pictures. Lectures are presented along with educational films by the Photographic Society of America.

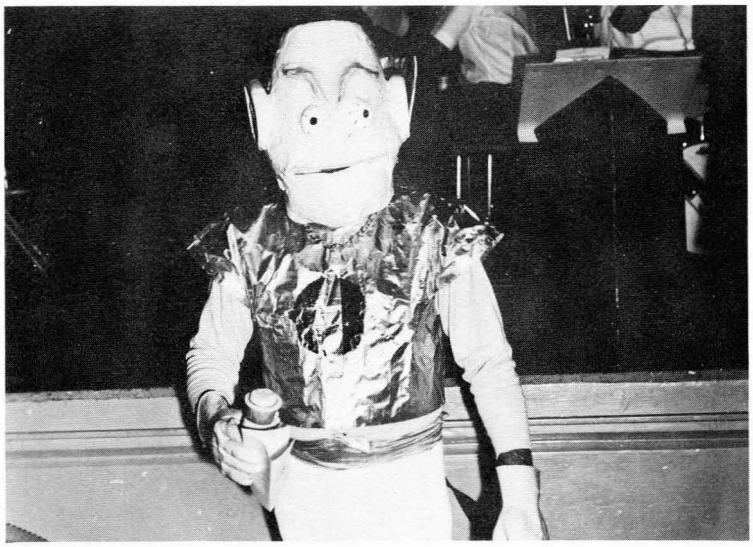
The club's present officers are: President - Clyde Hayes, Vice-President - Charles Bryant, Secretary - Leon B. Holt, Treasurer - Paul R. Yeager, and Program Chairman - Abraham Leiss. Meetings are held once a month in the Activities Building and the next meeting will be held at 7:30 p.m. on November 12.

The club welcomes new members, including amateur photographers, and offers any assistance or instruction they may need. Persons interested in obtaining more information about the club may call Holt, 4451.

WANTED: Ride or driving combination from Buckroe to W.A. on 8 shift. Rose, 3421.

WANTED: Driving combination from Huntington Court Apartments to E.A. on 8 shift. Frances Michie, 2326.

FOR SALE: 1956 Ford Fairlane 2-door club sedan with V-8 Fordamatic and radio and heater - $400. Leffel, 877-2393.



The Activities Association's Halloween Costume Ball turned out to be a huge success with everybody dressing in costumes. Left photo - One of the winners was George Palko who appeared as a creature from outer space. Right photo -Also selected in the group of winners were members of The Addams Family. Photos by Bob Nye

UNITED FUND CAMPAIGN

Division	Percentage	Total
Office of Res. Direction	97.4	$2516.00
Project FIRE	95.7	755.00
Lunar Orbiter	100	887.00
MORL	100	205.00
Scout	100	838.00
Aero-Physics	91.0	3565.00
Analysis and Computation	89.3	2451.00
AMPD	91.9	3982.25
Dynamic Loads	94.3	4186.00
FMTD	92.4	2670.00
Full-Scale	84.6	4181.00
Instrument Research	91.1	6270.50
Research Reports	100	999.50
Space Mechanics	97.8	2313.00
Structures Research	94.2	3440.96
Off. Chief, Eng. and Tech, Serv.	100	1005.00
Electrical Systems	93.7	2459.10
FVSD	97.8	2661.00
Mechanical Service	98.1	7259.57
Plant Maintenance	100	1363.50
RMFD	100	2641.00
Off., Asst. Dir. for Admin.	100	534.00
Administrative Services	100	999.50
Fiscal	99.1	1567.00
Personnel	100	830.50
Photographic	97.6	706.00
Procurement	100	1510.50
Resident Engineers	100	20.00
Total, NASA Employees	95.4	$62,817.88
NASA Exchange Cafeterias	100	216.00
Langley Federal Credit Union	100	110.00
Contractors at Langley Center and local company representatives: includes contributions not previously reported from employees of Kahoe Supply Co., Inc., Jack Clines, North American Aviation		1141.50
GRAND TOTAL		$64,285.38

PRESIDENT'S PROCLAMATION

Our national policy is directed toward the attainment of world peace, and our resources are committed to the task of securing and maintaining peace among the nations of the world. In recognition of this, the Congress has designated the eleventh of November as a legal holiday to be known as Veterans Day and has dedicated it to the cause of world peace (Act of May 13, 1938, 52 Stat. 351, as amended (5 U.S.C. 87a)).

As we honor on this day the millions of men and women who have honorably and devotedly served in our armed forces in time of war, we should also demonstrate our continued dedication to the attainment of world peace, giving outward evidence of our determination to seek the blessings of peace for all people. This we can do by participating in public ceremonies on that day.

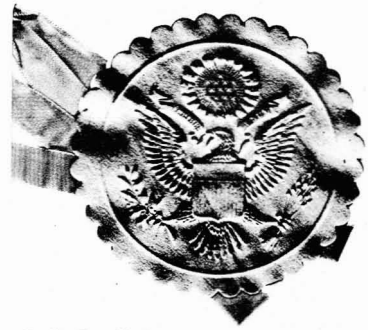
NOW, THEREFORE, I, LYNDON B. JOHNSON, President of the United States of America, call upon the people of this Nation to observe Wednesday, November 11, 1964, as Veterans Day, remembering with respect and affection those who have defended this Nation in time of war and rededicating ourselves to the cause of world peace.

I request the officials of the Federal and State Governments to associate themselves with the Veterans Day National Committee in order that people in all parts of our country may have an opportunity on that day to participate personally in public ceremonies and exercises.

I also direct the appropriate officials of the Government to arrange for the display of the flag of the United States on all public buildings on Veterans Day.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this thirtieth day of September in the year of our Lord nineteen hundred and sixty-four, and of the Independence of the United States of America the one hundred and eighty-ninth.



Lyndon B. Johnson

By the President:

Dean Rusk

Secretary of State

FOR SALE: Simon Omega Model B-22 enlarger. Davenport, PA 3-3514.

WANTED: Ride from Holly Homes to W.A. on 8 shift. Bonnie Reilly, 4866.

WANTED: Ride to Chicago or Michigan during Thanksgiving. Karen Rackley, 723-2234.

FOR SALE: 1963 Chevrolet Belair 2-door sedan with automatic transmission. Simonton, 851-2320.

FOR SALE: Baby crib and other miscellaneous baby furniture. Kiefer, 838-2666.

Langley Researcher

VOLUME 3, NUMBER 24 LANGLEY RESEARCH CENTER NOVEMBER 20, 1964

METEOROID DETECTION SATELLITE LAUNCHED BY NASA FROM WALLOPS

A satellite designed to gather information on the hazards spacecraft encounter from minute particles in space was launched at 7:02 a.m. EST on November 6 from Wallops Station by NASA.

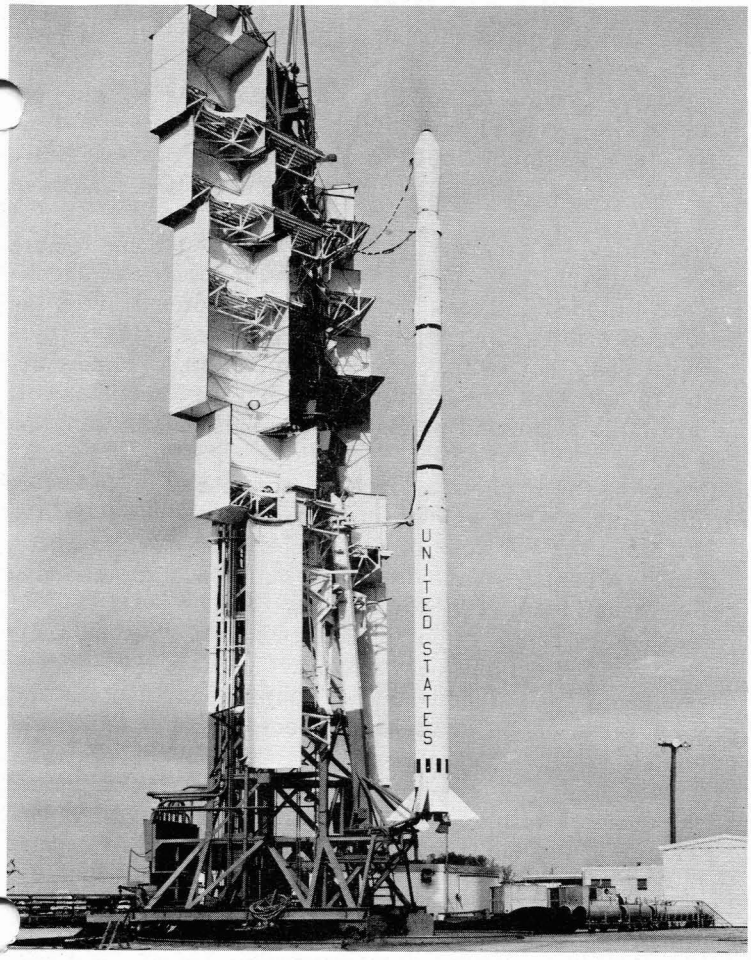
The project is under the direction of NASA's Office of Advanced Research and Technology with project management by Langley Research Center. Goddard Space Flight Center is also participating.

Explorer XXIII, launched in a southeasterly direction from Wallops Island, was boosted into orbit by a four-stage solid propellant Scout vehicle. The satellite's orbital elements are as follows: apogee, 614 statute miles; perigee, 286 statute miles; inclination to equator, 52 degrees, orbital period, 99 minutes.

Explorer XXIII is a cylinder 24 inches in diameter and 92 inches long. Weight in orbit is about 295 pounds.

The satellite is expected to have a useful lifetime of one

(Continued on page 3)



NASA launched Explorer XXIII from Wallops Station on November 6. The vehicle is shown above on the launch pad at Wallops.

POWER TESTS CONDUCTED ON GIANT MAGNET COILS

Power supply capability tests are being conducted on two huge magnet coils at the Space Radiation Effects Laboratory being established on the Peninsula by the Langley Research Center.

The magnet coils, two ring-shaped sections weighing 56 tons each, are part of the 600-million electron volt synchrocyclotron which the NASA will operate to study the effect on spacecraft and their systems of the particle radiation streaming from the sun or trapped in the earth's magnetic field.

In the NASA energizing tests, alternating current from a 1500 KVA transformer is directed into a solid state rectifier and converted to direct current at 500 volts and 2000 amperes-- equaling a million watts. This direct current, which is regulated to very close limits, supplies the energy for the magnet coils.

In operations, the magnet coils will be capable of creating a pulling power greater than 3,500 tons, strong enough to lift 30 large locomotives. Each coil contains nearly four miles of "wire" -- extruded rectangular aluminum tube 1.5 by 2 inches in cross-section, with a three-quarter-inch hole through its center for circulation of the deionized cooling water.

The massive magnet core, approximately 36 feet long, 24 feet wide, and 20 feet high and weighing about six million pounds will provide a magnetic field to keep the force within the coil. Since the protons will be accelerated in a spiral path until they reach the velocity of charged particles in space, the purpose of the magnet will be to keep them on the right path.

In another series of tests at the cyclotron site, magnetic field strength measurements are being taken over the entire magnet gap by Hall plates positioned by a remotely-controlled machine built for the purpose. Field strength and position data from the Hall plates are recorded on punch cards of electronic data processing machines and processed by Langley Research Center.

The laboratory, located about ten miles north of the Lang- Center, is scheduled to go into operation in late 1965. Plans call for the laboratory to be operated under contract to NASA by the Virginia Associated Research Center, a state organization comprised of representatives of the College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute, each of which conducts aerospace graduate study programs in cooperation with Langley.

The Langley Research Center and other research organizations will utilize the laboratory to conduct research in the basic problems associated with space environment, and in engineering applications. The $12.4 million facility is expected to be a focal point for the expansion of graduate education programs in high-energy physics and related fields.

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, Room 217, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Making plans to desert the bachelor ranks is Richard John Re, Full-Scale Research Division. He is engaged to Joanne Marie Becker of Hampton and plans call for a February wedding. . .Dan Cupid scored a victory when Patricia Warren, Flight Vehicles and Systems Division, announced her engagement to Richard Berne, Spacemobile. No definite date has been announced for the big event.

BOWLING BANQUET. . .Members of the Board of Directors of the NASA Tenpin Bowling League met recently to make plans for the annual banquet. It was decided that the dinner, trophy presentation, and dance would be held at the Activities Building at the conclusion of the bowling season.

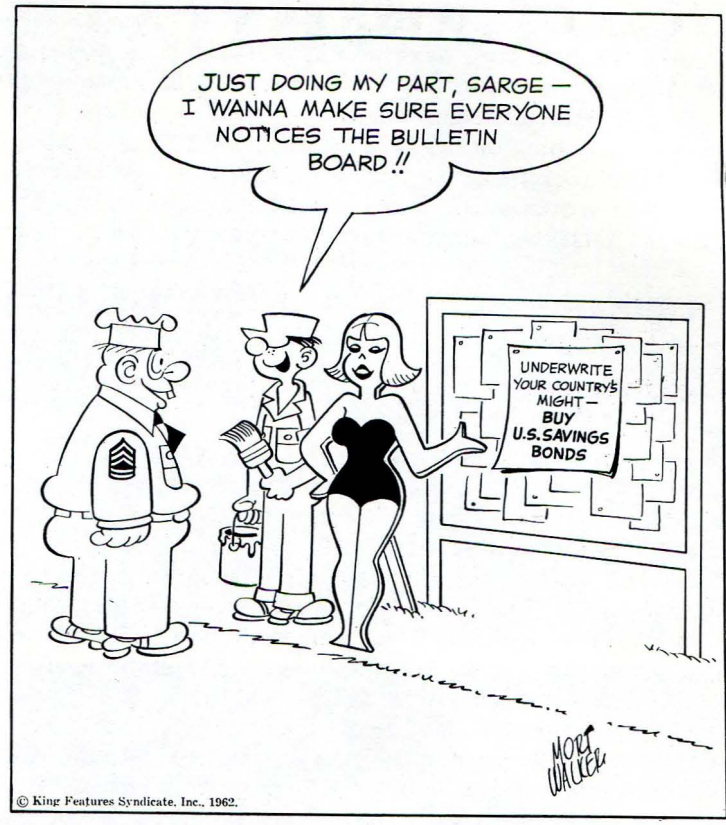
NEWLY WEDS. . .Wedding bells rang on November 14 when Marna M. Harlow, Space Mechanics Division, and William H. Cordle Jr., Research Models and Facilities Division, took their final vows at the First Lutheran Church in Norfolk. Mary Suit, Flight Mechanics and Technology Division, was maid of honor and ushers were Peter E. Lewis and Charles Heath, both of Research Models and Facilities.

HEALTH INFORMATION FOR TRAVELERS

The Chief of the Division of Foreign Quarantine, U.S. Public Health Service has issued the following advice for Americans traveling overseas during the winter of 1964-1965:

If you are going overseas this winter be vaccinated now against smallpox for all areas and against yellow fever and cholera if you are traveling in countries where these diseases are present. Immunization against typhoid and paratyphoid fevers is also recommended. Immunizations against tetanus, diphtheria, and poliomyelitis should all be up to date. You should inquire of your family physician about vaccination against influenza.

All vaccinations should be recorded on an "International Certificates of Vaccination" document which you can present to public health officials abroad and on returning to the United States. To be valid for international travel, vaccination certificates must be validated with a stamp approved by the U.S. Public Health Service.



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CAFETERIA MENU

The following menu will be served in the cafeterias during the week of November 23:

Monday - Cream of tomato soup, six fried oysters, pot roast of beef, grilled ham slice, baked hash.

Tuesday - Vegetable-beef soup, roast ribs of beef, grilled pork chops, spaghetti with meat sauce, fish cakes and cole slaw.

Wednesday - Thanksgiving Dinner - 65¢ - chilled tomato juice, waldorf salad, sliced turkey with cornbread dressing and whipped potatoes and giblet gravy or baked Smithfield ham with candied yam patties and spiced apples, plus buttered peas, hot rolls, butter, pumpkin pie or mince pie, coffee or tea. Milk and a limited variety of sandwiches will be available at normal prices for persons not desiring the full meal.

Friday - Clam chowder, grilled steak, stuffed flounder, broiled fish, grilled spiced luncheon meat.

The menu for the week of November 30 is as follows:

Monday - Tomato-barley soup, Swiss steak, breaded veal cutlet, baked ham, chili dog, hot dog.

Tuesday - Cream of potato soup, roast beef, fried scallops, liver and onions, beef ravioli.

Wednesday - Chicken-noodle soup, Spanish pot roast, grilled pork chops, ham and noodle casserole, cheese omelette.

Thursday - Vegetable-beef soup, grilled steak, smoked pork sausages with applesauce, fried chicken, tamale pie.

Friday - Clam chowder, roast beef, broiled fish, fried fish, hamburger.

WANTED: Ride from Newmarket to W.A. on 8 shift. Johnson, 4556.

WANTED: Alternate drivers from Harpersville Rd. to W.A. on 7:30 shift. Arrington, 4515.

FOR SALE: Sealey hollywood twin bed with grey padded head board - $45. Ledford, 577-0597.

FOR SALE: Oval pecan wood dining table with leaf and four mates chairs - $100. Evans, PA 2-4676.

TURKEY WINNERS NAMED

A total of 105 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 24 at the Activities Building. Winners are requested to bring their stubs along for identification. The turkeys must be picked up on November 24 because the Activities Building is not equipped to store them.

Sharpshooters who won in the matches were as follows: Bill Corlett, J. Holloway, C. Iams, E. D. Schult, D. R. Root, R. Siler, Harry Paucker, R. S. Caldwell, Larry Edwards, John Clark, U. M. Lovelace, Granville Webb, Joe Walker, W. E. Williams, Dennis Smith, Bob Bloxom, L. Parrish, Chuck Walker, and Robert L. Jones.

Winning in the drawing were the following: Harold Crate, J. W. DeLauder, Howard Ferrall, W. L. Williams (2 turkeys), Claude Webster (2 turkeys), Ann Johnson, John Gilbert, W. H. Phillips, P. H. Shea, L. O. Burns, Richard E. Davis, Larry Fisher, L. J. Fisher, D. A. Hudson, Albert Bell, Walter Lee, Judy Ferris, Dora Perry, D. R. Routten, Doris Eggleston, Bertie Armistead, J. F. Grizzard.

Dan Bridges, Mickey Gardner, O. Moss (2 turkeys), C. O. Burcher, Brian Pritchard, Wayne Barefoot, W. H. Goodwin, Harold Pierce, G. E. Theil, W. F. Stewart, Harry M. Lawrence, Mary Edwards, Garland Rollins (2 turkeys), C. A. Oss, Wilson Clark, C. L. Iams, Pete Lewis, Art Friend, Helen Creekmore, Nellie Medaris, Sue Rowe, Ronald D. Brown, Ambrose Christian, Sid Batterson.

Brenda Simpson, Davis L. Eanes, Virginia Kanoy, Nancy Taylor, Mrs. Lester A. Kurtz, Charlie Johnson, Ray Goodman, Ralph Hearn, James Burrell, Tom Kuss, Joe Harrison, C. E. Saul, W. C. Nettles, Amos Spady, W. H. Forrest, Georgia Dunn (2 turkeys), Bob Faust, S. E. Devan, Joe Manship, E. F. Smith, Helen Cox, M. D. McLaughlin, R. W. Weade, George Veneris, Frank Lawrence Jr., Mary Messick, Harry Barritt, Emma Jean Landrum, Diane R. Harris; Charles Conner, Thomas H. King, Charles Haight, Harry Walthall, Mary Barr, and Samuel J. Scott Jr.

NASA TOUCH FOOTBALL LEAGUE

At the completion of nine weeks of play, the Boozers and KNADS are tied for first place in the NASA Touch Football League. Scores for the last two weeks of play were as follows:

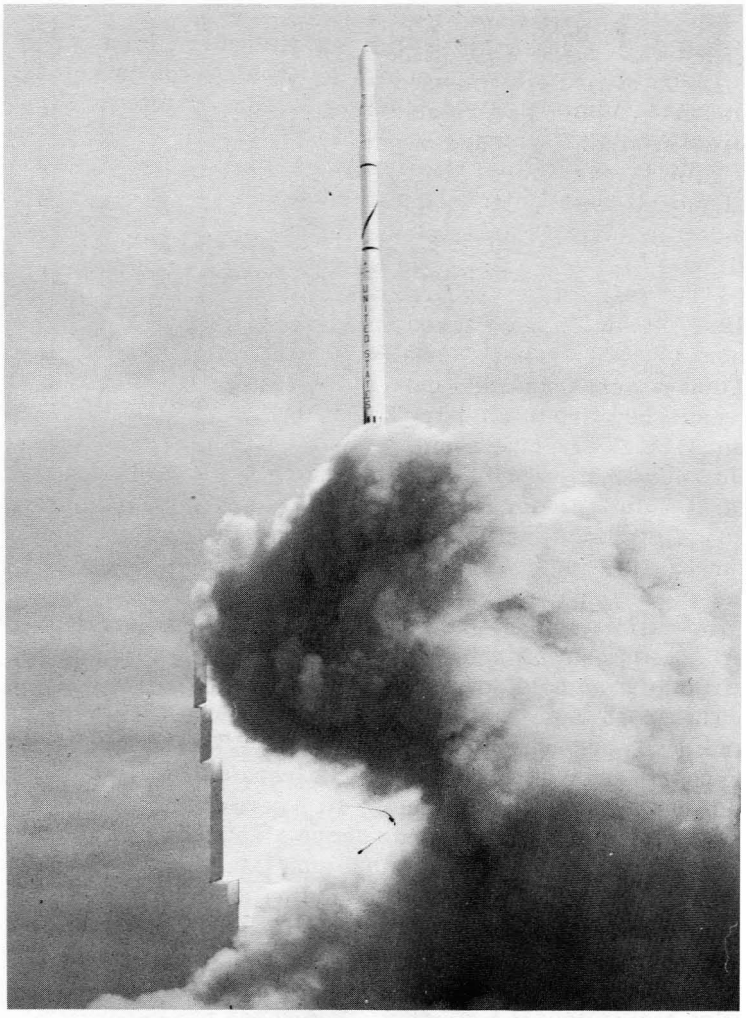
Frosties 13 - IRD 12, Heavy Boys 27 - Dedskins 13, Boozers 15 - Bombers 13, KNADS 24 - Packers 15, Frosties 45 - Heavy Boys 7, IRD 21 - Dedskins 14, Boozers 14 - Packers 6, KNADS 14 - Bombers 7.

The games played tomorrow at 9:30 a.m. at Kecoughtan High School will wind up the 1964 season. The schedule features the Boozers vs. KNADS to determine first place with Bombers vs. Packers, Dedskins vs. Frosties, and IRD vs. Heavy Boys.

OFFICE MACHINE REPAIRS

Effective December 1, all requests for repairs of office machines now being reported to Purchase Branch, telephone 3258, will be reported to Equipment Control, telephone 4437 or 4547.

FOR SALE: Hand crocheted wool afghan. Rollins, 868-3572.
WANTED: Light, bench-type drill press with or capable of accepting a mortising attachment, Wentz, PA 2-1166.



Explorer XXIII is shown above leaving the launching pa at Wallops Station on November 6.

METEOROID DETECTION SATELLITE

(Continued from page 1)

year. Its primary purpose is to provide spacecraft de signers with accurate knowledge of the penetration capa bilities of meteoroids and the resistance of various ma terials to penetration. Meteoroids are tiny particles com posed of iron, silicates and other substances which mov at very high speeds in space. They may strike a satellit at velocities ranging from seven to forty-five miles pe second, or even faster.

Also carried on board the Scout during launch was a experiment to measure air loads on the structure of th vehicle during its ascent through the atmosphere betwee 25,000 and 40,000 feet.

Charles E. Manion was the Project Engineer for Wallop Station, responsible for coordinating pre-launch, launc tracking operations. Robert T. Duffy was the Launch Di rector for Wallops, responsible for conducting the count down operations.

WANTED: Ride from 5703 Roanoke Ave. to W.A. on 8 shift Crews, 4607.
FOR SALE: 1957 Mercury, 4-door hardtop with automati transmission, power brakes, power windows, power steer ing, radio and heater - $250. Leiss, 877-2939.
WANTED: Ride from O'Canoe Place to E.A. on 8 shift McGuire, 2249.

X-15 SETS MANY RECORDS

The X-15 airplane amassed a total of 4 hours, 13 minutes and 11 seconds at speeds above 2,000 miles per hour (Mach 3) in its first five years of powered flight.

This is far more Mach 3 time than flown by any other airplane. The X-15 has flown twice as fast as any other airplane and it hit triple-sonic speeds on almost every flight.

Five years after its first powered flight, September 17, 1959, the X-15 had racked up a total of 17 hours, 52 minutes, 7.1 seconds - usually 10 or 11 minutes at a time. Total powered time is 4 hours, 8 minutes, 16.8 seconds.

Launched from an Air Force B-52 at 45,000 feet, the small black airplane zooms upward with its 59,000-pound-thrust rocket engine blazing for the first 60 to 90 seconds of its flight before its propellant supply is exhausted. It coasts or glides during the rest of its flight, which courses through the drag-free environment of the upper atmosphere and nearby space.

An estimated one-third of X-15's flight hours have been at speeds above Mach 2 (about 1500 mph). Seldom has the airplane been held down to even lower ones.

The X-15 has racked up a total of 2 hours, 39 minutes and 47.4 seconds at Mach 4 or about 2,700 mph, a speed impossible for any other manned aircraft.

It has achieved 40 minutes, 45.1 seconds above Mach 5 (3,400 mph) and 11.6 seconds above Mach 6.

Built for a top speed of 4,000 mph (Mach 6) and an altitude capability of 250,000 feet, the X-15 has set a high speed mark (unofficial world record) at 4,104 mph, and record altitude (unofficial) of 354,200 feet. Both marks were made by Joseph A. Walker, NASA chief research pilot. Major Robert A. Rushworth reached the record Mach 6.06 (4,057 mph) December 5, 1963. Walker set an official (FAI) world altitude record of 246,700 feet April 30, 1962. Major Robert M. White set the current official FAI world record altitude of 314,750 feet July 17, 1962.

Although the X-15 is not expected to achieve any higher altitudes than it already has, it may exceed its own top speeds. One of the three aircraft (No. 2) has been modified (mainly with external propellant tanks) to provide longer engine burning time, which will result in much higher speeds, possibly as high as Mach 8, more than 5,000 mph.

The X-15 made 116 flights in its first five years. When it has completed the assigned research task in aeronautical and space technology, it may have made twice as many flights as in the first five years. The tasks may require flying for about five more years before the airplanes are retired.

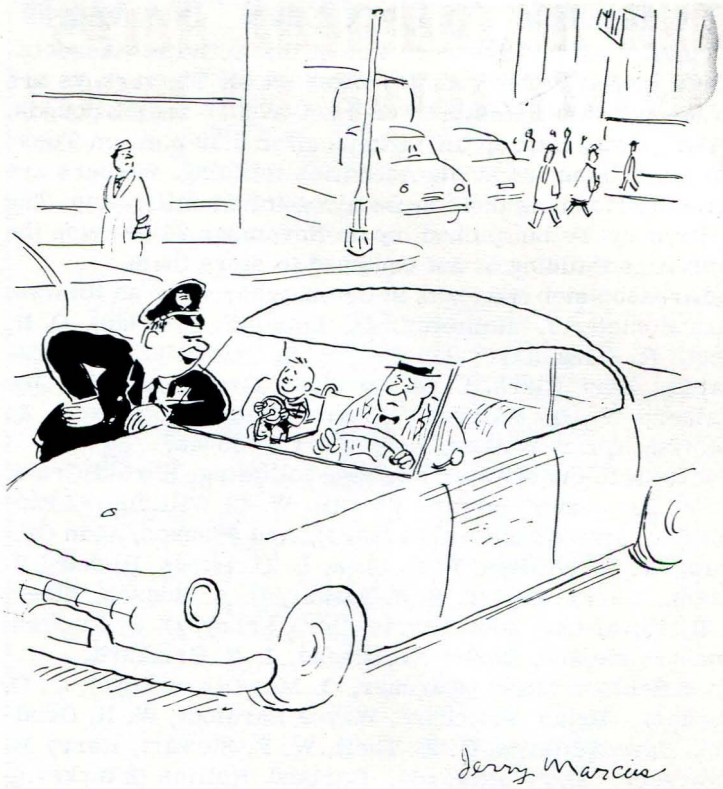
STRUCTURAL BONDING METHOD

A new type of adhesive bonding technique in structural assembly has been announced by NASA.

A NASA Tech Brief (No. 63-10558) describes the use of apoxy resins as an adhesive which leaves no voids or air pockets between the two surfaces joined together.

The new method employs vacuum, heat and pressure to produce the void-free bond line and is effective in applications involving high vibrational, impact or heat environments, the brief says.

Detailed information may be obtained by writing to the Office of Technology Utilization, Headquarters, NASA, Washington, D.C. 20546.



"Okay, who was doing the driving?"

KNOW YOUR CREDIT UNION

The following tips can save you money when you buy that new car:

Investigate before you negotiate. Check NADA wholesale and retail values both for the car you expect to get and the car you wish to trade. Research gives you a foundation of facts and helps you negotiate intelligently.

Don't appear too interested. An eager buyer rarely wins worthwhile price concessions.

Don't try to close the deal too fast. Successful trading takes time. Salesmen will not cut prices until they are convinced that you will not pay the one they are asking.

Don't split the "difference." If your price objective is reasonable, stay with it.

Have one member of the family do all the negotiating. Salesmen love an opportunity to "divide and conquer." If they can get the wife on their side, the rest is easy.

Wait for a buyer's market. Sagging sales, during a seige of bad weather for instance, make it tough to meet quotas and earn commissions.

Buy at the end of the month. The pressure is greatest then to exceed the month's quota and earn the factory rebate.

Shop around before you buy. Overhead and car turnover vary; some dealers consequently can offer better prices than others. Check at least three.

Be careful where you finance the car. Interest rates and methods of quoting them vary from place to place. The only fool-proof way to compare two plans is to multiply payments by months, add extras, and then take a look at the totals. Check on the cost of highly desirable loan insurance and the penalty, if any, involved in repayment ahead of schedule. Your Credit Union is a good place to start; chances are you'll end up there, too.

NASA INSTRUMENT HELPS DETECT COLOR ON MOON

NASA is developing an instrument to detect different lors on the surface of the Moon.

Called a "Moon Blink," the instrument already has proved itself by helping three men detect a red spot in the crater Alphonsus near the center of the Moon. This is the same area in which red spots were observed six years ago.

The instrument is helpful in locating spots of color on the Moon by making the spots appear to blink. The blinking effect is caused by rotating colored filters across the light reflected by the mirror of a telescope.

To detect a red spot on the Moon, red and blue filters are rotated across the light causing the spot to blink in and out of the image.

The instrument is being developed by Trident Engineering Associates, Inc., Annapolis, Md., from an idea of Dr. James B. Edson, technical assistant to the Associate Administrator for Advanced Research and Technology at NASA.

Trident has a $60,000 contract with Goddard Space Flight Center. Goddard let the contract on behalf of the Electronics and Control Division of the Office of Advanced Research and Technology at NASA Headquarters. The contract covers design, fabrication, development and demonstration of the instrument.

The successful demonstration of the "Moon Blink" apparatus occurred October 27 at an observatory near Port Tobacco, Md. The observatory is owned by Lyle Johnson, an amateur astronomer.

Johnson was the first to detect the red spot with the in-rument. After being located by the blinker, the red spot was seen with the aid of a 400-power lens. The blinker and the lens were attached to a 16-inch telescope.

Also observing the spot with the blinker and the eye-piece were E. D. Hall and Joseph Weresuk. The spot remained visible for about 45 minutes after its detection.

The sighting was not recorded. Photographic equipment is expected to be ready for the next opportunity of observation.

Observation of colored spots on the Moon have been reported in the past. Russian astronomer N. Koryzev recorded a sighting in 1958 in the same area as the spot detected by the blinker instrument.

Scientists disagree on the cause of the colored spots but claim that they indicate the Moon may be a source of gases and possibly of energy rather than a "dead" object.

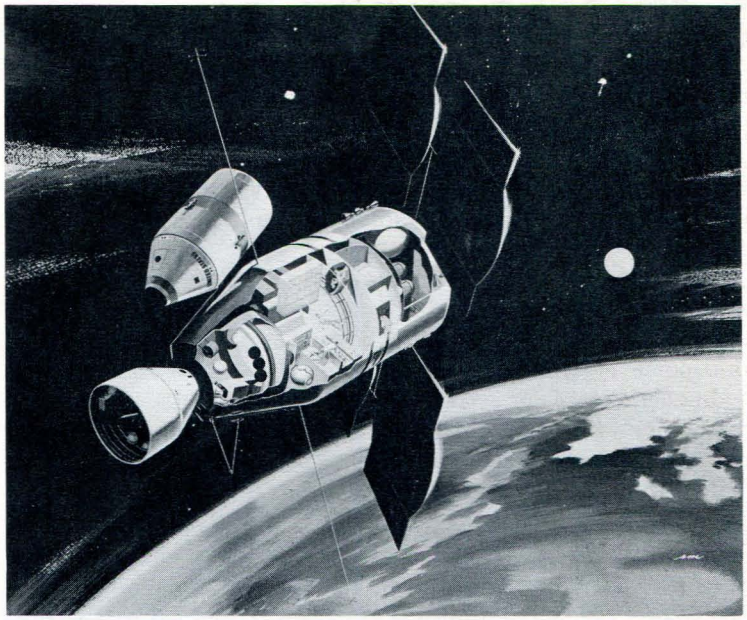
Trident Associates is a research and development firm staffed primarily by faculty members from the U.S. Naval Academy. John J. Gilheany is the firm's project manager. He and Hall are physics professors at the Naval Academy. Johnson is a government physicist and Weresuk is a high school teacher in Annapolis.

Plans to expand the blinker Moon-watch program are being considered.

FOR RENT: Room or rooms for 1 or 2 girls with or with-t meals. Foard, TR 7-0809.

ANTED: Passengers from Newmarket, Forest Park, or Big Bethel Rd. to W.A. on 7:30 shift. Fred King, 4691.

FOR SALE: 1954 Dodge aith automatic transmission, also 21-foot cabin Belvin boat with inboard Willys Jeep motor and marine clutch. King, CH 7-3817.



Earth-orbiting space stations now being developed could be adapted for use in interplanetary exploration by following a "building block" philosophy of vehicle design. Cutaway illustration shows Douglas Missile and Space Systems Division concept of typical basic space station that could evolve into an interplanetary vehicle if a flexible development plan were followed. Although exterior structural arrangement of later-generation space vehicles will change considerably, interior pressure shell and principal subsystems of the earlier space stations would remain basically the same.

SULLIVAN HEADS NASA DIVISION

Francis J. Sullivan has been named Acting Director of the Electronics and Control Division, NASA Headquarters.

The appointment fills the position formerly held by Dr. Albert J. Kelley, who became Deputy Director of the Electronics Research Center.

The division Sullivan heads is under the NASA Office of Advanced Research and Technology. It is concerned with planning and management of aeronautical and space programs of research in control, guidance, stabilization, communications, navigation, tracking, instrumentation and data processing.

Sullivan, who will report to Dr. Raymond L. Bisplinghoff, Associated Administrator for Advanced Research and Technology, has been Deputy Director of the Division since November, 1963. He joined the NASA staff in February, 1962.

Before coming to NASA, Sullivan was an electronics scientist at the Naval Air Development Center, Johnsville, Pa., from 1955 to 1962. Previously he served on active duty in the Navy as an aviator and test pilot. He is a graduate of the Navy's Test Pilot School at Patuxent.

Sullivan was born in Lost Creek, Pa., March 12, 1922. He studied mechanical engineering for three years at Pennsylvania State University. He received a B.S. degree in electronics engineering from Massachusetts Institute of Technology in 1949, and has done graduate work at the University of Maryland and the University of Pennsylvania. He has continued active in the Naval Air Reserve.

WANTED: Two alternate drivers from Beechwood to W.A. on 8 shift. Cooper, 4457.

HARPER APPOINTED TO NEW POSITION

Charles W. Harper, authority on simulation and aircraft flight research on the staff at Ames Research Center, has been appointed Director of Aeronautical Research, NASA Office of Advanced Research and Technology.

Dr. Raymond L. Bisplinghoff, Associate Administrator for Advanced Research and Technology, in announcing the appointment said, "Harper has been one of the nation's outstanding contributors to aeronautical research during the past two decades." Bisplinghoff also announced that Albert J. Evans, now on the Headquarters staff, will be deputy to Harper. "The appointment of Harper and Evans to the key posts will provide NASA with exceptionally strong leadership in carrying forward its important responsibilities in aeronautical research," Bisplinghoff said.

Harper has been chief of the Ames Full-Scale and Systems Research Division since 1959. In this post he has been responsible for simulation research in advanced aeronautical and space vehicles. He joined the Ames staff in 1941 as a junior aeronautical engineer and later directed the world's largest (40 by 80-foot) wind tunnel.

Harper specialized in low-speed flight problems during World War II, and in later years did extensive work on the low-speed problems associated with high-speed aircraft. He headed the boundary layer control research program, and was responsible for the Ames studies of supersonic transport design concepts. He is author of numerous technical reports and papers and has been active in the Advisory Group for Aeronautical Research and Development, North Atlantic Treaty Organization.

Harper was born September 24, 1913, in Winnipeg, Canada. He was graduated in 1941 from the University of California with a B.S. degree in Mechanical Engineering.

Evans, a native of Pawtucket, Rhode Island, is a 1942 graduate of the University of Rhode Island with a B.S. degree in Aeronautical Engineering. He joined the Langley Research Center in 1942, where he specialized in propeller research. He was transferred to Washington in 1953 as a technical assistant in aerodynamics. He has been a member of the staff of the Aeronautics Division since it was formed in 1962. He is author of a number of scientific papers on propeller design and theory, power plant cooling, and aerodynamic performance.

PUBLICATIONS AVAILABLE TO STAFF

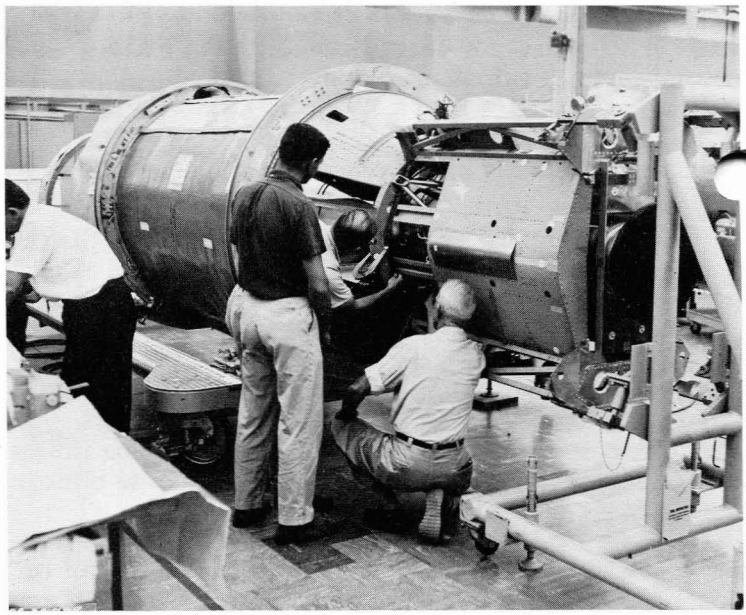
Three NASA publications are available in reasonable quantity to sections preparing research reports from the Publications Branch, telephone 3337. All three are intended to be of assistance to personnel preparing research reports.

Katzoff's "Clarity in Technical Reporting" NASA SP-7010, has long been widely disseminated at Langley but has only recently been announced for public distribution.

Mechtly's NASA SP-7012 "The International System of Units" provides a comprehensive list of physical constants and conversion factors to assist scientists desiring to make use of the International Systems of Units, a system known in its abbreviated form as the SI in all languages.

The NASA Publications Manual, NASA SP-7013, is the latest style guide for preparation of reports to be publish- by NASA.

FOR SALE: 3-bedroom brick rancher in Hallwood. $16,000 V.A. loan can be assumed. LoGioco, 838-0638.



Gemini manned rendezvous, flight hardware-- Gemini Agena, shown here, will be one-half of man's first joining together of two vehicles on space orbit. The Agena will supply the major part of the rocket power and maneuvering capability for the Gemini man-in-space program. It will join with the Gemini spacecraft, containing two astronauts. After hookup of the two vehicles, the combined craft will conduct various space maneuvers. This Air Force Agena, built by Lockheed Missiles and Space Co., is the actual vehicle which will attempt to make the first space rendezvous. The new engine, capable of starting and stopping many times in space, is already installed, as is the control system which is capable of handling 96 commands from the astronauts or ground stations.

BOGART NAMED SPECIAL ASSISTANT

Lt. Gen. Frank A. Bogart, USAF, has been appointed a special assistant to Dr. George E. Mueller, Associate Administrator for Manned Space Flight.

Gen. Bogart will be concerned with industry relationships and special management problems embracing the full scope of program control and contracting.

Gen. Bogart was born in Warren, Pa., was graduated from West Point in 1931 and has had continuous military service. He did graduate study at the Massachusetts Institute of Technology and has completed the General Staff Course, Command and General Staff School and the National War College.

His military assignments have included: Deputy Chief, Plans Division, Army Service Forces; Executive Officer for the Deputy Chief Staff, Materiel, Headquarters, USAF; Director of Budget, Headquarters, USAF; and Director, Supply Headquarters; Air Materiel Command. His most recent assignment was as Comptroller of the Air Force.

FOR SALE: 1954 Chevrolet, 2-door sedan, radio and heater. Cabrera, 723-3505.

WANTED: Ride from Langley Ave., Beaconsdale, to W.A. on 8 shift. Barbara Vick, 4562.

FOR SALE: Electric train set with mountains, houses, trees, switches and accessories - all mounted on 8 x 5-foot board. Johns, TR-72540 after 4 p.m.

WANTED: Riding combination from Deer Park area to W.A. on 7:30 shift. Drake, 4766.

NASA BOWLING LEAGUE

Mexicali Restaurant leads Group A in the NASA Tenpin League with 31 wins and 9 losses. Top bowlers for the week were Bob McGee with a 227 game and Henry Lee with a 620 set.

Odd Balls and Ranch House are tied for first place in Group B with 28 wins and 12 losses each. Top scoring honors went to Gary Beasley with a 250 game and Alton Moore with a 643 set.

Analogs lead Group C with 33 wins and 7 losses. Top scores were rolled by Howard Osborne with a 242 game and 653 set and Peggy Mayo with a 239 game and 623 set.

GROUP A

Mexicali	31	9	Electronic Shop	19	21
Unitary	25	15	Alley Cats	17	23
Devious	24	16	Hornets	16	24
Flyers	23	17	Frame Ups	16	24
Phantoms	22	18	Payloads	14	26
Short Circuits	20	20	Raiders	13	27

GROUP B			GROUP C		
Odd Balls	28	12	Analogs	33	7
Ranch House	28	12	Question Marks	28	12
A-OK's	23	17	Barristers	27	13
Misfits	23	17	ACD	25.5	14.5
Ivy-Farms-	22	18	Dillys	20	20
Flight Engineers	21	19	Greenhorns	19	21
Cee Pees	19.5	20.5	Strike Outs	19	21
Malfunctions	19	21	Alley Oops	19	21
Tenbenders	18	22	Spare Parts	18.5	21.5
Pinwigglers	17	23	METS	17	23
HMS	16.5	23.5	Dopesticks	15	25
Beats Me	16	24	Bowling Belles	15	25
Galaxies	16	24	Lunar Tics	13	27
Spare Oops	12	28	Gliders	11	29

Light Machine Shop 1 leads the NASA Duckpin League with 31 wins and 9 losses. Top scores were rolled by John Dupere with a 142 game and 400 set and Mary Edwards with a 113 game and 306 set.

Lt. Mach. 1	31	9	Ten Spots	18	22
Tigers	25	15	Rebel Bombers	15	25
Lt. Mach. 2	19	21	Strike Outs	12	28

IEEE CHAPTER MEETS TONIGHT

The Hampton Roads Chapter of the Institute of Electronic and Electrical Engineers will meet tonight at the Holiday Inn on Mercury Boulevard.

Arthur M. Shalloway, Electronics Division, National Radio Astronomy Observatory, Green Bank, West Virginia, will be guest speaker. His subject will be "Radio Astronomy." Shalloway will review the history of radio astronomy and give a brief discription of the electronic equipment used in radio astronomy.

A social hour will be held at 6:30 p.m. followed by dinner at 7:30 and the meeting at 8:30. The menu will include a choice of roast beef or seafood at $3.50 a plate. Reservations may be made by calling Curry Spitzer, 3446.

LOST: Man's billfold near Building 1194 - reward. Seabolt, 4626.

FOR SALE: Hampton One Design sailboat #366, complete with trailer - $650. Witherspoon, 723-0847.

FOR SALE: 1962 Volkswagon. Peterson, 838-1485.

Bob Nye, Langley Researcher Staff Photographer, happened to be on hand last week when this seal strayed into the Northwest Branch of Back River near the Impact Structures Section. The seal was accompanied by two other buddies who pushed him ashore. After posing for the picture he went back into the water and swam away.

HOLZMAN APPOINTED CONSULTANT

Brig. Gen. Benjamin G. Holzman, USAF (Ret.), has been sworn in as a consultant to NASA to assist in planning and administration of NASA's expanding research and technology program.

Gen. Holzman retired from the Air Force last month, closing out a career of more than 22 years. He had held his last command, the Air Force Cambridge Research Laboratory, Bedford, Mass., since September, 1960.

Gen. Holzman will work on staff organization and formation of a program for the center in the field of electronics research. He will work closely with Dr. Winston E. Kock, director of the Center.

Gen. Holzman's career has been closely identified with meteorology, physics and electronics. He was Commander of the Air Force Office of Scientific Research from October 1958 to January 1960, when he became Commander of the USAF Research Division.

He was born January 25, 1910 in Los Angeles. He was graduated from the California Institute of Technology and received a master's degree in geophysics in 1933. For two years he was a meteorologist with commercial airlines, then joined the Department of Agriculture in meteorological research. From 1939 to 1942 he worked for the Weather Bureau, rising to the post of meteorologist-in-charge at the Washington, D.C. Master Analysis Center.

He joined the Army in 1942, commanded a weather squadron at Goose Bay, Labrador, and did research and intelligence work with the Soviet Hydrological and Meteorological Mission in Washington. In 1943 he became chief of the Army Air Force's Long-Range Forecasting Section, and later headed weather prediction for the Allied invasion of France. He was weather advisor for the first atomic bomb tests at Alamagordo, N.M., in 1945 and for the later series at Bikini and Eniwetok.

METAL SOCIETY MEETS NOV. 23

The Hampton Roads Chapter of the American Society for Metals will meet on Monday, November 23 at 6:30 p.m. in the Activities Building.

George A. Ratz, Senior Technologist of the Stainless Steel Group of the Applied Research Laboratory of the U.S. Steel Corporation, will present a lecture on "The Metallurgical Factors Contributing to the Embrittlement of Metals."

The embrittlement of metals is a condition which causes a marked loss of ductility with little or no change in other mechanical properties. The influence of crystallographic structures, temperature, phase changes, gases, the effect of loading (stress), and metal configuration on the embrittlement of different metals will be discussed.

Emphasis will be placed on the effect of temper brittleness and tempered martensite brittleness in alloy steels, as well as the common practices used to minimize the deleterious effects of these types of embrittlement. In addition, the embrittlement of stainless steels due to 885 F embrittlement and sigma phase, will be reviewed and discussed.

Ratz graduated from the University of Pittsburgh with a B.S. degree in Metallurgical Engineering. Before joining the Applied Research Laboratory in 1961, he was the Research Metallurgist and Supervisor of the Development Laboratory of the Research and Development Unit of the Duquesne Works of U.S. Steel. At Duquesne he was active in development, production, and maintenance problems involving carbon, alloy, and stainless steels.

He collaborated with B. R. Queneau in the preparation of the series of educational lectures on "The Embrittlement of Metals" presented by Dr. Queneau before the National Metal Congress in Philadelphia. These lectures have since been published in book form by the American Society for Metals.

For reservations or further information concerning the meeting, call H. Herring, 4870, or F. W. Schmidt, 3439.

FREEDOM FROM HUNGER WEEK

In a recent proclamation, President Johnson designated this week as Freedom From Hunger Week. This is part of a world-wide observance of the Freedom from Hunger Campaign to eradicate the age-old problems of hunger and malnutrition which handicap half the human race.

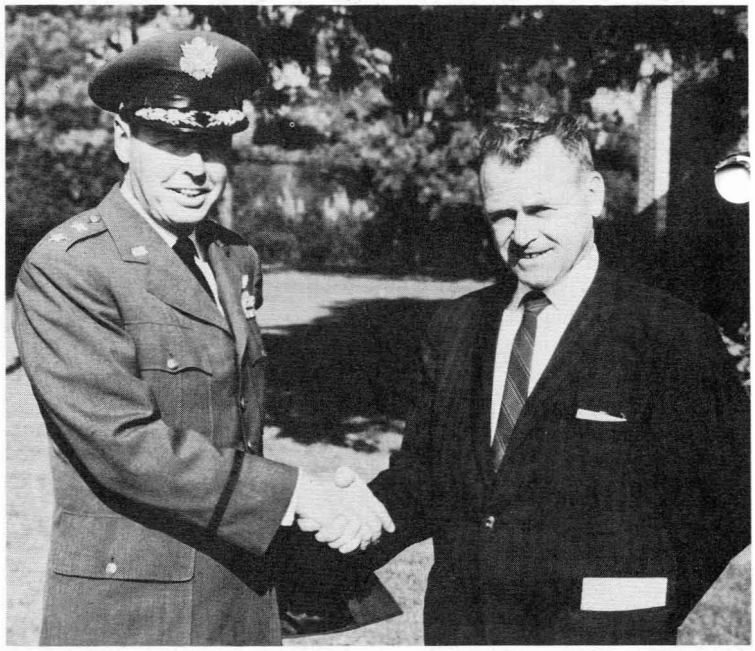
The President has urged all Americans to cooperate with the American Freedom From Hunger Foundation, a nonprofit, nonpartisan, nongovernmental organization, by participating in programs in observance of the President's Proclamation.

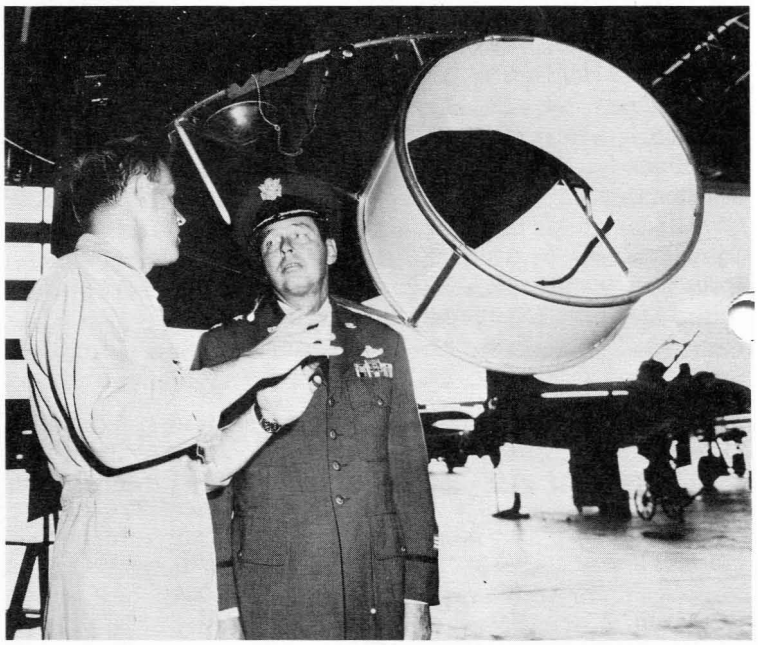
BASKETBALL NOTICE

At a recent organizational meeting of the NASA Basketball League Charles Clarke, 8-foot Tunnel, was elected commissioner and Kal Grunwald, 7 x 10-foot Wind Tunnels, was named vice-commissioner.

Twelve teams have entered the league including Misfits, Boozers, 8-foot, Space Vehicles, Gunners, ACD, Short Circuits, Greenhorns, Packers, Hot Rocks, Ex Raiders, and Structures. The league will be divided into two sections and fees will be approximately $35 per team.

The Referees Association and NASA League will sponsor a rules clinic on Tuesday, November 24 at 5 p.m. in the Activities Building. Persons interested are invited to attend.





Approximately 285 students and faculty members of the Armed Forces Staff College, Norfolk, visited the Langley Center on November 12. Top photograph - Charles J. Donlan (right), Langley's Associate Director, welcomes Major General J. Stanley Holtoner, Commandant of the Armed Forces Staff College. Bottom photograph - Donald J. McGinley Jr., research test pilot in Flight Mechanics and Technology Division, discusses Apollo LEM docking simulation procedures with General Holtoner.

LOST: NASA Library book "Static and Dynamic Electricity" by Smythe. Margery Hannah, 4478.

FOR SALE: 1957 Nash - 2-door coupe - $350. Spirn, CA - 95021, Williamsburg.

FOR SALE: Craftique solid mahogany dining room table - 47 x 72 inches. Hill, 723-5728.

FOR SALE: Girl's 26-inch bicycle. Gillis, LY 6-5938.

FOR SALE: Complete automobile air conditioning unit, tilt-top drafting table, portable radio, and Scuba regulator and spear gun. Gilman, PA 2-5847.

Langley Researcher

VOLUME 3, NUMBER 25 LANGLEY RESEARCH CENTER DECEMBER 4, 1964

MARINER SPACECRAFT LAUNCHED SATURDAY ON FLIGHT TO MARS

NASA launched the Mariner IV spacecraft from Cape Kennedy last Saturday on a course toward Mars in an attempt to obtain the first closeup pictures of the planet which scientists believe may harbor life.

The spacecraft chose the wrong celestial body Sunday as its heavenly guidepost toward Mars but Monday it executed a maneuver which placed it in position eventually to send photographs of Mars back to Earth.

On the fourth attempt in three days, a radio signal was sent to the spacecraft and this time it successfully completed the tricky maneuver which locked it onto the bright star Canopus in the camera-aiming operation.

This crucial maneuver was accomplished by means of an electronic eye in Mariner IV as it hurled toward Mars at a speed of more than 7,000 miles an hour for its rendezvous in July with the so-called red planet. The eye took a "fix" on Canopus, the second brightest star in the heavens.

The signal was sent from the Jet Propulsion Laboratory of the California Institute of Technology. According to a JPL spokesman, this was the first time a star was used for an attitude reference on a long space mission.

An Atlas-Agena booster hurled the spacecraft on its seven and a half-month, 325-million-mile voyage to the vicinity of Mars.

(Continued on page 3)

TWO SATELLITES LAUNCHED BY ONE SCOUT VEHICLE

The Scout launch vehicle, developed by the Langley Research Center, scored a first in NASA history on November 21 when two satellites - the Air Density and Injun Explorer Satellites - were put into orbit by one launch vehicle. On November 6, Scout also successfully launched the Explorer XXIII meteoroid detection satellite. This marked the first time that three Langley managed satellites had been put into orbit in a one-month period.

The Air Density and Injun Explorer Satellites, now designated as Explorers XXIV and XXV, were put into orbit by a four-stage Scout rocket from the Pacific Missile Range from Vandenberg Air Force Base, Lompoc, Calif.

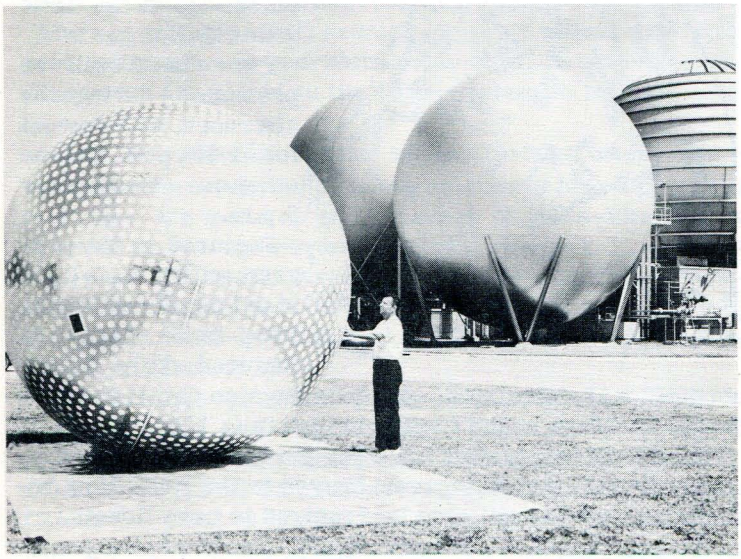
Explorer XXIII was launched from Wallops Island by a four-stage solid propellant Scout vehicle.

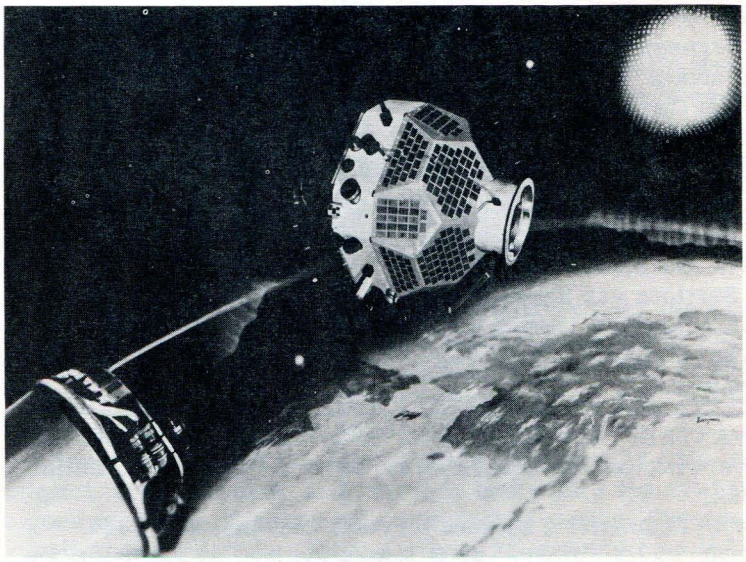
Purpose of the dual satellite experiment was to provide more detailed information on complex radiation-air density relationships in the upper atmosphere.

Once in orbit, the 135-pound payload separated into a 12-foot polka-dotted sphere for air density and atmospheric heating measurements and a two-foot diameter satellite bearing particle detectors to measure the bombardment of the atmosphere by energetic particles from space.

The amount of energy brought into the Earth's upper at-

(Continued on page 5)





A two-in-one satellite experiment to probe simultaneously the density and radiation characteristics of the upper atmosphere were launched by a Scout vehicle by the Langley Research Center on November 21. Left photograph - The 12-foot diameter air density spacecraft is shown in front of huge vacuum spheres at the Langley Center. These spheres are part of several modern laboratories used to investigate problems of very high-speed flight and reentry from space. Right photograph - This artist sketch shows separation in orbit of (from left) the last stage of the Scout launch vehicle, Injun satellite (Explorer XXV) with instruments deployed, and the 12-foot diameter air density spacecraft (Explorer XXIV). The Injun Explorer spacecraft was built by the State University of Iowa under contract to Langley. The launch took place at the Pacific Missile Range from Vandenberg Air Force Base, Lompoc, 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, Building 587, telephone 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on December 8 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on December 16 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Linda Hale, 2323, for an appointment.

NEW HEIR. . .Celebrating the birth of a son on November 5 is George L. Maddrea, Electrical Systems Division.

BLOODMOBILE. . .The Red Cross Bloodmobile will make its final visit for 1964 to the Center on December 9. 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.

PINOCCHIO. . .The Newport News Branch of the American Association of University Women will present the Nicolo Marionettes in Pinocchio, a children's theater production, tomorrow. There will be two shows - one at 10 a.m. and the second one at 2 p.m. Both shows will be presented at Ferguson High School. Tickets are fifty cents for children or adults and may be purchased from any AAUW member or at the door.

CALENDAR NOTICE

Officials of the Stock Section announced that requests for 1965 desk and wall calendars should be submitted by Thursday, December 10.

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.

WANTED: Alternate driver from Brandon Heights and Warwick-on-the-James area to W.A. on 8 shift. Butler, 4621.

WANTED: Girl's 24-inch bicycle. Dickens, 826-1844.

FOR SALE: House at 5 Edgewood Dr., $1000 below appraisal. Elliott, LY 6-9766.

FOR RENT: 3-bedroom brick rancher with attached garage, built-in stove, located in Hampton - $130 monthly. 596-8076.

WANTED: Ride from Williamsburg to W.A. on 8 shift. Kathryn Smith, 4842.

WANTED: Driving combination from Ivy Farms to W.A. on 8 shift. Boyden, 4425.

"Yep-Here's One With Plenty of Interest!"

CHILDREN'S PARTY DECEMBER 13

The Activities Association's Children's Christmas Party will be held on Sunday, December 13 at the Activities Building.

Two shows will be presented during the afternoon with one set for 1:30 p.m. and the other one scheduled for 3 p.m.

Featured on the program will be television star Poop-Deck Pappy. Poop-Deck Pappy is featured daily on one of the local television stations. He also entertained the Center children at the Christmas party in 1959.

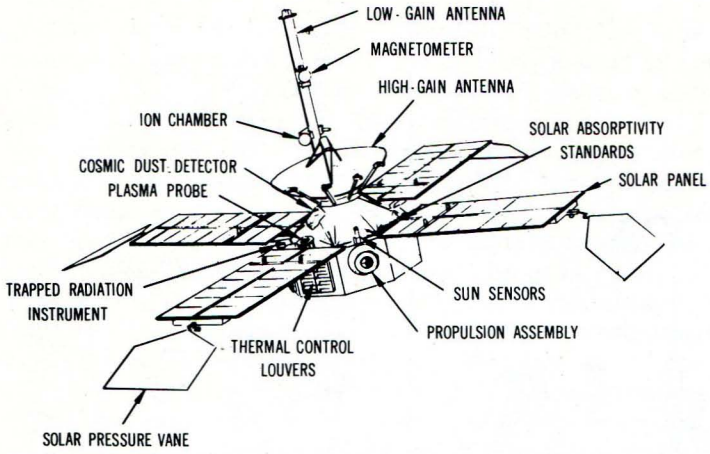
Tickets are twenty-five cents per person and may be purchased from District Representatives to the Activities Association. Adults will also be required to have tickets.

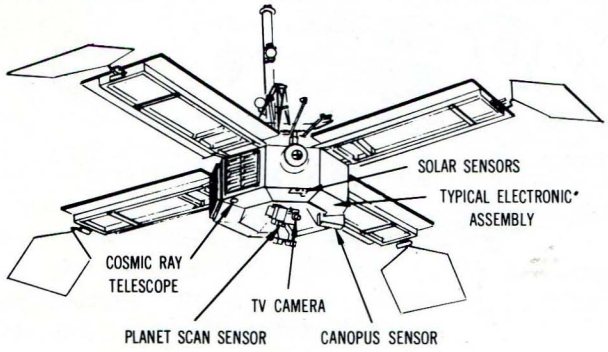
PROFESSOR TO VISIT CENTER

Dr. James J. Kauzlarich, Chairman of the Department of Mechanical Engineering, University of Virginia, will visit the Center on December 8. Employees wishing an appointment with Dr. Kauzlarich should call the Training Office.

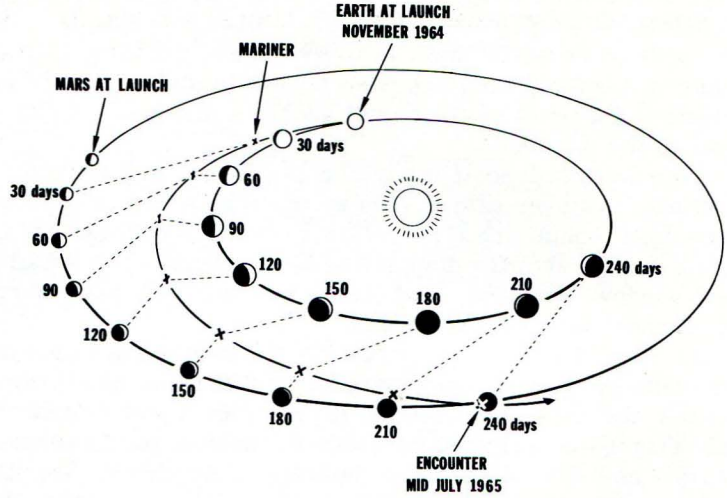
WANTED: Passengers to Miami or enroute on December 19. Haeger, 3483.

MARINER/MARS SPACECRAFT





MARINER TRAJECTORY TO MARS



MARINER SPACECRAFT LAUNCHED

(Continued from page 1)

If all goes well, the craft will televise up to 22 pictures of the Martian surface from about 10,000 miles away during a 30-minute flyby next July and send them back to Earth. Instruments will measure radiation, magnetic fields and micrometeorites in interplanetary space and near Mars.

Mars, a predominantly reddish-colored planet with some greenish blue areas and white polar caps, is given the best chance of any planet in the solar system to support some type of life.

Since the greenish areas appear through telescopes to change color seasonally, some scientists have speculated that they are made up of vast areas of moss-like vegetation that go through normal seasonal changes.

Mariner IV is not expected to uncover any clues to the existence of Martian life, but its scientific readings near the planet will be vital to U.S. plans to land life-seeking robots on Mars in 1969.

The Mariner program is directed by NASA's Office of Space Science and Applications. It has assigned project management to the Jet Propulsion Laboratory. JPL designed, built and tested the Mariner spacecraft. Lewis Research Center is responsible for the Atlas-Agena launch vehicle and Goddard Space Flight Center's Launch Operations supervised the launch at Cape Kennedy.

WANTED: Ride to Atlanta on Dec. 18 or 19. Lee, 2395.

FOR SALE: 3-bedroom brick rancher with attached garage and anchor fenced-in backyard - located in Brentwood. Can obtain new loan or assume present G.I. loan with $99 monthly payments, Campbell, 595-0897.

CHRISTMAS SAFETY REMINDERS

THE TREE IS NOT FOR BURNING -- The Christmas Tree, that is. Staff members are requested to keep this fact in mind when putting up decorations at work or at home. Make flameproofing of trees and greenery a part of your Christmas safety program.

Only flameproof trees and decorations will be permitted in Center facilities. Trimmings and fabrics may be made flameproof by using a solution of 9 ounces of borax and ounces boric acid mixed with 1 gallon of hot water. This solution may be used to spray, dip, or brush on the articles and tree to make them flameproof. One simple method of spraying is the use of an insect spray gun or vacuum cleaner spray gun.

Staff members are urged not to use medicinal cotton such as the type used in the dispensaries. This cotton goes through a special sterilizing process and is highly flammable.

Electric lighting sets should not be used on metallic trees. A voltage leak from faulty lights or wiring could result in severe shock or burns if the tree is touched. Instead use an off-the-tree spot or floor lights for effective display.

Staff members are reminded that all decorations used for group functions at the Activities Building must be approved by the Safety Office.

In placing the tree, it is best to avoid spots near the fireplace, stove, television set, radiator, or electric bulbs. The tree should not be located near any stairway or elevator which would provide an upward draft. It should not be near entrance doors or otherwise block exits.

Never use candles. Use electric lighting sets only. Inspect every socket and wire to make sure the set is in good condition. Discard sets with frayed wiring. Provide a switch some distance from the tree for turning tree lights on and off.

Do not leave lights burning when no one is in the house. From time to time inspect the tree to see if any of the needles near the lights have started to turn brown. If so, change the position of the lights.

When needles start falling, take the tree down and discard it outdoors.

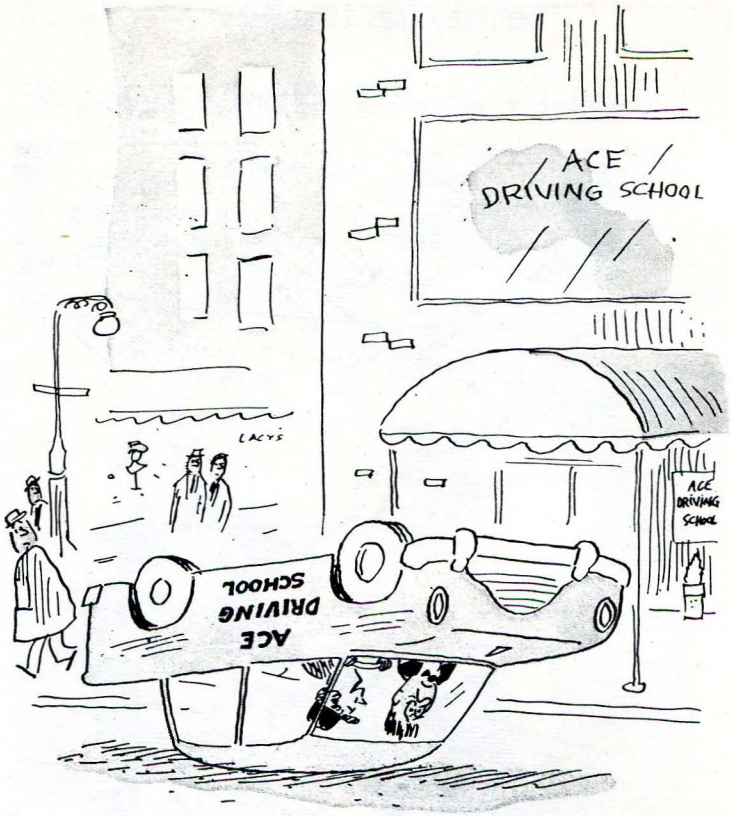
KNOW YOUR CREDIT UNION

So you want to increase your share holdings or make a payment on a loan? An easy, no waiting way is to patronize Uncle Sam. Many members do not realize how simple it is to save or repay by mail. Initially, no special form is required. A letter will do provided it clearly states the action desired and contains the name, address, and account number of the member.

Once the first deposit or payment is sent in, further transactions are even easier. The member gets back a window envelope containing (1) a yellow reversible address card, (2) a receipt showing disposition of his check, (3) a smaller window envelope, and (4) the two vouchers necessary to support the next transaction.

He files the receipt and leaves the remaining items in the outside envelope until needed. At that time, he (1) discards the outside envelope, (2) completes both vouchers showing name and account number - no address is necessary - and the disposition desired of his check, (3) puts both copies of the voucher in the remaining envelope, (4) reverses yellow card and inserts it in this envelope with Credit Union address showing through the window, and (5) seals envelope, adds return address, and mails.

The cycle is now underway and continues indefinitely in a self-perpetuating, back-and-forth manner. The procedures were designed to save members time and inconvenience so why not give the system a try? Maybe you'll like it!



"Well, did I pass?"

SA-7 CAMERA CAPSULES FOUND

Two barnacle-encrusted camera capsules from the Saturn I SA-7 vehicle have been found after several weeks adrift in the Atlantic.

Color film from the two capsules, providing data on the rocket's operations in flight, was in good condition.

SA-7 was launched September 18 from Cape Kennedy. A search for the eight camera capsules aboard was not conducted because of high seas resulting from Hurricane Ethel. The capsules impacted some 530 miles down range from the Cape.

The capsules were found in the vicinity of San Salvador and Eleuthera Islands in the Bahamas. At San Salvador, two beachcombing sailors spotted a capsule floating near the shore. They swam out and retrieved it. At Eleuthera on the same day, a Pan American World Airways employee spotted a washed-up capsule during a beach stroll. The recovery points, separated by about 140 miles, were each more than 200 miles from the impact point.

Engineers of the Kennedy Space Center and the Marshall Space Flight Center report the interiors of both capsules were dry and in good condition.

One of the capsules contained motion pictures of the interior of a liquid oxygen tank (number three tank). The other camera photographed the area between the Saturn I's first and second stages, showing separation of the stages and ignition of the second stage. Each camera had 100 feet of film.

The camera capsules were built for the Marshall Center, manager of the Saturn program, by Cook Electric Company, Morton Grove, Illinois, using a camera provided by the D. B. Milliken Company, Arcadia, California. Chrysler Corporation assisted MSFC in the modification, checkout and installation of the systems.

AIAA TO HEAR DR. WAGGONER

Dr. James N. Waggoner, Director of Life Sciences, Ai-Research Division of the Garrett Corporation, will be guest speaker at a meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics, on Tuesday, December 8 at the Holiday Inn, Hampton.

Dr. Waggoner will speak on "Human Tolerance to High-Speed, High-Altitude Flight." He will discuss man's role and capability in the aircraft - spacecraft program of the present and future. The particular stresses inherent in the environment of supersonic and space travel will be presented, along with an approximation of man's ability to cope with these stresses. Finally, there will be a consideration of the current knowledge of man's reaction to the combination of stresses of flight, and the knowledge still needed in order to assure human safety on missions of the future.

Since receiving his B.S. and M.D. degrees from Indiana University, Dr. Waggoner has had a distinguished career in aviation medicine and medical research. He served as a Flight Surgeon in the Navy and as Regional Medical Director for United Air Lines prior to assuming his present position. His work has included research and development in bio-instrumentation for measurement of physiological data in space medical subjects, physiological tolerances in space flight and supersonic aircraft, life support systems, and utilization of an orbiting laboratory for biological investigations.

The meeting will be preceded by a social hour at 6 p.m., followed by a baked ham dinner at 7 and the meeting at 8. Reservations for the dinner may be made by calling William Michael, LY 5-0463, Harleth Wiley, LY 6-4427, or L. W. Enderson, 595-6702, by December 7.

TWO SATELLITES LAUNCHED

(Continued from page 1)

mosphere by these colliding energetic particles is not known, although there is evidence that this energy is one of the factors governing the atmosphere's density, temperature and composition at high altitudes.

Explorer XXIV will continue high altitude density measurements in the polar regions, determine the sources of atmospheric heat by comparing data with that of Injun and other satellites, and determine density and temperature variations of the atmosphere as a function of latitude.

Explorer XXV will measure the flux of corpuscular radiation into the atmosphere (the atmospheric bombardment by charged particles from space) and will sample the concentration and energy distribution of the charged particles.

The research experiments are part of the program of NASA's Office of Space Science and Applications. Project management is assigned to the Langley Research Center where the project was conceived.

The following Langley Center scientists and engineers have had active roles in the development of the satellites and the experiments:

Scientific Investigators for Air Density Spacecraft - William J. O'Sullivan, Principal Investigator; Gerald M. Keating, and Claude W. Coffee, Jr.

Project Participants - Claude W. Coffee Jr., Project Manager; Charles V. Woerner, Air Density Explorer Spacecraft Manager; Gerald M. Keating, Project Scientist; and Robert E. Johnson, Technical Project Engineer.

Launch Vehicle - Eugene D. Schult, Head, Scout Project Office; James R. Hall, Scout Vehicle Technical Manager; C. T. Moore, Scout Payload Coordinator; Seymour Salmirs, Scout Performance Assurance Engineer; Elmer J. Wolff, Scout System Integration Engineer; and Robert M. Dvorak, Scout Range Coordinator.

The following scientists and engineers have had active roles in the development of Explorer XXIII and its experiments:

Earl Hastings, Jr., Project Manager; Hugh C. Halliday, Technical Project Engineer; Leon V. Taylor, Instrumentation Project Engineer; Jose M. Alvarez, Operations Manager; Charles A. Gurtler, Experimenter, Pressurized Cells; Alfred G. Geswick, Experimenter, Impact Detectors; James H. Siviter Jr., Experimenter, Capacitor Detectors; James Gene, Experimenter, Solar Cell Degradation Experiment; Eugene D. Schult, Head, Scout Project Office; James D. Church, Scout Project Field Operations Director; C. T. Moore Jr., Payload Coordinator; Leo Forrest, Systems Integration Engineer; Clarence Robins, Mission Assurance Engineer; Kermit G. Pratt, Project Manager, Scout Flight Loads Experiment; Moses J. Long, Systems Engineer, Flight Loads Experiment; and Charles J. Laird, Instrumentation Engineer, Flight Loads Experiment.

FOR SALE: Stenotype machine. Githens, PA 3-5324.
FOR SALE: 1953 Ford $100. Tyeryar, UN 8-9031.
LOST: "Photographic Lenses and Shutters" by Richard W. St. Clair. J. A. Penland, 4770.
FOR SALE: Rock tumbler - $5. Clem, PA 2-2146.
FOR SALE: H. O. train set with extras. Bielat, PA 2-6976.
WANTED: Passengers to Florida on Dec. 22. Shirey, 3421.
WANTED: Persons to share driving and expenses to Louisiana during Christmas holidays. Creddur, 4731.

NASA BOWLING LEAGUES

Mexicali Restaurant continues to lead Group A in the NASA Tenpin League with 32 wins and 16 losses. Unitary is in a close second with 30 wins and 18 losses. High scores were rolled by Frank Plotz with a 233 game and Henry Lee with a 593 set.

Odd Balls lead in Group B with 36 wins and 12 losses. Taking top scoring honors were Charlie Goad with a 250 game and M. G. Beasley with a 664 set.

Analogs lead in Group C with 35 wins and 13 losses. In a close second are Question Marks with 34 wins and 14 losses. Top scorers were John Taylor with a 267 game, Peter Lewis with a 633 set, and Jane Oehman with a 217 game and 585 set.

GROUP A

Mexicali	32	16	Alley Cats	24	24
Unitary	30	18	Electronic Shop	23	25
Phantoms	28	20	Frame Ups	22	26
Flyers	27	21	Hornets	18	30
Devious	26	22	Payload	17	31
Short Circuits	25	23	Raiders	16	32

GROUP B			GROUP C		
Odd Balls	36	12	Analogs	35	13
A-OK's	30	18	Question Marks	34	14
Ranch House	29	19	ACD	32.5	15.5
Misfits	28	20	Barristers	31	17
Ivy Farms	26	22	Dillys	27	21
Cee Pees	25.5	22.5	Greenhorns	27	21
Malfunctions	24	24	Strike Outs	26	22
Flight Eng.	22	26	Alley Oops	23	25
Beats Me	22	26	Spare Parts	19.5	28.5
Pinwigglers	21	27	Dopesticks	19	29
Ten Benders	21	27	Bowling Belles	18	30
Galaxies	19	29	METS	18	30
HMS	18.5	29.5	Gliders	13	35
Spare Oops	12	36	Lunar Tics	13	35

Light Machine Shop No. 1 continues to lead in the NASA Duckpin League with 33 wins and 15 losses. Top bowlers for the week were Chuck Whitcomb with a 156 game and 380 set and Elizabeth Patterson with a 105 game and 300 set.

Lt. Mach. 1	33	15	Lt. Mach. 2	23	25
Tigers	28	20	Rebel Bombers	23	25
Ten Spots	25	23	Strike Outs	12	36

FOR SALE: 21-inch console TV. Bryant, LY 5-0819.
FOR SALE: 21-inch Motorola console TV - $30. Haigler, 826-1721.
WANTED: Ride from Redheart Dr. to W.A. on 8 shift. Anne Leatherman, 2268.
FOR SALE: Sofa and matching chair - $50, platform rocker - $15. Sealey, 826-2679.
FOR SALE: 12-gauge pump gun with variable choke. Raney, 877-2688.
WANTED: To trade two Community Concert Blue Series patron tickets to Peiffer Jazz Trio or Molina's Ballet for White Series tickets for Shumacker or Houston Symphony. Thornton, 826-4654 after 4 p.m.
FOR SALE: 3/4 ton air conditioner, 110-volt - $65; full-size electric range - $125; Danish modern sofa and chair, needs new cushions - $40; coffee table - $10. Ransdell, 877-0008.

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	4 FISCAL DIV. CHRISTMAS PARTY	5 DYNAMIC LOADS CHRISTMAS PARTY
6	7	8 BRIDGE CLUB	9 BLOODMOBILE	10	11 SPACE VEHICLE CHRISTMAS PARTY	12 STRUCT. MECH. CHRISTMAS PARTY
13 CHILDREN'S CHRISTMAS PARTY	14	15 BRIDGE CLUB'S CHRISTMAS PARTY	16 AMPD CHRISTMAS PARTY	17	18 RETIREMENT PARTY	19 DVS CHRISTMAS PARTY
20	21	22	23	24	25 MERRY CHRISTMAS CHRISTMAS	26
27	28	29	30	31 NEW YEAR'S EVE DANCE 9 p.m.-1 a.m.	HAPPY NEW YEAR	

1964 DECEMBER 1964

Shown above are the events scheduled to take place in the Activities Building throughout the month of December. The year will close with the annual New Year's Dance on December 31 in the Activities Building.

GENERAL PHILLIPS APPOINTED DIRECTOR OF APOLLO PROGRAM

Maj. Gen. Samuel C. Phillips has been appointed director of the Apollo program, it was announced by Dr. George E. Mueller, NASA Associate Administrator for Manned Space Flight.

Gen. Phillips has served as Apollo deputy director since January 15. For the past year, Dr. Mueller has directed the Apollo Program in addition to his overall responsibilities for directing and administering the entire NASA manned space flight program.

As Apollo Program Director in the Office of Manned Space Flight, Gen. Phillips will have responsibility for directing all aspects of the Apollo three-man lunar exploration program, including Saturn launch vehicles and Apollo spacecraft.

Before his assignment to NASA Headquarters, Gen. Phillips was Vice-Commander of the Air Force Ballistic Systems Division, Los Angeles. Previously he was director of the Minuteman Systems Program. Phillips has served in the Air Force since 1942.

WANTED: 2 alternate drivers from Maxwell Lane - Deep Creek area to W.A. on 8 shift. Pierce, 4539.
WANTED: Passengers or alternate drivers from Newmarket or Briarfield Rd. to E.A. on 8 shift. Parker, 2292.
WANTED: Driving combination from Sussex-Hampton to W.A. on 8 shift. Newman, 4521.
FOR SALE: 3-bedroom, air conditioned rancher in Bethel Park - pay $995 and assume loan. Kirkland, 826-0890.

NASA TO USE BOEING 707 PROTOTYPE FOR SST STUDIES

NASA has awarded a contract to the Boeing Company for dynamic flight simulation work for the supersonic transport program. The $2.5 million contract was made by the Langley Research Center.

Under the terms of the study, Langley pilots and engineers and Boeing pilots will use the prototype of the Boeing 707.

The 707 prototype will be modified by installation of major control and computer equipment so as to permit complete simulation of a wide variety of supersonic transport types.

The analog computer will be connected to the pilot's controls for use on flights duplicating those of different configurations of supersonic transports as programmed by NASA.

The modifications will take several months to complete. Preliminary checkout of the equipment will be completed next spring. The airplane will be operated at Langley for several months.

NASA used the prototype 707 on a similar basis last summer for a study of low speed flight problems.

FOR SALE: Shure M3D-N21D cartridge. Brooks, 838-237
FOR SALE: 1963 Plymouth Fury convertible, 330 hp, automatic transmission - $2,050. Hanks, 838-2665.
FOR SALE: 1964 Volkswagon 1500-S station wagon with sliding top - 600 miles. Pausch, 595-0057.

CLUB OF THE MONTH

"Set them up in the next alley," a cry the modern day kegler can hardly remember. A cry with a nostalgic ring for many of the more experienced bowlers. This memorable sound along with the manual pinsetters and, of course, the picturesque pinboy have completely vanished from the more modern bowling lanes.

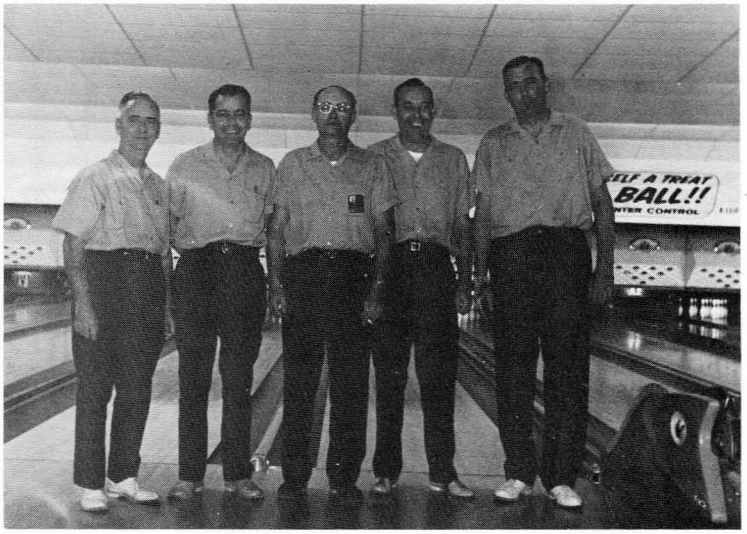
Bowlers at NASA can still remember those good ole days. The NASA, formerly NACA, Bowling League was formed amid the golden days of bowling. Several persons bowling in the NASA league this year can remember when the league was first organized in 1948 with 10 teams participating. A group of men and women bowling once a week in Phoebus decided it would be more fun to form a league. The league was formed and bowling was started at the Wythe Lanes.

A few of the beginning bowlers were Ike and Marie Edgett, Bill Wood, Duke Woolson, Ashley Smith, Bruce and Louise Earnhardt, Lucille Blanco, and Dorothy Moore. As the word got around more and more people showed their interest in bowling in the league. About eight years after the formation of the league it outgrew the Wythe Lanes and moved to the Sports Bowl. This was in 1956 and was the first year the league became ABC sanctioned. It was the same story as at Wythe, the league grew and in 1958 moved to Circle Lanes with 28 teams. Again more teams applied for entrance into the league than the house could handle so in 1963 the league expanded to 40 teams and moved to Hidenwood Fairlanes. During the current bowling season the league can proudly make claim of being the largest league on the East Coast.

The most frequent champion in those early days was the first-sponsored team in the league - Headpins. This team consisted mainly of people in the ISS section of IRD and the evidence of their frequent winning is on display there now. Members of this first-sponsored team were Frank Hart, John Joyce, "Dink" Rollins, Stan Pearson, Bob Horstman, and Tommy Vranas. On the other end of the calendar the winners of the leagues in the 1963-64 season were the Tom Cats, now Mexicali, and the Misfits.

Since the beginning of the old NACA league, many of the people involved have taken on active parts in Peninsula bowling. In 1949 Charles W. "Bill" Wood Jr., and an employee from the Naval Weapons Station initiated the forming of the Hampton Roads Bowling Association. This organization has grown until it now supports some 4,000 bowlers in the Peninsula area. Tommy Vranas was elected president of the HRBA for the 1963-64 season and again for the 1964-65 season. Tommy is one of the few men to be elected president two terms in succession. Mike Panz and Bill Wood are past presidents of the HRBA. Another honor that has been bestowed on Mike and Bill is their election into the HRBA Hall of Fame. Only five people have been elected into this glorious spotlight and NASA personnel have captured two berths.

The HRBA also selects a man each year whom they feel has helped the Peninsula area bowling more than any other individual. This honor does not carry with it the ability to bowl. This is an honor given for work done in the Peninsula area that will benefit the bowlers. Out of the seven years this award has been presented, NASA has placed two men on this list. In the 1961-62 bowling season Frank Hart was awarded the "Bowler's Man of the Year" award and in 1963-64 Tommy Vranas was chosen "Man of the Year".



CHAMPIONSHIP BOWLERS. Top photograph - Members of the Tom Cats, now Mexicali, who won Division A Championship during the 1963-64 season are (from left): Frank Hart, William "Shot" Campbell, Walter Weller, and Will Watson. Second photograph - Members of the Misfits who won Division B Championship in the 1963-64 season are: Tom Lusby, Manfred Cross, Tom Dudley, Charles Gerrity, and David Vann.

In the 1964-65 season, the league has been split into three divisions. This gives the league a scratch division, a low handicap and a high handicap division.

The league elected one set of officers and serving as president is J. B. Lovell, Lunar Orbiter Project Office. Other officers are: vice-president - Durward Bolding, Ling-Temco-Vought contractors for NASA; secretary - Peggy Mayo, and treasurer - Charles Gerrity, Electrical Systems Division.

The league, even with 40 teams participating, still emphasizes bowling for fun, relaxation and social recreation with fellow employees. The past year the league spent about $750 for trophies alone and distributed them to the deserving individuals. The balance of money in the treasury is used to finance a banquet. The banquet consists of dinner for bowlers and their wives or girl friends, dancing to an orchestra, and usually a drawing for prizes or cash.

INDUSTRY PROPOSALS REQUESTED FOR HYPERSONIC RAMJET DESIGN

Proposals for the conceptual and preliminary design of a hypersonic ramjet research engine are being sought from the aerospace industry as the beginning of Phase I of the NASA's Hypersonic Ramjet Experiment Project announced last June.

Interested companies, or groups of companies, have until June 7 to file their technical proposals with the Langley Research Center, which is managing the Project under the direction of NASA's Office of Advanced Research and Technology.

The project seeks the eventual construction of a research ramjet test engine as a means of advancing the technology of air-breathing propulsion which NASA has been developing for the past 25 years.

Until recently, the design and construction of such a research engine would have been virtually impossible because of important gaps in essential knowledge. Through component research the gaps appear to have been narrowed sufficiently to make the construction of a research engine feasible.

Because of its relative fuel economy, the ramjet engine is considered a promising propulsion system for flight missions at hypersonic speeds -- those above 3,300 miles per hour, or more than five times the speed of sound.

The ramjet powerplant is expected to be useful for the hypersonic transport aircraft, for boosters, and for spacecraft flying within the atmosphere. Engineers and scientists foresee great advantages, compared with other flight systems, in reduced weight and improved flight efficiency with the ramjet at hypersonic speeds.

In its simplest form, the ramjet has no moving parts. It compresses air by ramming it into the front of the engine at high speeds. In contrast the turbojet requires a mechanical air compressor.

Energy is added by burning fuel in the compressed air, and the combustion gases then expand rearward through the engine's tailpipe to produce thrust. The ramjet operates best at speeds of 2,000 miles per hour or more, in the speed range above turbojet engines.

NASA expects to select three contractors from the companies responding to the request for proposals.

Each will conduct a detailed study of advanced ramjet engine design, to define the best possible ramjet research engine, and to develop a preliminary engine design for a research flight engine.

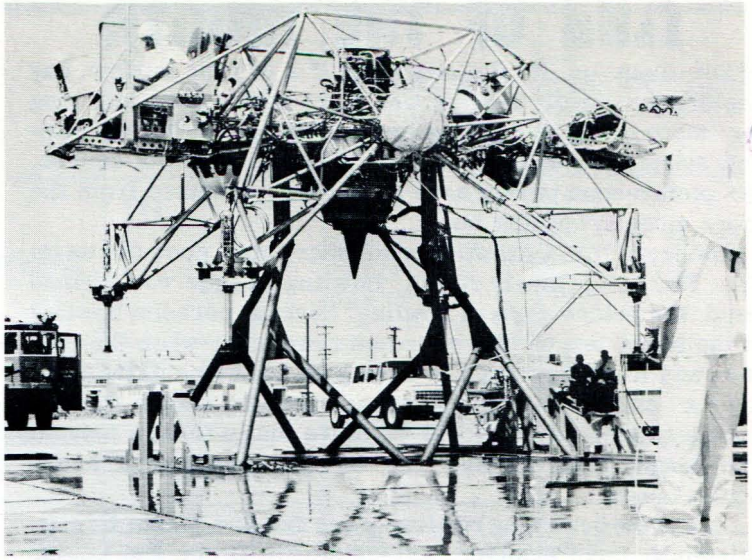
In the first phase of the project, the selected contractors will prepare engine development plans for Phase II, and these plans will be considered as technical proposals for further work in the project.

Because the Hypersonic Ramjet Experiment Project is intended ultimately to include flight research with the engine mounted on the X-15 No. 2 airplane, the guidelines for preliminary design include a weight limitation of 800 pounds for the final research engine including necessary flight test instrumentation, and dimensions compatible with mounting the engine near the lower aft fuselage of the X-15.

Liquid hydrogen fuel is specified for the research engine. The X-15 No. 2 will be capable of carrying 110 gallons of this fuel.

The NASA bid request seeks a ramjet capable of operating at flight speeds between Mach 3 (about 2,000 mph) and Mach 8 (about 5,300 mph.)

The Hypersonic Ramjet Project is in the programs of the Aeronautical Research Division of the NASA's Office of Advanced Research and Technology. The work will be carried out under the technical supervision of the Langley Center, with the assistance of the Ames, Lewis, and Flight Research Centers.



Rigorous tests, which ultimately will lead to landing on the Moon, are conducted by NASA in such strange-looking contraptions as this spidery device. At Flight Research Center X-15 pilot Joe Walker is shown checking out electric flight control systems of the Lunar Landing Research Vehicle. The LLRV is locked in this "tilt table" device which affords the LLRV complete freedom of motion yet restricts it from actual flight. Thus the occupant gets the feel of a descent to the low-gravity surface of the Moon.

NEW YEAR'S DANCE PLANNED

The Activities Association's Annual New Year's Eve Dance will be held at the Activities Building on Thursday, December 31.

The outstanding social event will be semi-formal which means the ladies may wear long or short dresses and their escorts may wear business suits, tuxedoes or tails.

Music for the affair will be furnished by Charlie Johnson and dancing will be from 9 p.m. until 1 a.m.

Only a limited number of tickets will be sold and the admission will be seven dollars per couple. Free setups and seasonal favors will be furnished. Reservations may be made by calling the Activities Building, telephone 4583. No reservations will be held after 10 o'clock.

Tickets may be purchased from the following members of the Executive Board:

Herbert Pelton, Building 1220, phone 3415; A. J. Voitlein, Building 1244, phone 4517; Virginia LaPrade, Building 1152, phone 3337; Ray Goodman, Building 1232, phone 3231; Herbert Boulter, Building 1230, phone 3446; Humbert Rockey, Building 1230, phone 4807; Linda Johnson, Building 587, phone 2384; Betty Tholl, Building 1251, phone 4711, and Richard Kurtz, Building 586, phone 2362.

FOR SALE: 1956 Hallmark mobile home - 2-bedroom. McCrocklin, 868-6159.

WANTED: Trumpet. Carmines, UN 8-3811.

LANGLEY RESEARCH CENTER

TRADITION OF NEARLY HALF CENTURY OF SERVICE TO SCIENCE OF FLIGHT PERMITS LANGLEY STAFF TO LOOK WITH CONFIDENCE TO MOON, PLANETS

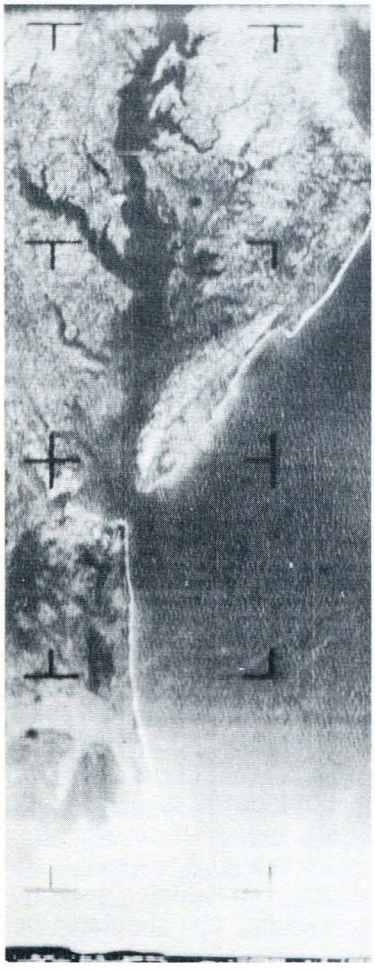
In modern wind tunnels and specialized laboratories, in flight research, and in theoretical studies, scientists at the Langley Research Center of the National Aeronautics and Space Administration are looking to the future. Their mission: to advance the science of flight. In accomplishing this goal, Langley initiates pioneering projects in aeronautical and space science and technology, and helps establish the feasibility of undertaking future missions in space as well as laying a broad foundation for the development of spacecraft and aircraft with superior performance.

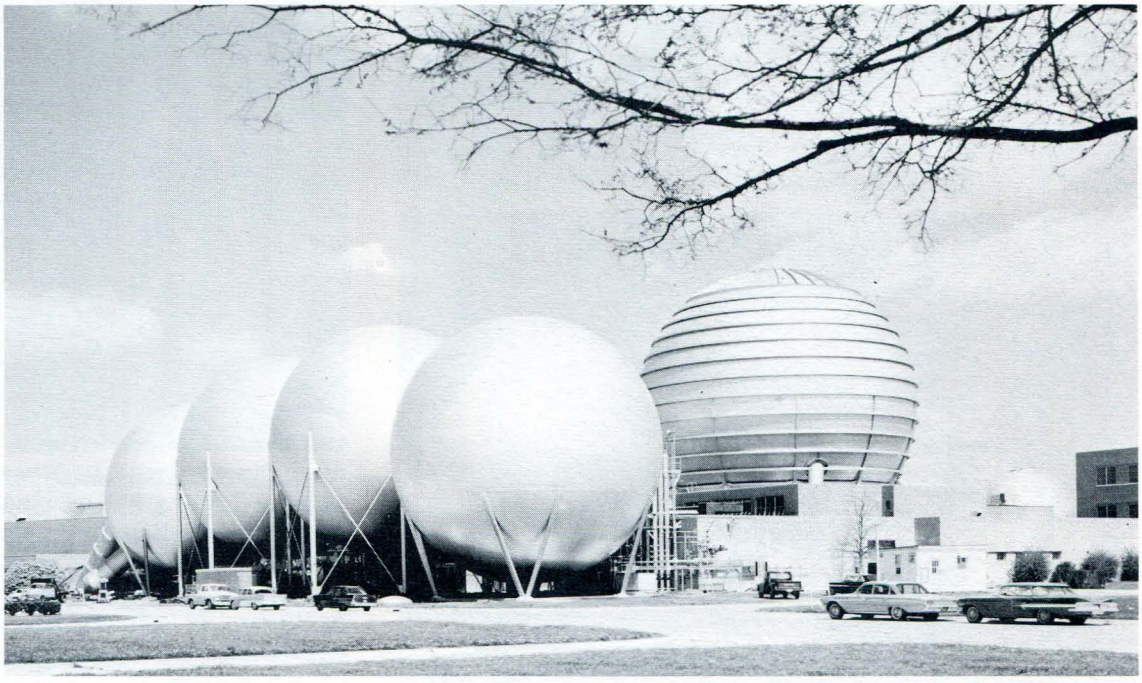
Langley research encompasses many fields and relates to a variety of end objectives. These include launch vehicles, manned and unmanned earth satellites, lunar vehicles, planetary spacecraft, hypersonic flight vehicles, supersonic aircraft of advanced design, vertical takeoff-landing and short takeoff-landing machines and helicopters, and subsonic aircraft with particular reference to the operating problems of transports.

In the space field, there is an intensive study of technical problems associated with possible future missions. Technology relative to a Manned Orbiting Research Laboratory, for example, has been under study at Langley for several years. This basic research includes investigations of the problems of heat balance, structural requirements for resistance to micrometeoroids, and energetic particle radiation as affecting space vehicle mechanisms or occupants, and studies of life support systems.

Langley is conducting extensive research in aeronautics, including a variety of scientific studies to provide basic information for use in the development of an efficient supersonic commercial air transport. Scientists also are seeking solutions to problems that relate to lifting vehicles for flight in the hypersonic range, velocities above five times sonic speed. This research involves not only difficult aerodynamic and structural problems, but basic questions regarding the propulsion to be employed in this speed range.

Langley Research Center has a staff of more than 4,000 scientists, engineers, technicians, and other supporting personnel and laboratories and other facilities which represent an investment by the United States of a quarter billion dollars. Established in 1917, just 14 years after the pioneering flights of the Wright Brothers at nearby Kitty Hawk, Langley has a history of significant accomplishment in the aerospace field over a period of nearly half a century-- a tradition which permits the Center to look with confidence to the stars.





HUGE VACUUM SPHERES (above), typical of new space age facilities at the National Aeronautics and Space Administration's Langley Research Center, Hampton, Virginia, are part of several modern laboratories used to investigate problems of very high-speed flight and reentry from space. In the photograph of the eastern section of the United States (left), made by the United States weather satellite Nimbus I, Langley is to the right of the lower part of the cross mark. The picture, made from an altitude of 325 miles on the 138th orbit of Nimbus, shows (from left) the Langley Research Center area, Chesapeake Bay, the Eastern Shore, and the Atlantic Ocean. Photographs on the next three pages illustrate some of Langley's aerospace facilities and research activities.

DIRECTOR'S CHRISTMAS MESSAGE

As the Langley Research Center approaches the end of another year, it is appropriate that we pause to reflect on the events of 1964 and to look ahead to the challenges of the future.

Langley can be proud of its demonstrated capability for assuming important new aeronautical and space research responsibilities, and of its effectiveness in solving current problems and in helping to provide a firm technological foundation for the success of future national programs. Vital flight projects, laboratory and wind tunnel experiments, and special studies have added to our knowledge, making it possible for NASA to record significant advances in the effort to perserve the role of leadership of the United States in the aerospace sciences.

The quality, role, and scope of Langley activities as part of the over-all national aerospace program were perhaps best highlighted by the NASA Field Inspection of Advanced Research and Technology, held here in May of this year. It was a successful effort to inform the public of our mission and progress in aeronautics and space and was the product of the teamwork which characterized the activities of the staff throughout the year. This ability to work together effectively has been evident not only in research but in other areas, including our relationship with other agencies of the Federal Government and private organizations, and our participation with the local community in programs of mutual interest.

The success enjoyed by Langley this year in many areas of endeavor will inspire us to make even greater strides during 1965 and the years ahead. I appreciate your support and take great pleasure at this holiday season in extending to members of the staff and their families a Merry Christmas and a Happy New Year!

Floyd L. Thompson

NEW YEAR'S DANCE DEC. 31

The Activities Association will close the 1964 social season with the New Year's Dance on Thursday, December 31 at the Activities Building.

The event will be semi-formal and music will be furnished by Charlie Johnson and his band. Dancing will be from 9 p.m. until 1 a.m.

Only a limited number of tickets will be sold and admission will be seven dollars per couple.

Tickets may be purchased from the following members of the Executive Board:

Herbert Pelton, Building 1220, phone 3415; A. J. Voitlein, Building 1244, phone 4517; Virginia LaPrade, Building 1152, phone 3337; Ray Goodman, Building 1232, phone 3231; Herbert Boulter, Building 1230, phone 3446; Humbert Rockey, Building 1230, phone 4807; Linda Johnson, Building 587, phone 2384; Betty Tholl, Building 1251, phone 4711, and Richard Kurtz, Building 586, phone 2362.

NEW NASA IDENTIFICATION BADGES TO BE ISSUED AT ALL CENTERS

New dual-purpose employee identification badges will soon be issued to all Langley employees in accordance with a NASA directive that will standardize badges at all NASA installations.

The new identification cards will serve as a dual-purpose badge and identification card. It will have a detachable clip so that it can be carried in a billfold for identification during non-working hours.

The Security Office plans to issue the new badges prior to January 31.

The new badge will allow employees freedom of movement through the Center and other NASA installations, except certain areas prohibited from a safety standpoint and areas where employees have insufficient security clearance.

Color coding will be used to indicate the degree of clearance. The colors will as follows:

Top Secret - Yellow, broken with four vertical white stripes.

Secret - Red, broken with two vertical white stripes.

Confidential - Blue, broken with one horizontal white stripe.

Uncleared (but investigation in progress) - Black, unbroken border.

MOTORISTS MUST STOP FOR CONVOYS

The Langley Air Force Base Security and Law Enforcement division urges all motorists to exercise extreme caution when approaching an oncoming convoy with red light emergency equipment in operation.

When approaching an oncoming convoy, the motorist must pull to the side of the road and come to a complete stop until the convoy has passed. When approaching a convoy from the rear, the motorist must remain at the rear of the convoy vehicles and not attempt to pass or cross through it.

The cooperation of all motorists on LAFB is necessary in order to properly safeguard the convoys and prevent accidents.

ANNUAL LEAVE NOTICE

As the 1964 leave year comes to a close, staff members are reminded that they have until midnight January 2, 1964, to use the annual leave they earned this year.

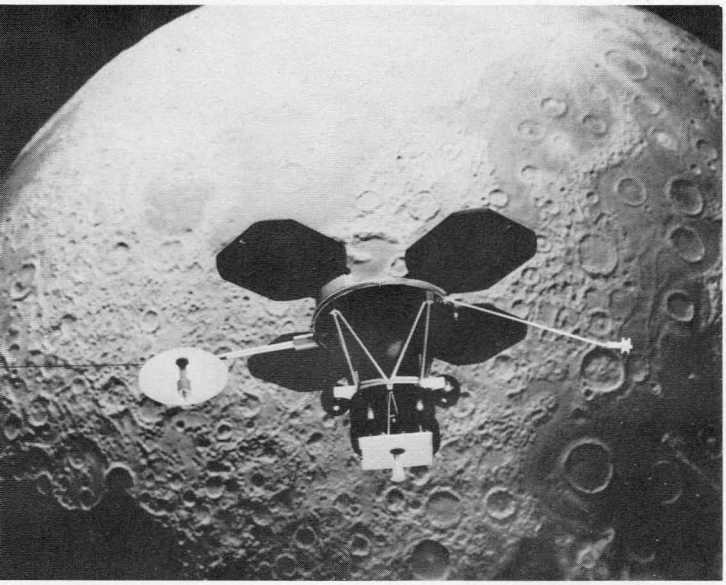
For those who started this year with more than 30 days of accumulated annual leave, all the annual leave they earned during 1964 must be used by January 2 or they will lose the unused portion. In other words, they may keep all the accumulated annual leave they had at the beginning of the year but cannot increase it.

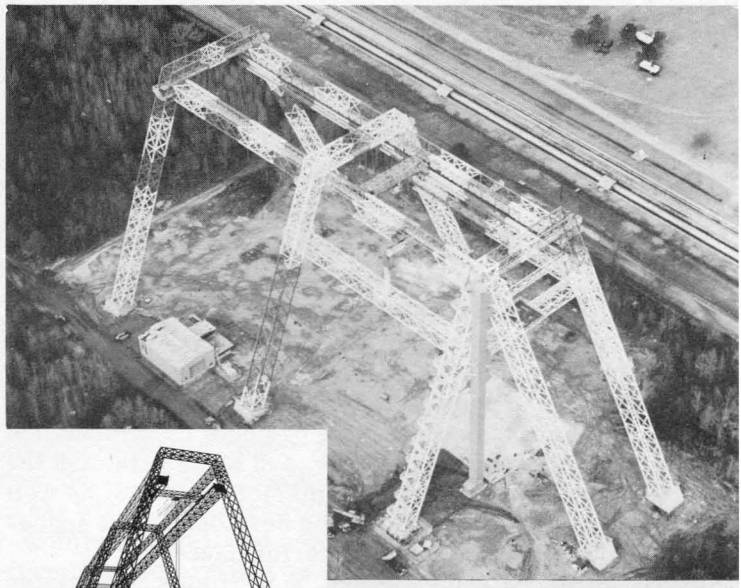
Those who had less than 30 days of accumulated leave at the start of the year may end the leave year with 30 days leave, but no more. This means that they must use all of this year's earned leave in excess of 30 days. If the excess leave is not used, they will lose the unused portion.

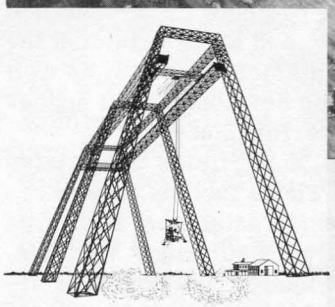
Unused sick leave may be carried over from year to year with no restrictions and there is no limit on the amount of sick leave which may be accumulated.

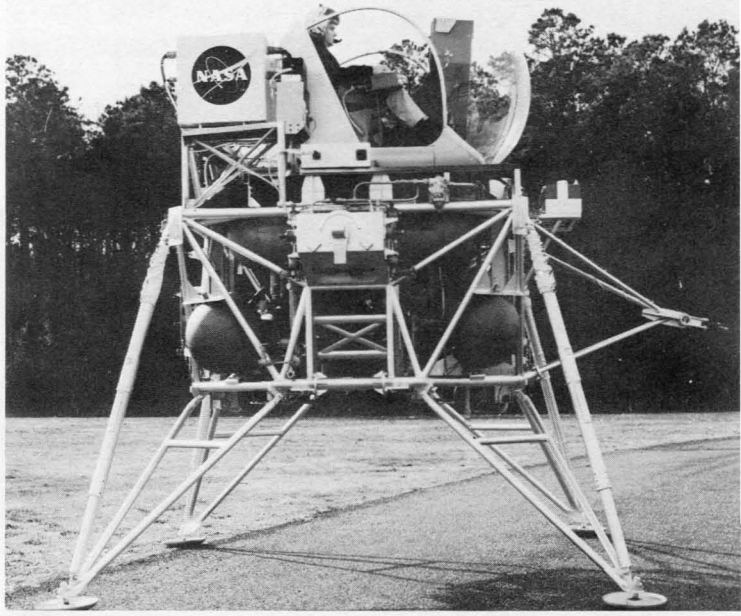
LOST: IBM electric typewriter, Inventory No. 68948. Finder please call Security Office, 2297.

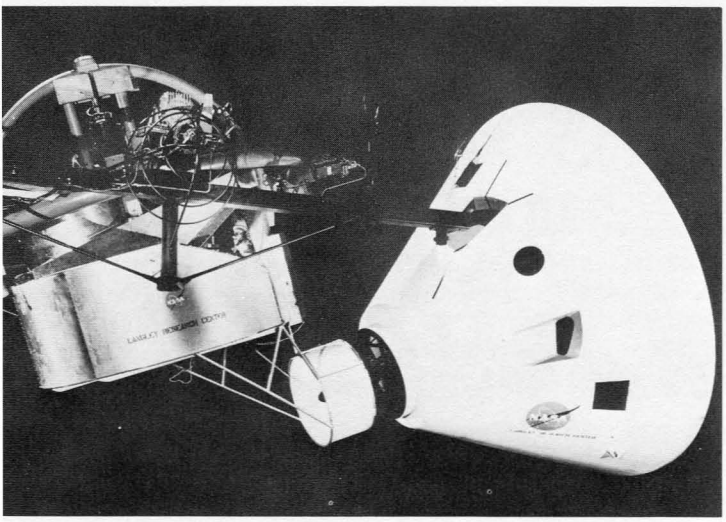
FOR SALE: Dachshund puppies. Fowler, 826-0371.





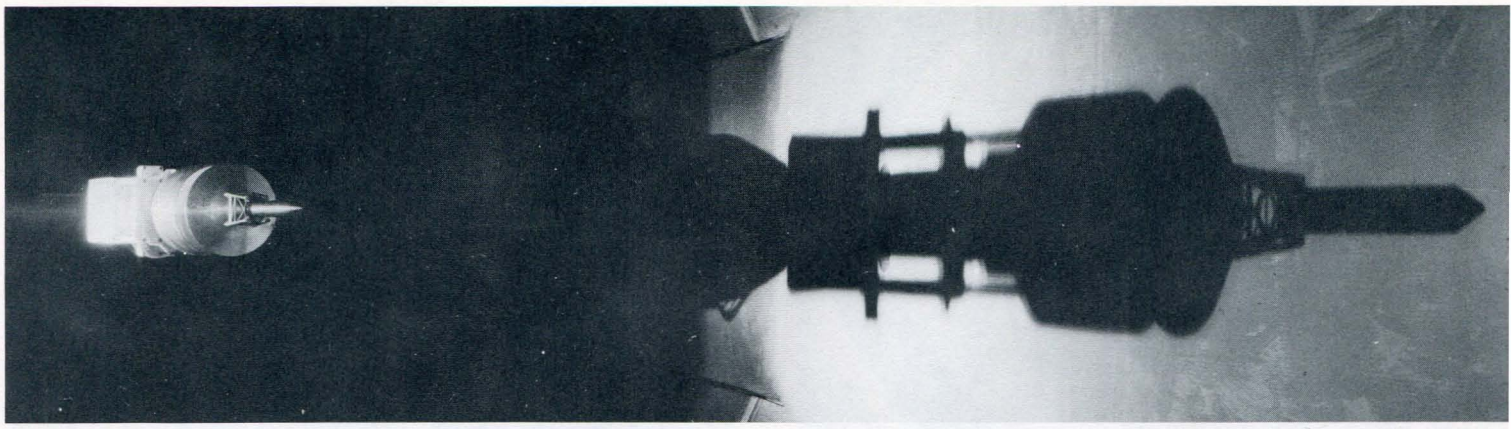


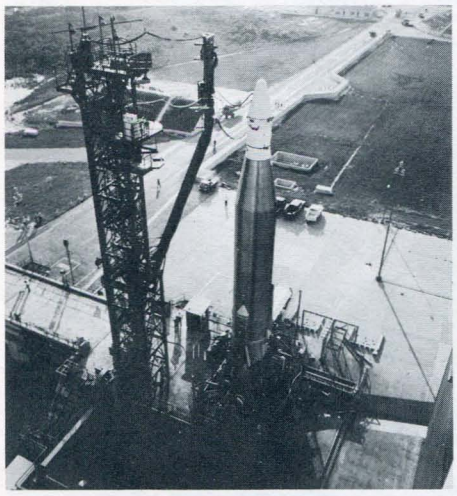


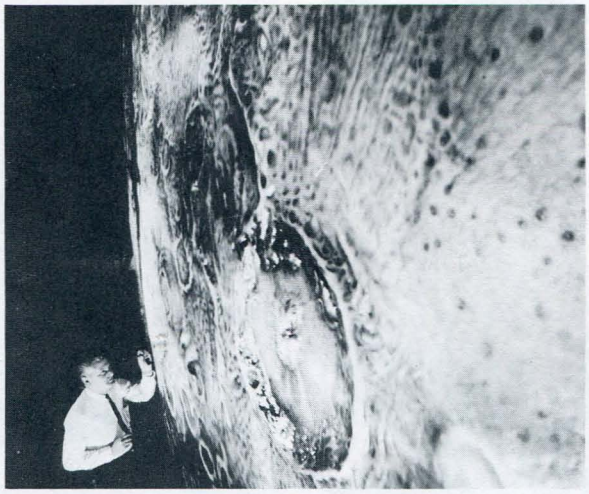


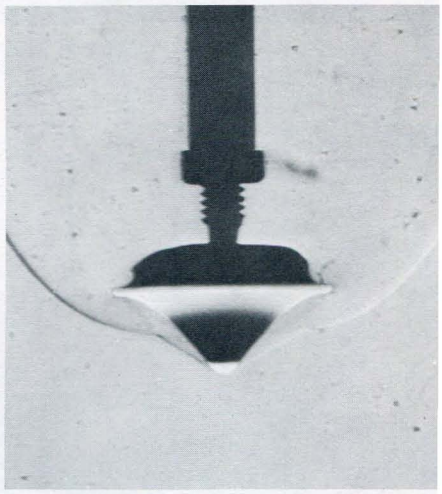
LUNAR ORBITER is a Langley-managed project to make high resolution photographs of the moon to locate suitable landing sites for the manned mission. Scale Models (top left) show how it will approach to within less than 30 miles of the moon to photograph lunar objects as small as a yard square. First flight is scheduled for 1966 from Cape Ken-

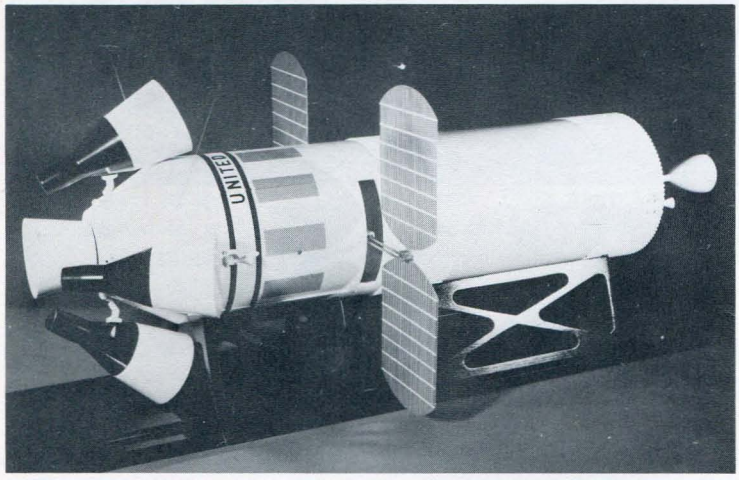
techniques. Suspended from the 250-foot high, 400-foot long steel gantry will be a manned rocket-powered research vehicle (lower right) to study problems astronauts will encounter in landing on the moon. In operation (drawing), the facility will simulate the one-sixth gravity of the moon. In another research device, designed for studying locomotion problems of an astronaut in moving about on the moon, a system of slings suspended from the gantry supports most of the weight of a scientist (center left) and allows him to walk and jump under conditions simulating lunar gravity. Some studies are made with the subject wearing a space suit or a heavy back pack. A facility (lower left) includes the simulated crew section of the Project Apollo Lunar Excursion Module (LEM), which is shown after having been maneuvered by a research pilot to rendezvous and dock with an Apollo model. The two vehicles are sup-

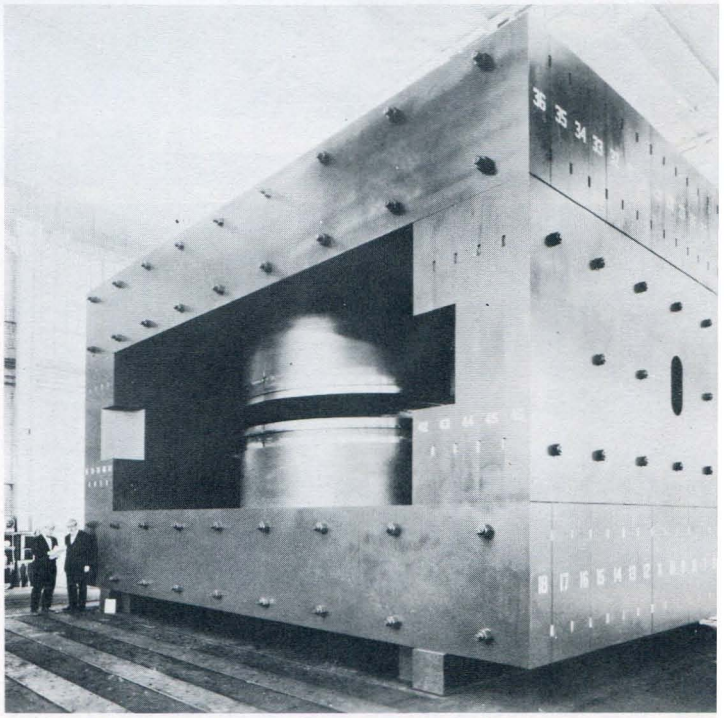




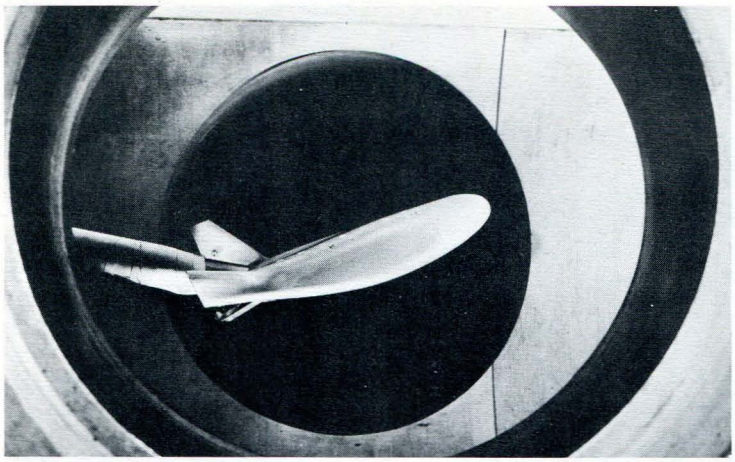


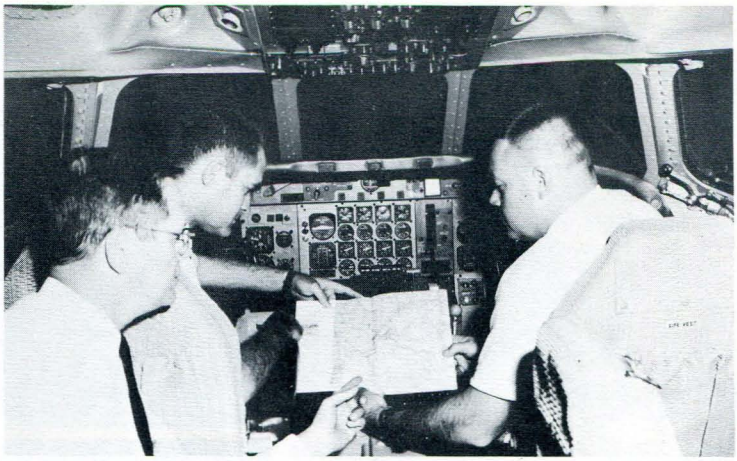


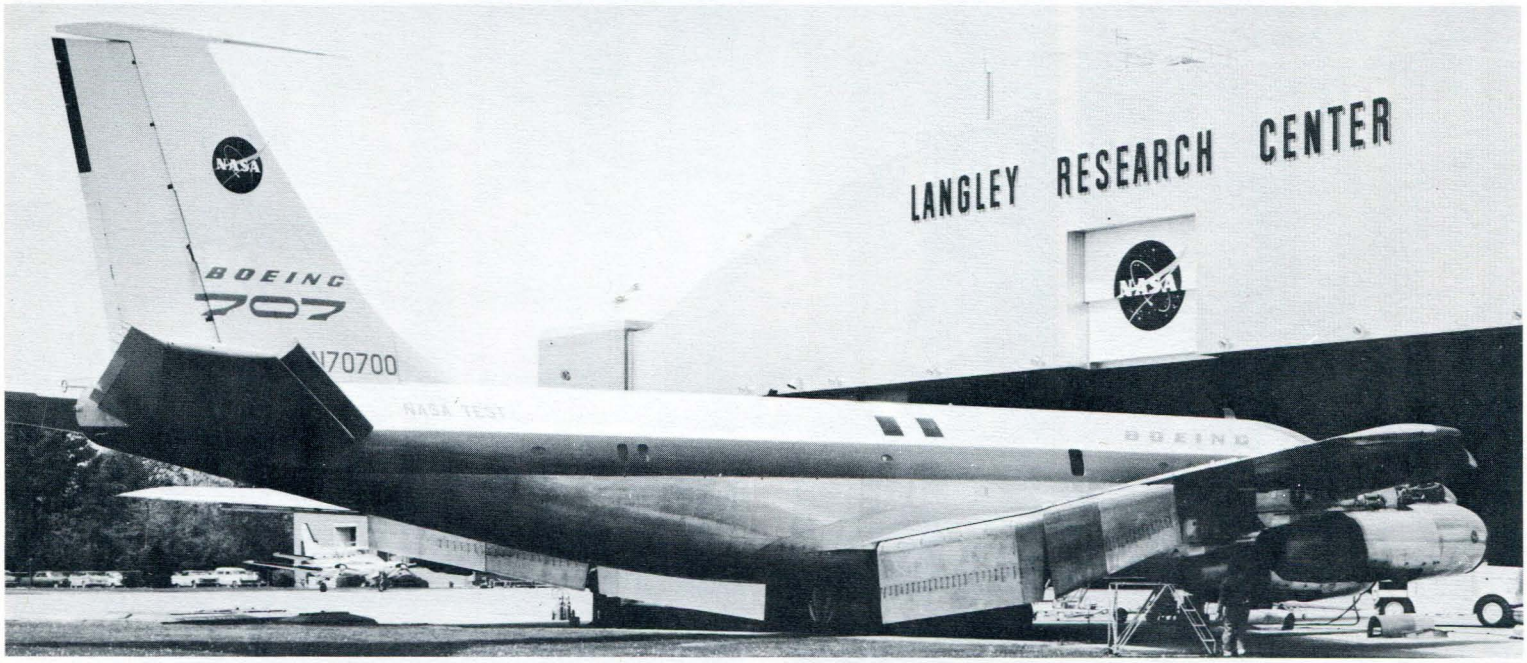


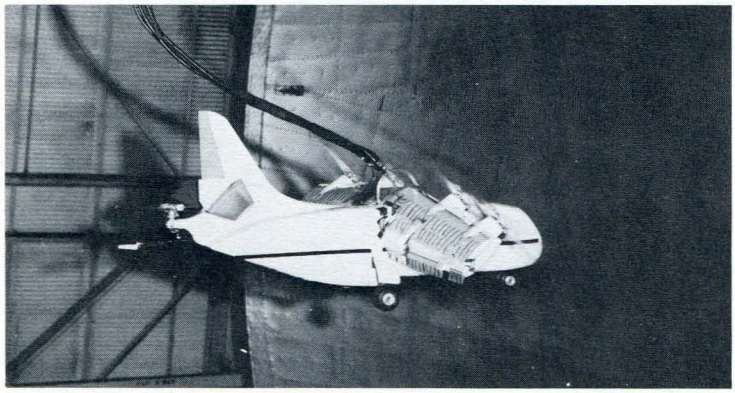


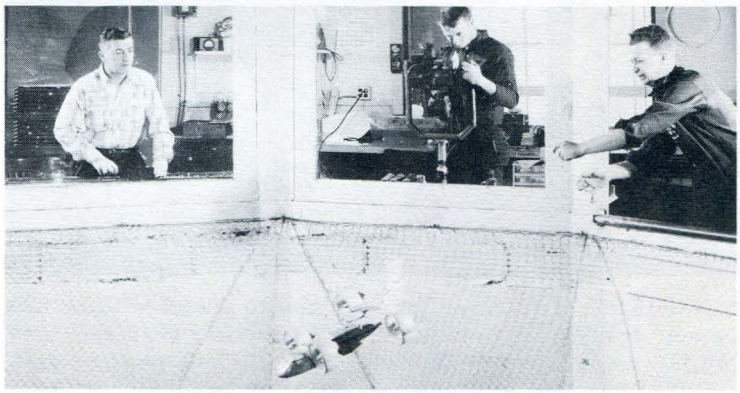
IN OTHER LUNAR research, an Apollo model with launch escape system (top) casts its shadow in a transonic dynamics wind tunnel in aerodynamic tests; a Project Fire booster and reentry package (upper left) is viewed at Cape Kennedy, Florida, prior to an April 1964 flight in which vital scientific information at speeds of about 25,000 miles an hour-- slightly in excess of lunar reentry velocity-- was obtained; and an engineering designer (upper center) checks one of four large lunar maps being built as part of a unique Lunar Orbit and Landing Approach simulator. Looking further into the future, a model (upper right) is tested in a high-speed wind tunnel as part of a research program to determine entry vehicle shapes for use as future unmanned instrumented probes to study the atmospheric and surface properties of Mars. Scientific studies to establish a technological basis for a Manned Orbiting Research Laboratory are leading to new concepts, including one (lower left) based on the Saturn 1B launch vehicle, with Gemini type ferr spacecraft clustered around its docking fixtures. A Spac Radiation Effects Laboratory being built by Langley nea the Center will house a magnet core (lower right) as a integral part of a synchrocyclotron for studying the effect of high energy particles, both electrons and protons, c space vehicles and their systems. The laboratory will be focal point for a graduate study center operated by Virgin Associated Research Center in cooperation with the NASA











MODEL of the HL-10 lifting-body type reentry vehicle (top left) is studied in a variable density Mach 8 wind tunnel to determine its heat transfer characteristics. Such experiments help scientists devise thermal protection systems for the Langley concept, which is studied in facilities having test speeds ranging from subsonic through hypersonic. Langley scientists (top right) discuss details of air traffic control prior to beginning a simulated flight to study problems of integrating the supersonic commercial air transport of the future into the nation's air traffic control system. The simulation is part of extensive basic research by Langley to provide the technology for development of a supersonic transport. A specially-equipped Boeing 707 (center) was investigated to find ways to reduce the landing and takeoff distances required by jet transports. Large wing flaps, shown fully deflected, employ the boundary layer technique to increase the airplane's ability to fly at lower speeds. Langley conducts research with a variety of V/STOL models and full-scale vehicles to provide basic data useful in the design and construction of operational aircraft. A one-tenth-scale model of the tri-service XC-142A tiltwing airplane (lower left) is shown in the full-scale tunnel in research to study dynamic stability and control in transition flight, and an X-22A tilt-duct model (lower right) is released in a vertical wind tunnel while cameras record its spin and recovery characteristics.

LANGLEY SEEKS BIDS FOR ADDITION TO SPACE RADIATION EFFECTS LABORATORY

Langley Research Center has asked construction firms to bid on a proposed 8,400-square-foot experiment area addition to the Space Radiation Effects Laboratory at Oyster Point in Newport News.

The new section, to be 63 feet high like the main support building at the NASA facility, will provide a special area in which scientists can experiment with two kinds of subatomic particles called Mesons and Neutrons.

Work asked in the bid invitation consists of foundation piling, steel building framing, roofing, walls and metal siding to match the existing main support building exterior, extension of the overhead crane runways, and interior construction of a Meson-Neutron control room.

The government estimate of the value of the addition is $700,000 and the contractor will have 180 calendar days to complete the work.

Bids are to be opened at Langley on January 13.

The 600 million electron volt synchrocyclotron which forms the heart of the Space Radiation Effects Laboratory is capable of producing Mesons and Neutrons if its primary product - a beam of protons - is aimed at a material target. Mesons and Neutrons are then produced as secondary or by-product particles.

Mesons are the secondary particle of greatest interest to scientists. They are quite unstable, heavier than electrons, but usually lighter than protons. Their direction of travel can be controlled because they possess an electrical charge, but their short lives require that experiments using them be located very near the Meson source itself.

The SREL addition, therefore, will be placed at the South end of the laboratory, close to the 600 MEV synchrocyclotron.

Of less scientific concern, but available as a synchrocyclotron by-product, are neutrons, which are a fundamental part of the nucleus of an atom. They have about the same mass as a proton but have no electrical charge, and hence cannot be focussed or directed by magnets as protons can be.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of December 21:

Monday - Split green pea soup, baked stuffed cornish hen, chuckwagon steak, grilled ham slice, welch rarebit.

Tuesday - Cream of tomato soup, roast beef, grilled pork chops, knockwurst and beans, tuna-noodle casserole.

Wednesday - Chicken-rice soup, Spanish pot roast, grilled Canadian bacon, fried chicken, cheese ravioli.

Thursday - Clam chowder, grilled steak, barbecued pork chunks over rice, stuffed flounder, grilled spiced luncheon meat.

The menu for the week of December 28 is as follows:

Monday - Tomato-barley soup, breaded veal cutlet, meat loaf, fried fish, barbecued sandwich.

Tuesday - Minestrone soup, country style chopped steak and gravy, fried scallops, roast pork, hot dog.

Wednesday - Vegetable-beef soup, roast beef, beef stew, fried chicken, cheese omelette.

Thursday - Tomato soup, grilled steak, smoked pork sausage, broiled fish, baked hash.

A WORD FROM THE WISE

ANNOUNCEMENTS

NEW ARRIVALS. . .Announcing the birth of a son, John Eric, on December 8 are Peggy, formerly of 7 X 10-foot Wind Tunnels, and Julius Harris, Aero-Physics Division. Weighing in at seven pounds, fifteen ounces on December 11 was Daniel Andrew, son of Doris Stroup, Administrative Services Division.

CORRECTION. . .In the last issue of Langley Researcher the name of Jack McLain, Site Supervisor of Ling-Temco-Vought contractors for NASA, was omitted from the picture of the Mexicali bowling team. He is shown in the picture second from the left.

SPECIAL INSERT. . .Included in this issue of Langley Researcher is a special insert showing some of Langley's contributions in advancing the science of flight.

AIR FORCE GYM FACILITIES. . .Air Force Gym facilities are available to NASA employees if they are not being used by AF personnel. In order to use the facilities it will be necessary to contact the Athletic Officer at the gym. Abuse of the facilities will result in this privelege being withdrawn. For further information contact Ray Goodman, Chairman of the Activities Committee of the NASA Activities Association, telephone 3231.

FOR SALE: 1963 Corvette Sting Ray. PA 2-0807.

WANTED: Alternate driver from Norfolk to W.A. on 7:30 shift. Hudgins, 4851, or Norfolk 587-9023.

LANGLEY AWARDS CONTRACT TO STUDY ORBITAL ASTRONOMICAL OBSERVATORY

A study contract to assess the technological problems of designing, building and operating a manned orbiting astronomical observatory has been awarded by NASA to the Boeing Company, Seattle, Washington.

The ten-month study, ordered by Langley Research Center, is valued at $191,835 and is under the programs of the Office of Advanced Research and Technology.

Although NASA has no approved flight program for manned orbital laboratories, the technological basis on which such concepts can be evaluated is being acquired through research in NASA centers and in industry.

Under terms of the contract, Boeing will study possible ways in which such an observatory might be operated, with particular emphasis on the role men will play in its scientific program.

Major scientific advantage of an orbiting observatory is its freedom from the filtering effects of the Earth's atmosphere, which prevents ground-based instruments from observing many important parts of the electromagnetic spectrum.

A primary ground rule of the study is that the orbiting telescope be sufficiently adaptable to support a broad astronomical program. The study will assume that the telescope will be operated in conjunction with a proposed Manned Orbital Research Laboratory (MORL). The MORL concept is under study by Langley for the Office of Manned Space Flight. The telescope would be launched separately and brought to the MORL by rendezvous techniques.

Three basic modes of operation are to be studied: (1) with the telescope docked and permanently coupled to the MORL; (2) with the telescope coupled for experiment preparation and maintenance work by the MORL crew, but disconnected during operation; and (3) with the telescope and laboratory fully disconnected, with preparation and maintenance tasks handled by crewmen travelling between the MORL and the telescope.

Engineers are interested in the partial or completely decoupled operation since the motions of crewmen in the MORL might make it difficult to achieve the extremely precise alignment and pointing accuracies demanded of an optical instrument.

One important aspect of the contractor study concerns mechanical means for attaining and holding the pointing accuracies demanded. Observations may take up to several hours, and accuracies in the range one-tenth to one-hundredth of a second of arc are specified by NASA. Estimates of the electrical power needed for telescope operation are to be made.

Throughout the feasibility study, Boeing will be looking for specific areas in which the presence of a human operator or crew can produce results not attainable with a remotely-controlled instrument.

Primary work under the contract will be centered at Boeing's Seattle plant, and the company plans to engage subcontractors and consultants to assist in the task.

The feasibility study is a continuation of work in progress at Langley Research Center on problems of the orbital laboratory concept.

WANTED: Riding combination or passengers from Sussex-Hampton to W.A. on 8 shift. Newman, 4521.

CHRISTMAS EVE AT LANGLEY - Wesley Berryman, our cover artist, has given us his concept of the arrival of December's most outstanding VIP.

APPRENTICE HONOR ROLL

Twenty-one apprentices completed the mid-term semester with an average of 96 or above. Members of the honor roll are as follows:

David R. Brooks, 16-foot Tunnel; Leland E. Bryant and Philip M. McElveen, Material Processing and Development; Thomas G. Dudley, IRD-VI; Robert M. Ely, Unitary Tunnel; Robert K. Faison and Edward H. Ostwald, Instrument Construction Shop; William W. Fernald and James F. Garvin, Light Machine Shop; Thomas H. Hall, Hypersonic Continuous Flow Facility; Stephen C. Irick and John W. Oakley, Dynamic Model Shop; William S. Jones, Model and Pliant Structures; James J. Kiss, Structures Laboratory; Allen N. Milton, General Electric Service; Cecil G. Phillips, IRD-GPM; Louis A. Purdey, High Temperature Fluid Mechanics; Wayne W. Rohrbach, IRD-FM; Kenneth F. Test, Ground Support Systems; Davis B. Wright, Research Projects and Models, and Lemuel F. Swindell, Heavy Machine Shop.

WANTED: Passengers to Mississippi on December 23. Dexter, 4669.

WANTED: Passengers from Newmarket, Forest Pk. or Big Bethel Rd. to W.A. on 7:30 shift. Fred King, 4691.

WANTED: Ride from Tide Mill Farms to W.A. on 7:30 shift. Edwards, 3234.

WANTED: Alternate drivers from Wythe to E.A. on 8 shift. Irene Christian, 2201.

Langley Researcher

VOLUME 3 NUMBER 26 LANGLEY RESEARCH CENTER DECEMBER 31, 1964

NASA REPORTS OVER 900 INTERESTED IN SCIENTIST-ASTRONAUT PROGRAM

More than 900 persons have applied or indicated interest in the scientist-astronaut program for future NASA manned space flights.

The recruiting program, which started in mid-October closes today. So far, the NASA Manned Spacecraft Center has been receiving applications at a rate of approximately 20 per day in the fields of natural science, medicine, and engineering. NASA will select 10 to 20 scientist-astronauts to begin training in 1965.

Although applications are encouraged from all fields, MSC officials have expressed a particular interest in receiving inquiries from the geological sciences.

About 200 of the 900 persons who applied or indicated interest have been termed ineligible. Most of the ineligibles were ruled out for not meeting physical requirements of eyesight, age and height, or citizenship requirements.

Visual requirements call for 20/20 uncorrected vision in both eyes. Each applicant is required to pass a Class I military flight status physical that prohibits the wearing of glasses.

Pressure suit helmets worn in space flight cannot accommodate glasses and the wearing of contact lenses is impractical in space flight.

The National Academy of Sciences will review all applications by early Spring 1965 and make its recommendations to NASA.

(Continued on page 3)

SATELLITE IS STILL SPHERICAL, SAYS NASA DESIGNER OF ECHO I

The designer of Echo I believes the huge aluminum satellite still has the essentially spherical shape it attained when it was launched into orbit by NASA more than four years ago.

The 100-foot diameter Echo I spacecraft was developed at the Langley Research Center under the direction of William J. O'Sullivan Jr., who originated the erectable space vehicle concept which led to the design of the satellite.

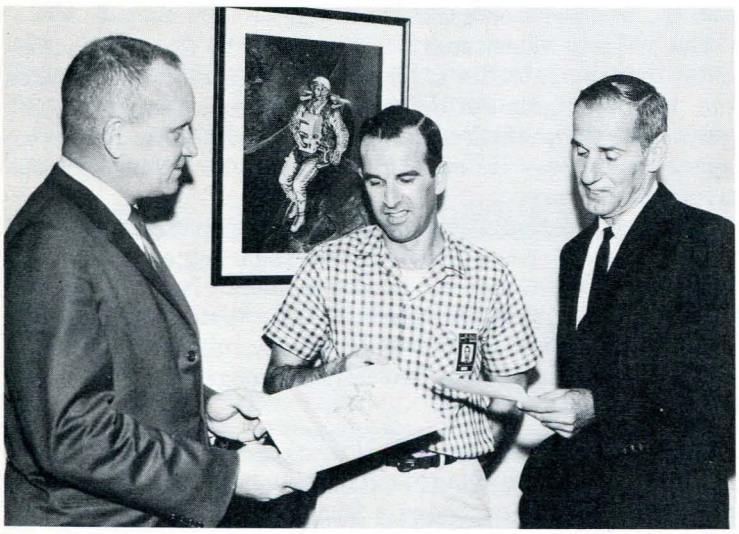
Constructed of very thin Mylar plastic film, with an outside vapor deposited coating of aluminum, the compactly folded satellite was rocketed into orbit August 12, 1960, from Cape Kennedy, Florida, ejected from its metal container, and automatically inflated to spherical shape.

The balloon proved the feasibility of using a satellite as part of a passive communications system. It has been viewed by millions of persons throughout the world, and is still visible as it orbits the earth-- a symbol of space research for peaceful purposes.

In an effort to determine how well Echo I has withstood the space environment in its millions of miles of travel, Langley contracted earlier this year with Goodyear Aerospace Corporation, Akron, Ohio, to make an optical investigation of the condition of the satellite.

Through use of a photometer as Echo I moved across the sky, measurements of its brightness were obtained over a large range of what the scientists call the phase angle.

(Continued on page 2)



Three employees recently received cash awards under the NASA Incentive Awards Program. Left photograph - James F. Montgomery (center), Photographic Division, receives a citation from Fred Rector (left), Head of Publications Branch, and a check for $25 from Harry H. Hamilton, Chief of the Photographic Division. Montgomery's suggestion concerned the storage of research records. Right photograph - Howard B. Edwards (second from left), Acting Chief of Instrument Research Division, presented $25 to David S. Vann (left) for his suggestion concerning rotating cradle for contour plots of S55C Satellite and other vehicles. John C. Cullum (right) also received a check for $25 for his suggestion on environmental test fixture. Looking at one of the citations is E. N. Koch.

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 2375.

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

Langley Researcher is printed and distributed by the Publications Branch.

BASKETBALL SCHEDULE

The NASA Basketball League will begin its season on January 1 . The league is divided into two divisions with six teams in each group. Playoffs will be held on March 21, 22, and 24. For further information call Charles Clarke, 2238 or 2329.

TEAMS: 1. Bucket Brigade, 2. Packers, 3. Boozers, 4. Misfits, 5. Gunners, 6. 8-foot, 7. X Raiders, 8. Hot Rocks, 9. Structures, 10. Short Circuits, 11. Greenhorns, 12. ACD.

Date	5:00	6:15	7:30	8:45
Jan. 11	3-4	1-2	5-6	7-8
Jan. 13	9-10	11-12	1-6	5-4
Jan. 18	7-12	2-3	11-10	8-9
Jan. 20	1-4	3-5	6-2	7-10
Jan. 21	12-8	9-11	1-5	4-2
Jan. 25	3-6	7-11	10-8	9-12
Jan. 27	5-2	1-3	6-4	7-9
Feb. 3	11-8	12-10	1-2	3-4
Feb. 4	5-6	7-8	9-10	11-12
Feb. 8	5-4	1-6	2-3	7-12
Feb. 10	11-10	8-9	1-4	3-5
Feb. 15	6-2	7-10	9-11	12-8
Feb. 17	1-5	4-2	3-6	7-11
Feb. 18	8-10	9-12	1-3	5-2
Feb. 22	6-4	7-9	11-8	12-10
Feb. 24	1-2	5-6	3-4	7-8
March 3	9-10	11-12	1-6	5-4
March 4	7-12	2-3	11-10	8-9
March 8	1-4	3-5	6-2	7-10
March 10	9-11	12-8	1-5	4-2
March 15	3-6	7-11	10-8	9-12
March 17	1-3	5-2	6-4	7-9
March 18	11-8	12-10		

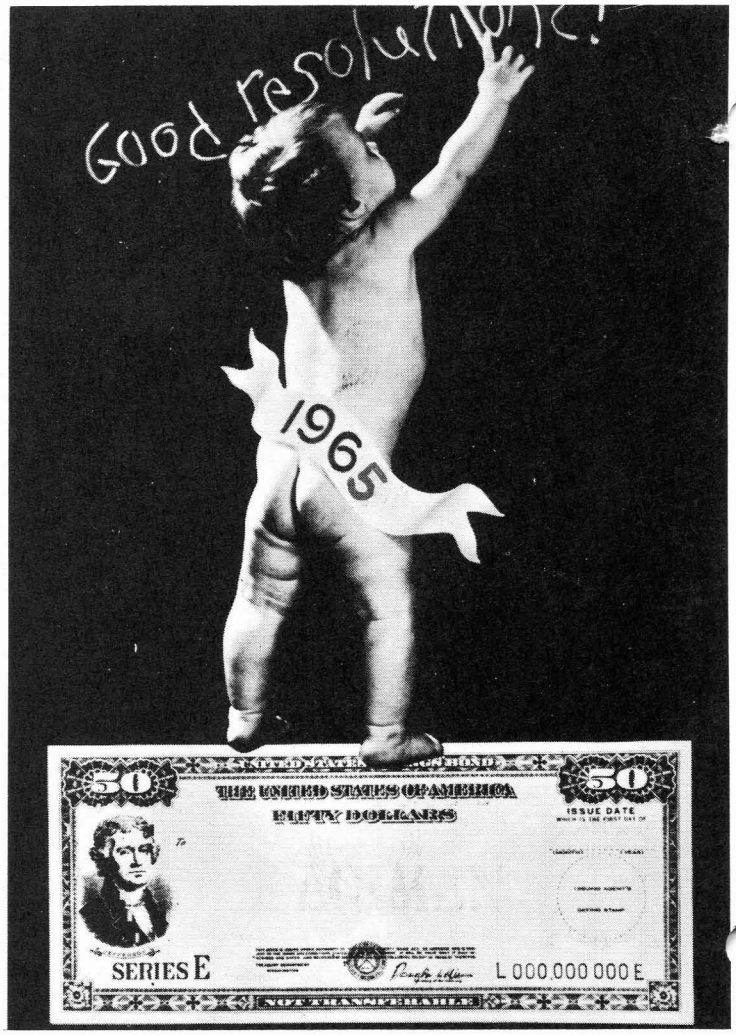
NASA TOUCH FOOTBALL LEAGUE

The NASA Touch Football League ended its 1964 season with Boozers taking first place in Division 1 with 9 wins and 1 loss and Frosties leading Division 2 with 5 wins, 4 losses, and 1 tie.

Other standings in Division 1 were as follows: KNADS had 8 wins and 2 losses. Bombers 6 wins and 4 losses, and Packers 3 wins and 7 losses. Other standings in Division 2 were: IRD 3 wins, 6 losses and 1 tie; Dedskins 3 wins and 7 losses, and Heavy Boys 2 wins and 8 losses.

FOR SALE: 1964 Chevrolet Biscayne 6, 4-door - $2100. Clevenson, CH 5-1859.

FOR RENT: 3-bedroom brick rancher in Brentwood - $95 per month. Carter, 595-0101.



SATELLITE IS STILL SPHERICAL

(Continued from page 1)

This is the angle measured at the satellite between the sun and the observer on earth.

The results of the study, as reported by Goodyear, indicate that the satellite's aluminum surface-- which makes the balloon highly reflective of light and radar waves, regulates its temperature, and protects the plastic film from space hazards-- is still highly specular, that is, it reflects like a mirror.

Based on calculations using the known reflective characteristics of Echo I when it was launched and his interpretation of the Goodyear measurements made nearly four years later, O'Sullivan has concluded that Echo I "is still essentially spherical and that its very thin coating of aluminum has suffered no measurable degradation in specularity or reflectivity."

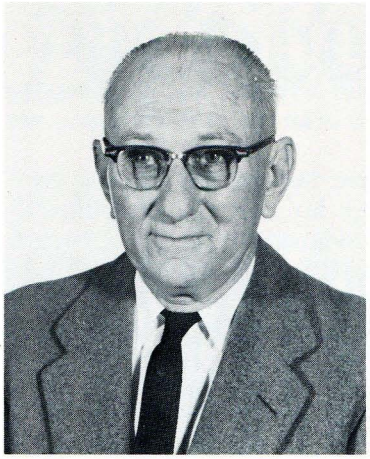
FOR SALE: Solid mahogany sideboard by Gammon - $175, Mahogany Duncan Phyfe extension table with pad - $50, mahogany corner cupboard - $60. Phillips, PA 3-5382.

FOR SALE: Oil floor furnace with thermostat control, heats 5-6 rooms - $75, 1954 Dodge with 1956 V-8 moto. 21-foot Belvin cabin boat with marine clutch. Fred King, CH 7-3818.

FOR SALE: 650 x 13 snow tires, 1 wheel for Valiant or Lancer, trailer hitch for 1962 Valiant or Lancer. Supplee, 851-3550.

Charles E. Walton

Iris A. O'Neal



Clarence L. Decker

G. Clyde Lumpkin

TWO COURSES OFFERED STAFF

A three-semester-hour course in Organic Chemistry will be offered staff members, beginning on January 19. The course will cover chemistry of the various organic functions. Reactivity is correlated with electronic and three-dimensional aspects of compounds of carbon.

The course will be sponsored by the Division of Extension, College of William and Mary, and will be offered as a prerequisite course for those interested in the Bio-Medical Engineering Program under the Medical College of Virginia.

The course will be of 66 hours duration, meeting twice each week for 6 hours per week, for a period of 12 weeks. Lecture sessions will be conducted at the Langley Center each Tuesday from 8 to 11 a.m. and laboratory sessions will be held at the College of William and Mary each Wednesday from 1 to 4 p.m.

A non-credit course in Report Writing will be offered, beginning on January 21. The course will cover techniques of writing and is designed primarily for engineers and technicians. Emphasis will center on report writing or exposition, according to the interests of the students.

The course will be sponsored by the Division of Extension, College of William and Mary, and will be of 45 hours duration, meeting on Thursday of each week at the Center from 4 to 7 p.m., for a period of 15 weeks.

Persons interested in enrolling in these courses are requested to call the Training Office, 2347.

SCIENTIST-ASTRONAUT PROGRAM

(Continued from page 1)

After the final selection of the scientist-astronauts, those who are not already qualified pilots will be given flight training in high performance jet aircraft and helicopters. At the end of flight training, there will be a refresher period in the research and academic fields of each selectee.

FIVE EMPLOYEES RETIRE

Five staff members retired yesterday with over 144 years of combined Government service. The retirees are Charles E. Walton, Research Models and Facilities Division; Iris A. O'Neal, Plant Maintenance Division; Clarence L. Decker, Plant Maintenance Division; G. Clyde Lumpkin, Fiscal Division, and Mary Efird, Research Reports Division.

Walton was born December 8, 1894 in Long Branch, New Jersey. He attended Cornell and Syracuse Universities. During World War I he served with the British Royal Air Force and was recognized as an Ace. During World War II he served as a Captain in the Air Force from 1941 to 1943. He joined the Center staff on November 13, 1945 as a Mechanical Engineer.

O'Neal was born January 16, 1895 in Upshur County, West Virginia. He served in the U.S. Army from 1917 to 1919. Before joining the Center staff on October 12, 1945 as a Maintenance Mechanic, he was employed at the Newport News Shipbuilding and Dry Dock Company.

Decker is a native Hamptonian and was born April 26, 1901. He started his NASA career on September 24, 1925 as a mechanic. He transferred to the Lewis Research Center in 1945 and returned to Langley in 1948.

Lumpkin was born May 26, 1902 in Danville. He graduated from Hampton High School and took a business course from LaSalle Extension. He joined the Center staff on March 14, 1923.

Miss Efird is a native of Winston-Salem, North Carolina. She received her B.A. degree from Salem College and did graduate work at Radcliffe College. Before starting her Government career she taught at Salem Academy and served as Library Assistant at Brookline Public Library in Brookline, Massachusetts, and at the University of North Carolina. She went to work for the War Department in Winston-Salem on November 18, 1943 and transferred to the Center as a Librarian on October 31, 1949.

FOR SALE: Baby crib. Dancy, 838-2666.

WANTED: Henry J body and frame. Bowen, 851-1418.

FOR SALE: 1963 Chevrolet Biscayne. Bowen, 851-1418.

FOR RENT: 3-bedroom rancher in Holly Homes - furnished. Wikstron, CH 4-5501.

FOR SALE: Sam Snead Blue Ridge left-hand golf clubs - includes 4 woods, 8 irons and pitching wedge - $50. Topping, 868-9318.

FOR SALE: 1957 Ford. Heath, LY 6-5094 after 4 p.m.

FOR SALE: 1954 Ford V-8. Carmines, 826-2894.

FOR SALE: Charles M. Steiff piano - $65. Revere, LY - 64054.

FOR SALE: Blonde dining room set with table and 4 chairs - $40, Maytag washing maching - $50, pedal organ - $75. Adamson, 722-8719.

FOR SALE: Westinghouse dryer and washing machine. Mueller, TW 8-5406.

FOR SALE: Getzer cornet. Evans, 868-9054 after 4 p.m.

LIFE AT LANGLEY IN 1964

As we come to the end of another eventful and progressive year let's pause to look back over the stories that made headlines.

January - Air Density Explorer Successfully Launched... NASA Negotiates With Boeing for Lunar Orbiter Spacecraft. . .Two Spacemobiles Assigned to Center. . .Second Echo Communications Satellite Launched by NASA.

February - NASA Selects Honeywell to Build Scanner Spacecraft. . .Lunar Landing Research Facility Nears Completion. . .Langley Cooperating in Program to Study Spacecraft Concepts. . .Saturn SA-5 Tested Here. . . .Langley Awards Antenna Test Facility Contract.

March - NASA and Douglas Sign Contract to Study Space Station Concept. . .Langley Moon Gravity Simulator Attracts National Attention. . .Staff Congratulated on Cost Reduction Effort. . .Langley Takes Part in Fourteen Science Fairs. . .World's Fair Plans Space Park.

April - Synchrocyclotron Components Begin Arriving. . . NASA to Evaluate Sites for Electronics Center. . .Project Fire Spacecraft Launched Successfully. . .Explorer IX Reenters Atmosphere and Burns. . .Hooker Appointed NASA Representative to Australia.

May - Langley Begins Research Program on Low Landing Speed Jet Transport. . .Thompson Meets With Cost Reduction Monitors. . .Key Management Appointments Made at Center. . .Donely Receives Laura Taber Barbour Air Safety Award. . .Langley Holds NASA Field Inspection of Advanced Research and Technology.

June - Staff Praised for Inspection Success. . .NASA Scout Vehicle Air Lifted. . .Sixth Saturn Launched Successfully. . .Computers Indispensable as Tool for Space Research. . .Meteor Photo Network in Operation.

July - National Science Fair Winners Visit Langley. . . NASA Buys Hingeless Rotor Helicopter for Research Use. Twenty-four Employees Receive NASA Special Service Award. . .Langley Horizon Scanner Carried on X-15 Flight. SERT I Launched from Wallops. . .NASA to Begin New Ramjet Research Engine Project. . .Dr. Koch Heads Electronics Center.

August - Ranger VII Successfully Launched on Photographic Mission to Moon. . .Reentry Heating Experiment Launched on Scout Vehicle. . .Thirty-four staff members Receive Advanced Degrees. . .Kilgore Heads United Fund Drive.

September - Cambridge Site Selected for Electronics Center. . .Echo I Aids French Surveyors. . .Dr. Busemann Retires. . .White Rat Launched from Wallops.

October - Scientists Study Parachute Tests in New Mexico. Garrick Wins NASA Exceptional Service Award. . .Fourteen Apprentices Graduate. . .Syncom in Precise Orbit. . .Annual Service Pin Ceremony Held.

November - Presidential Citations Presented to Center Organizational Units. . .Center Donates $64,285 to United Fund. . .NASA to Select Scientist-Astronauts for Future Space Flight Missions. . .G. W. Ousley Named Paris Representative. . .Meteoroid Detection Satellite Launched from Wallops. . .Power Tests Conducted on Giant Magnet Coils. NASA Instrument Helps Detect Color on Moon.

December - Two Satellites Launched by One Scout Vehicle. . .Mariner Spacecraft Launched on Flight to Mars. . . SA-7 Camera Capsules Found. . .NASA to Use Boeing 707 Prototype for SST Studies.

START THE NEW YEAR WITH A GOOD IDEA...

and send it in...

...to the AWARDS OFFICE

The Center's Cost Reduction Program can prove even more effective during the new year with your support in submitting good ideas to reduce costs and by personally employing good work habits in your own job. Cost reduction is not a new concept in our work at Langley. It has been our practice throughout the years to accomplish the Center's objectives in the most economical manner possible. The reporting of our cost reduction accomplishments is, however, a new part of the program and in many instances we are not recognizing significant savings made by our organizational units because a record of the accomplishment has not been submitted. Start the new year with a new idea-submit your suggestions to the Awards office and cost savings accomplishments to your division cost reduction monitor for inclusion in the Center's report on cost reduction.

EMPLOYEES DONATE BLOOD

Center employees donated a total of 164 pints of blood when the Bloodmobile visited the Center recently.

Jules M. Miller and Peter Korycinski reached the five-gallon mark. Horace E. Bellamy and Ronald B. Amole completed their quota for a three-gallon pin.

Two-gallon pins were presented to Charles M. Feamster, Frank M. Plott, George W. Jones, Arvid L. Keith, and Shirley Floyd.

Receiving one-gallon pins were Maurice L. Laughlin, John B. Peterson, and Robert P. Davis.

Assisting during the visit were Dr. Frank Kearney and Dr. M. H. King.

FOR SALE: 1962 Corvette Monza. Lauer, 595-2619.

FOR SALE: Fish tanks - 1 15-gallon, 2 20-gallon, 1 29-gallon, 2 stands, 4 lights and covers, 4 heaters, 2 pumps plus extras - $100. Halsey, PA 2-7084 after 6 p.m.

FOR SALE: New 19-inch Motorola portable TV. Nettles, 877-2152.

FOR SALE: 5-room bungalow on 100 x 100-foot lot - $7000 plus closing costs. H. L. Freeman, 826-2992.

FOR SALE: 1959 Nash Metropolitan 2-door coupe - $350. Spirn, Williamsburg CA 9-5021.

WANTED: Driving combination from Bethel Park to E.A. on 8 shift. Townsend, 2249.

WANTED: Ride from Warwick Gardens to W.A. on 7 shift. Horvath, 4825.