National Aeronautics and
Space Administration

**Langley Research Center**

NASA

# Langley Researcher

Volume 21 Issue 3 February 12, 1982

***Director's Comments***

## Hearth Addresses Major Langley Concerns

There are three subjects I will discuss in this article: 1) the Center's new Chief Scientist, 2) the Time and Attendance situation, and 3) the impact on Langley of the FY '82 budget cuts and the proposed FY '83 budget.

1) Since Frank Hohl's untimely death last December, Mr. Petersen and I have been searching for a suitable replacement as the Center's Chief Scientist. We are very pleased that Mr. Robert H. Tolson, Chief of the Atmospheric Sciences Branch in AESD, has accepted the position. Bob is a proven individual researcher in his own right and has been an outstanding research leader for the past ten years, or so. We are convinced that he will be a valuable addition to the Office of the Director and will make an excellent Chief Scientist for the Center.

2) For several months, Time and Attendance at Langley has been the subject of an investigation by NASA's Office of the Inspector General. We have received the report from the Inspector General. There are 15 cases cited in the report and all of the affected Langley personnel have been notified. Over the next few weeks, we will be having further discussions with the appropriate Langley employees and will be making final decisions on the administrative actions to be taken. I wish to make the following points:

- In spite of rumors that there were "Widespread abuses of the Time and Attendance system," only 15 cases were cited and there will be no criminal prosecutions.
- A major factor in the 15 cases appears to be the use of "informal" compensatory time systems at Langley. There should not be such systems at Langley; all overtime and compensatory time must be within the formal Time and Attendance system.
- Some changes to our Time and Attendance system to clarify and simplify it are required and will be made.
- It is the responsibility of all supervisors and employees that each and every employee of this Center is to work an 8-hour day and 40 hours a week unless either appropriate leave is charged to that employee or an alternate work schedule is formally approved. This is a fundamental responsibility of all employees and their supervisors.

3) President Reagan recently submitted NASA's FY '82 operating plan and his FY '83 budget request to the Congress. The NASA FY '83 budget request shows an increase over the FY '82 plan, which is unusual for most government agencies in this era of Federal budget cuts. What do the FY '82 and '83 NASA budgets mean to Langley? There are both good news and bad news answers to this question. On the bad news side, the FY '82 operating plan and the FY '83 budget request show a sharp decrease (from the '81 level) in research and development funding for aeronautics. This will result in substantially lower R&D budgets for Langley in FY '82 and FY '83. Thus, significant changes will have to be made in the ongoing program. In addition, the average on-board personnel complement of the Center is to be reduced in FY '82 and again in FY '83. The reductions are such that we will not be able to do any hiring during the remainder of this fiscal year. However, in FY '83, we should be able to carry out normal hiring and to fully replace attrition.

Continued on page 2..

## Black History Month Observed

Each February Black History Month commemorates heritage of a people who were and are important to the development of the United States. It is a reminder of the nation's commitment to creating an environment wherein people of all races and colors can share the riches of this country.

From the earliest days of the settling of America, blacks have contributed to many scientific and engineering discoveries that have helped make life easier, safer and more pleasant for everyone.

Recognizing the contributions of black Americans began in 1915 when Carter G. Woodson, known today as "the Father of Black History," launched an organized study of black history and, in 1926, established the first Negro History Week. When Woodson died in 1950, his work was carried on by an organization he founded, now called the Association for the Study of Afro-American Life and History. Woodson's campaign to recognize blacks has become the nationally celebrated Black History Month.

The Langley Research Center shares America's dedication to recognizing the contributions of black Americans and will host a special program in observance of Black History Month.

The Office of Equal Opportunity Programs will sponsor a program, "Philosophical Aspects of Cultural Difference," February 18 at 9 a.m. in

Continued on page 2..

— *photo by Bob Nye*

**Burnett W. Peters (left), Chief, Management Support Division, recently presented certificates of appreciation to Jean Miller, Anne Terry, Patricia Russell and Carolyn Graham "in recognition of outstanding performance in supporting the security mission of the Langley Research Center." These employees displayed initiative and professionalism in implementing procedures which permitted the orderly and efficient rebadging of all Langley employees, ahead of the deadline period, with a minimum of interference with the employees' official duties, according to Bill Smith of the Security Branch. Charles E. Jones, Head of the Security Branch, is at right.**

# AIAA Participates in Engineers Banquet

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will be one of the 18 technical societies sponsoring the annual National Engineers Week Banquet Saturday, February 27, at the Hotel Chamberlin's Roof Garden.

The Engineer of the Year Award will be presented following the banquet and Charles "Ed" Fritts, Director of Private Sector Productivity for the General Accounting Office, will speak on "Productivity and the Revitalization of America."

A cash bar will be open from 6 p.m. throughout the evening, and there will be dancing following the program. Information and tickets for the banquet, which will feature Prime Rib, are available from Steve Yaros, ext. 2673. The price will be $12 per person through February 22, after which the price will be $14.

# Director's Comments

Continued from page 1.

This then leads me to the more positive aspects of the budget picture. The personnel reductions at Langley are the lowest (on a percentage basis) of any NASA Center. In addition, the aeronautics budget will permit us to maintain a vigorous in-house research program; the majority of the reductions in the aeronautics budget will probably be made in the out-of-house segment of our program. In addition, the FY '83 budget includes funding for major rehabs to both the Transonic Dynamics Tunnel and the 4- × 7-Meter Tunnel; Langley's CofF budget in FY '83 will be larger than any other NASA Center.

We are currently in the process of examining our ongoing program to determine what final adjustments will be necessary due to the FY '82 and '83 budgets. In addition, we are examining the personnel reductions to determine what internal adjustments are to be made. All in all, however, the positives in the budget outlook outweigh the negatives and I am optimistic about the Center's future.

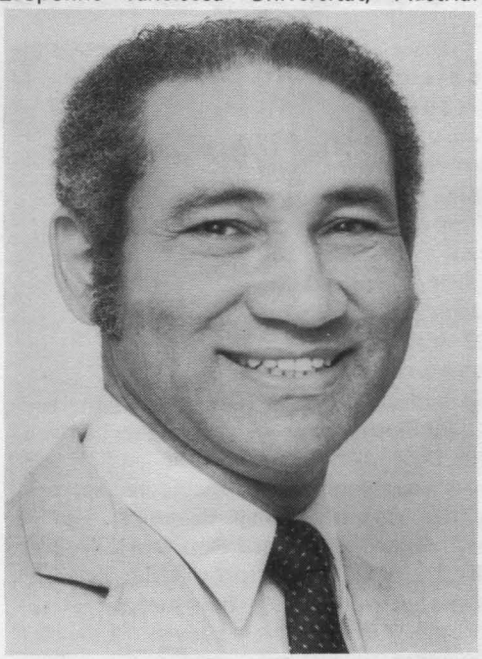
D. P. Hearth
Director

# Black History

Continued from page 1.

the Activities Center. Dr. Edwin J. Nichols, a clinical/industrial psychologist with the National Institute of Mental Health, will discuss cross-cultural management in multi-ethnic society.

Nichols received his undergraduate degree in psychology from Assumption College in Windsor, Canada; served a clinical/industrial internship at Eberhardt-Karls Universität in Tübingen, Germany; and received his doctorate in psychology and psychiatry from Leopoline-Franciscea Universität, Austria.



Nichols is Chief, Special Populations Section, Pharmacologic and Somatic Treatments Research Branch, NIMH. He also has a private clinical and industrial psychological practice, and teaches part-time at colleges and universities in the Washington, D.C., and Maryland areas. He has received many awards and is active in local and national professional societies.

Employees attending the colloquium are to charge their time to Job Order A1599.

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Editor . . . . . Jean Drummond
Staff Photographer . . . . . Bob Nye

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex, or national origin. All materials submitted are subject to editing.

# Status Review Set for February 22

The agenda for the Monthly Status Review is given below, so that researchers may attend talks of particular interest. The review is held on the fourth Monday of each month in Room 225, Building 1219, unless otherwise announced.

The following technical sessions are planned for Monday, February 22; the morning session will begin at 8:30 a.m. and include presentations by:

**STRUCTURES**

Workshop Results-Flight Effects on Inlet Fan Noise

Physiological Properties of LaRC Developed Polymers and Their Precursors

**ELECTRONICS**

Problems in Lightning Data Analysis

Digital Systems Upset Susceptibility

Computer-Aided Reliability Estimation -- An AIRLAB Capability

**PROJECTS**

Hoop Column Antenna System Development Status

Program Task

Electromagnetic Analysis

The morning session will also include presentations by Management Operations and the Office of Equal Opportunity.

The afternoon session will begin at 1:30 p.m. and will include presentations by:

**AERONAUTICS**

Results of F-16E Free Flight Tests in the 30 × 60 Foot Tunnel

STOL Fighter Aerodynamic Research

**SPACE**

Nitrogen Oxide Budget of the Troposphere

Angular Reflectance Models for ERBE from GOES data

Geometric Hidden Line Technique for CAD System

**SE&O**

SE&O Overview

NTF Update

Shuttle Fillerbar Charing Analysis

The review will be concluded by 4 p.m. Copies of the complete agenda will be available at the meeting or may be obtained by calling Raoul 'd M. Price, ext. 2417.

# Jackson to Speak at Colloquium

"If You Innovate, You Have Got to Communicate to Motivate" will be the topic at a Langley colloquium Monday, February 22, when John D. Jackson examines the issues of innovation, communication and motivation and suggests how to make the next step a UFO -- User Friendly Object.

Jackson, Senior Instructor at the American Airlines Flight Academy in Fort Worth, Tex., will speak in the Activities Center at 2 p.m., followed by a question and answer session. At 3 p.m. the speaker will move to the Langley Room for an informal discussion.

According to Jackson, technologists are the main source of the advances that bring us a better life. However, if these advances are to be warmly received by the ultimate user, Jackson said the technologists must explain their latest wonder in terms the user can comprehend and be comfortable with. The technologists must also understand the social and economic impact of their products. Jackson said that in recent years the aviation industry has adopted a large number of technology advances and even more are on the horizon.

Jackson has been with American Airlines for over 20 years. Previously he was an instructor with the Boeing Airplane Company and served in the U.S. Air Force. He attended the University of Arizona and West Texas State College and graduated from the Air Force Technology School.

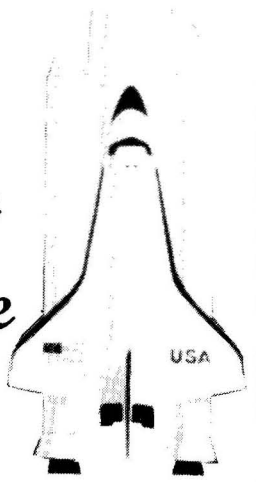
He received the highest award ever given to an American Airlines employee, the Distinguished Service Award for Merit, and the Goodwill Ambassador Award.

# Recent Retirees

**Faye T. Riley**, Acquisition Division, retired January 29.

**Leburn O. Burns**, Operations Support Division, retired February 8.

# *Space Shuttle Update*




Preparations for Space Shuttle Columbia's third flight continue smoothly with target date for rollout to launch pad now set for Wednesday, Feb. 17. It had been scheduled for Sunday of the following week.

Launch on March 22 holding firm.

Meanwhile, prime crew astronauts Jack Lousma and Gordon Fullerton and astronauts Vance Brand and Bob Overmyer are expected to run through a series of mock flights today and tomorrow, and on Feb. 27 an actual cryogenic loading of the extermal tank will highlight a simulated countdown to moment of launch.

# *In Memoriam*

**G. Kimball Miller Jr.** of the Flight Dynamics and Control Division died Saturday, February 6, in Mary Immaculate Hospital. He was 44.

Miller was an aerospace engineer in the Theoretical Mechanics Branch. He was in the U.S. Air Force, assigned to Langley Research Center, from 1959 to 1962.

A native of Havre de Grace, Md., Miller received a bachelor of science degree in aeronautical engineering from North Carolina State College in 1959.

**CHOICE BIT**

Each life should build a step upon which some who follow can climb a little higher.

# 'User Area' Opened in ACD

Federal agencies often face both a multitude and a paradox of objectives. Not all of them find workable solutions to their seemingly conflicting goals.

Langley's Analysis and Computation Division (ACD), however, has found a workable solution to a recent paradoxical situation.

In recent years, two objectives have emerged as being of primary importance to the division: the need for more security for ACD computer services and the need for greater computer accessibility for Langley researchers.

Since computer security basically required less accessibility for people without proper security clearance, it is easy to perceive that the two goals were diametrical opposites.

However, in the summer of 1981, ACD fulfilled both its goals by modifying its first floor area. Since the ACD building (1268) was already undergoing extensive renovation last summer, including an exterior face-lift, remodeling of first floor space, replacing ceilings and reworking the electrical distribution system, further modification was easily accomplished.

Increased security for computer centers has become a major concern throughout the country, according to Tony Fecondo, Computer Security Officer.

"Stories about computer sabotage and fraud are continually being circulated. For this reason, the federal government has set forth guidelines, laws and regulations about computer security. We must be very protective."

The need for security at Langley's computer center is magnified by the fact that ACD also serves private contract industries, colleges and other government branches.

The new security system is considered a great improvement over the former one. In the past, security during night hours at ACD allowed no admittance without a security clearance and prior administrative approval.

ACD's answer to the "more security/more accessibility" paradox is something called the "User Area." This area includes the User Consulting Office, a few interactive terminals and the job submittal area.

The User Area also includes a vending machine room, a restroom, a water fountain and a telephone. This area is accessible 24 hours a day, including weekends and holidays.

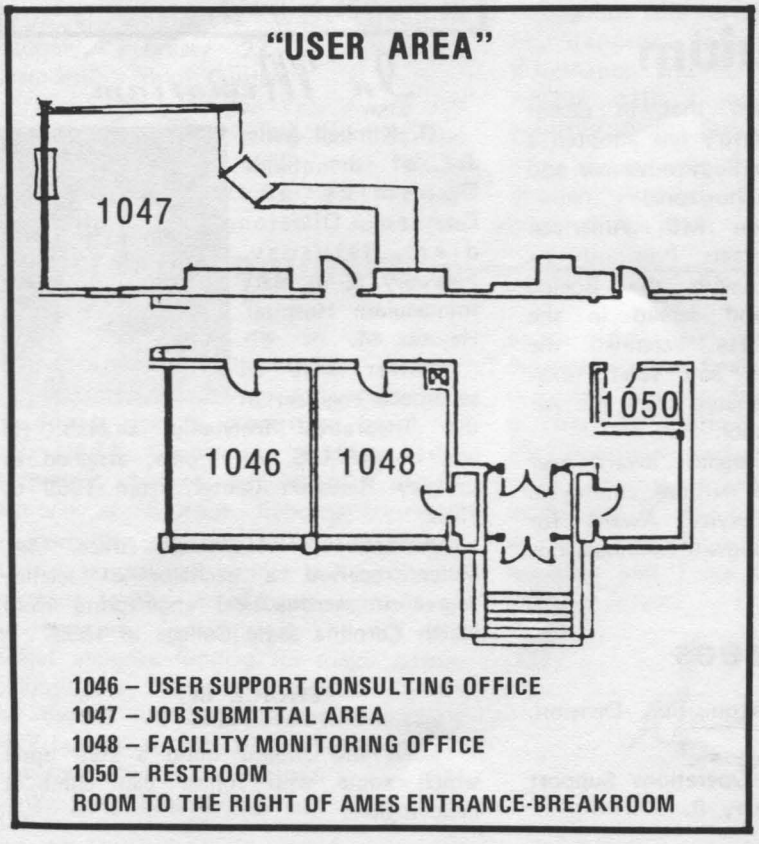
Access to the User Area is available to anyone with a Langley ID badge. Users are required to sign in, but no prior approval or security clearance is required.

To gain access to the User Area on week nights or weekends, people enter the building by the Ames Road entrance. Users then present their badges at the Facility Monitoring Station and sign in. The office is staffed 24 hours a day by two contract employees who monitor facility utilities and provide access control. Proposed plans include the installation of a remote controlled lock at the entrance for evening and weekend use. The facility monitor would then electrically open the door for admittance to the facility.

In the job submittal area, results from completed jobs may be picked up in the new bins assigned to each division. The new bins can be locked to provide extra security.

The new bins were installed, as well as a mesh fence reaching from the top of the bins to the ceiling, to prevent over-eager researchers from crawling through or over them to "find" or "rush" their programs.

Those interested in using the ACD User Area are welcome to visit the facility.




# Licenses Double as Donor Cards

Did you know you are walking around with an organ donor card in your wallet or purse? In 1977 the Division of Motor Vehicles started issuing a Uniform Donor Document as part of each Virginia driver's license. It appears in the center section of the license.

All a person has to do to become a donor is to sign the card, have it witnessed and carry it with him. It is not necessary to register with anyone, so it's not known who has signed the cards.

Ann Martin, organ procurement specialist, with the Medical College of Virginia's clinical transplant program, says that no figures have been kept on the number of donated organs that have been received as a result of people signing the driver license document.

Although Martin does not have statistical records on the number of donors, the Medical College's transplant program does not receive nearly enough organs.

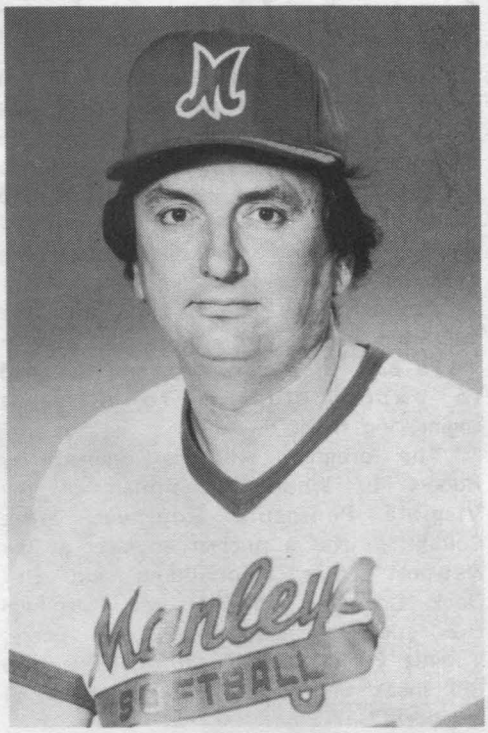
She pointed out that people are handed their new driver licenses "already folded up, so they probably never even know the donor card is there. And at the time of death, families forget. We are trying to do some programs with ambulance squads and police departments to make them aware so they can look to see if a donor card is there."

Martin explained that if only 1 percent of the population signed donor cards "we would have enough kidneys for the people waiting for transplants."

*Personnel Profiles*

# A Fox Hill Tradition

*by Allan C. Hanrahan*




RONALD L. (RONNIE) WEBER is an easy-going, friendly, tall and still a bit lanky sort of guy but he doesn't really look legendary. However, on the playing field of Francis Asbury Park in Fox Hill and to many of the folks of that section of Hampton where Weber was born and reared and now lives, as well as to the devotees of fast-pitch softball on the Peninsula and elsewhere, that is just what he is--a legend.

Weber is only 45 years old but even four or five years ago he was described by one newspaper sportswriter as one of the "old-timey" boys on the Fox Hill fast-pitch softball team. (I have a next-door neighbor who follows Ronnie's playing career and he occasionally asks me: "Have you seen 'ole' Ronnie lately?" And this from a gentleman in the neighborhood of 80 years of age!)

Weber himself put it thusly: "It seems I've played ball all my life nearabouts."

Last year, he was one of the two unanimous choices for the first Fox Hill all-time team, a mythical team but one that nevertheless represents the best of those who have played for this Fox Hill institution that will be 36 years old this coming season when Weber takes over as manager. He was a player coach last year, his 27th season on a team that has been variously known over the years as the "Fox Hill All-Stars," "F & M Bankers," "WVEC Telecasters," and "Poquoson Motormen," reflecting only some of their sponsers. This year they are sponsored by Manley's Service Company.

"There have been a number of them (sponsors)," Weber related and remembered that one year each player had a sponsor.

"And one year we just sponsored ourselves," added the first-baseman who loves the game and who has set such team records as a streak of 223 fielding chances without an error (1976-77) and a batting average of .374 in the 1973 season, the same season when he batted .333 in the national tournament, held that year in Seattle.

The team has gone to the national tournament four other times, to such places as Clearwater, Fla.; twice to Springfield, Mo.; and last year to St. Josephs, Mo. The other times they flew but this time they traveled by bus.

"It was a 30-hour ride," reported Weber, "but we got to see the scenery and the farmland of the midwest; it was real pretty. That's one of the things about playing ball," he continued, "I've gotten to see a lot of the country."

Weber enjoys traveling and enthusiastically spoke of a trip he and his family had taken to California to visit his father-in-law, and some of the places they had visited, including Disneyland. He is looking forward to the trips the team will take this season, especially a road trip to New England.

Weber began playing for the team the same year he graduated from Hampton High School where he lettered in baseball and basketball. Hampton's basketball team finished third in the state that year. He also played basketball at Fork Union, where he attended for a year, and the next year, his freshman year at VPI, he made the varsity team. After two years at VPI, he realized his desire to be an electrical engineer wasn't all that strong so he applied and was accepted to the Apprentice School here. That was in September 1957 and he has been here ever since, except for six months of active duty with the National Guard in the late 1950s. He is presently an Electronic Technician in the Quality Assurance and Inspection Office of the Fabrication Division.

"No, not really," Weber answered when he was asked if he had time for any other interests outside of his job, softball, and his family, which is his wife, the former Charlotte Huff of Hampton, and their two sons: Darrell, 16, and Kevin, 14. The Webers are communicants at St. John's Episcopal Church in Hampton, attending as regularly as they can. He does find time during this season of the year to serve as assistant coach of the basketball team on which Darrell plays, and he is the coach of Kevin's team. When asked that team's record so far this year he answered with a laugh: "Well, we lost all our games. But you know," he reflected, "sometime you have to learn how to lose. Not everything in life is winning."

Still, Weber has done more than his share of winning and hopefully he, his family, and his softball team will always enjoy a "winning season."

# Employees Receive Special Awards

**Special Achievement** awards have been presented to the following employees.

**Jerome T. Foughner, Jr.**, for "sustained superior performance in assisting in the management and administration of the NASA Langley Office of the Chief Scientist;"

**Judy W. Lowe**, "in recognition of outstanding performance in the preparation of technical papers for the AIAA 7th Aeroacoustics Conference and the presentation materials for the Jet Noise Peer Review.

**Susan K. Miller**, for "exceptional performance in the support of the document processing and cataloging area of the Technical Library Branch;"

**Debbie L. Griffith**, and **Cheryl L. Williams** for "exemplary performance in preparing Langley's scientific manuscripts for publication;"

**Walter M. Laughon**, "in recognition of outstanding achievements in the successful negotiation and administration of large and complex systems and systems management contracts in support of the Scout Launch Vehicle Program."

# Career Day Scheduled at Langley

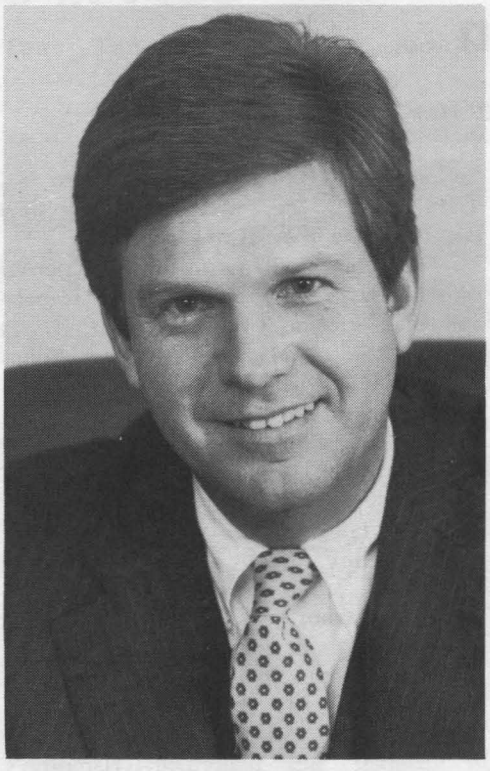
Peninsula high school seniors will visit Langley February 24 to take part in the eighth annual "Career Day," held in association with National Engineers Week.

The purpose of the week is to acquaint the public with the work of engineers and to honor outstanding members of the profession.

Approximately 500 seniors who are interested in engineering will take part in the 9 a.m. to 2 p.m. program, designed to expose students to different engineering fields.

The program will be opened by Robert L. Wheeler, Chairman of the Virginia Peninsula Engineers Week Committee and a nuclear engineer at the Newport News Shipbuilding and Dry Dock Company. Wheeler will introduce the guest speaker, Henry K. Berry, Virginia Peninsula Engineer of 1981, who will speak on "What it Takes to be an Engineer."

Following Berry's talk, there will be a panel discussion, "Life as a Co-op," by engineering cooperative education students



from Langley and the Newport News Shipbuilding and Dry Dock Company; a tour of several research facilities at Langley; and individual meetings with representatives from 18 Peninsula engineering societies.

Berry is the Founder and President of Engineering Incorporated, an independent professional corporation located in Hampton, which provides custom structural, mechanical and electrical engineering and design services.

He received a bachelor of science degree in engineering from Stevens Institute of Technology and is a graduate of the Piping Design Program of the Newport News Shipbuilding and Dry Dock Company Apprentice School. He is Director of the First Peninsula Bank, Virginia Peninsula Economic Development Council and the Engineers Club of Virginia Peninsula; and a member of the National Contract Management Association, Virginia Society for Professional Engineers and American Consulting Engineers.

# Headquarters Personnel Changes Announced

C. Thomas Newman has been named NASA's Comptroller, replacing William E. Lilly who retired in October. Newman had been serving as acting Comptroller since Lilly's retirement. Thomas Campbell replaces Newman as Deputy Comptroller.

As Comptroller, Newman will direct and implement NASA's budget formulation and execution process, and will provide the agency-wide financial control required to assure adequate, timely and essential accounting of all agency recources.

Prior to becoming Deputy Comptroller in 1977, Newman was NASA Deputy Director of Resources Analysis from 1968 to 1973 and Director of that office from 1973 to 1977.

Newman joined NASA in 1963 and served as Chief of Apollo Resources Control from 1963 to 1968. Prior to joining NASA, he worked for the Department of the Navy, the Atomic Energy Commission and the Department of Defense.

Campbell has served as NASA's Assistant Comptroller for Program Status Review and Cost Assessment since 1979. He joined NASA's Goddard Space Flight Center, Greenbelt, Md., in 1959 as administrative assistant in the Satellite Applications Systems and Projects Division. He came to NASA Headquarters in 1963 and has worked in the resources area since then.

Dr. Walter B. Olstad has been named NASA's Associate Administrator for Management, replacing Edwin C. Kilgore. Olstad has been Deputy Administrator for Aeronautics and Space Technology since 1979. C. Robert Nysmith will replace Olstad in an acting capacity.

As Associate Administrator for Management, Olstad will provide managerial direction of all functional management and administrative matters such as personnel, supply and equipment, facilities and computer support. He will also provide managerial advice and support to Program Associate Administrators, the Deputy Administrator and the Administrator.

The Office of Management was created under the NASA reorganization plan which became effective in November. This new office will handle part of the functions previously performed by the Office of Management Operations and some of the functions under the NASA Comptroller.

Olstad was Chief of the Space Systems Division at Langley from 1975 to 1979.

He joined Langley in June 1954 as an aeronautical research engineer, serving first in the Transonic Tunnels Branch and then in the Reentry Physics Branch. In 1966 he was named Head, Gas Physics Section, and in 1969 was appointed Head, Advanced Entry Analysis Branch.

Olstad earned his bachelor of science degree in mechanical engineering from Brown University, Providence, R.I., in 1954 and received his master's degree in aerospace engineering from Virginia Polytechnic Institute, Blacksburg, in 1958. He earned his doctorate degree in applied mathematics from Harvard University in 1966.

Olstad has specialized in the fields of aerothermodynamics, radiation heat transfer, applied mathematics, numerical analysis and the management of research and development programs. He has authored or co-authored over 40 technical papers.

In 1981 Olstad received the NASA Distinguished Service Medal and the American Institute of Aeronautics and Astronautics Thermo Physics Award. He is a member of the AIAA and served as one of their representatives to the Elmer A. Sperry Board of Award.

# Happenings

**HAPPY HOUR** will be held today from 4 to 6:30 p.m. in the Activities Center.

**WALT DISNEY** movie "The Prince and the Pauper" will be shown February 14 at 3 p.m. in the Activities Center. Admission is 75 cents per person.

**BASKETBALL.** Employees' Night at the College of William and Mary will be held tomorrow at 7:30 p.m. for the basketball game with Temple. Mezzanine reserve seat tickets are available for $3 upon presentation of a NASA badge at the William and Mary Hall ticket office, which opens at 6 p.m.

**HONEY BUNCH.** The NASA-Langley Apicultural Club will meet Monday, February 22, from 7 to 9 p.m. in Room 180 of Building 1209. Homer Powers, Virginia State Apiarist, will present a program on current national and international trends in beekeeping and honey markets, and will report on the recent American Beekeeping Federation meeting.

**GIRLS, GIRLS, GIRLS!** The Commodore Chorus honors the fairer sex, barbership harmony style, in their 25th annual show, "Girls, Girls, Girls," Friday, February 19, and Saturday, February 20. Curtain time is 8 p.m. at the new Virginia Beach Pavilion Theater. The show will feature several guest quartets, including "Vaudeville," the 1981 international quarter finalists from Alexandria, Va. The Commodore Chorus is the performing group of the Norfolk Chapter of the Society for the Preservation and Encouragement of Barbershop Quartet Singins in America, Inc. Call local Commodores Roy Albang, ext. 3737, or Jim Youngblood, ext. 3666, for information and tickets.

**AFGE.** The regular meeting of AFGE Local 2755 is scheduled for February 17, at 4:30 p.m. in the Union Office, Building 1232-B.

**NAGS.** "Are You in Control?" will be the subject for the February NAGS Meeting. Thomas Yager, an aerospace technologist at Langley, will present a film on "Hydroplaning" — a phenomenon that occurs on a wet highway, when an automobile actually loses traction and you lose control of your vehicle. This film will alert you of this phenomenon and help you to understand the problem and what you should do if this should happen to you. Yager has been actively involved in this research and will be on hand to interpret the film and answer questions. The meeting will be held at the Holiday Inn February 16 at 6:15 p.m. For reservations call Reachie Hall, ext. 2150. Dinner includes roast beef, salad, two vegetables plus dessert and beverage for $7.50. Reservations should be made by 4:30 p.m. today.

**BINGO** is played every Thursday at 7:20 p.m. in the Activities Center.

**DINNER DANCE.** A beef and burgundy dinner dance will be held March 27 in the Activities Center. Music will be provided by Bob Marshall and the Crystals. For more information call the Activities Office, ext. 3139.

**SKI TRIP** is planned to Mont Tremblant, Canada, the last weekend in March; enjoy the finest skiing in the northeast on 75 meters of trails and slopes for beginners to experts. Trip includes transportation, two nights lodging at the Chalet des Chutes, three days of skiing, a three-day lift ticket, two breakfasts and dinners. Prices start at $171. Call Norman Willey, ext. 3987 or 490-0238.

**LECTURE.** On February 19 at 4 p.m., there will be a lecture on "Cosmology and Particle Physics - The Cosmic Connection" in Room 109 of the William Small Physical Laboratory at the College of William and Mary. Gary Steigman, of Bartol Research Foundation and the University of Delaware, will be the guest lecturer. There will be a coffee for Steigman at 3:30 p.m.

**FOX HILL EXHIBIT.** "Fox Hill: A Look Back" is the new temporary exhibit at Syms-Eaton Museum. This display traces the history of the Fox Hill area of Hampton through Indian artifacts, watermen, their boats and tools, objects recovered from the water, and reminders of long vanished landmarks. The name Fox Hill first appeared about 1625. Since then it and its people have played a prominent role in the history of Hampton and the Peninsula. Syms-Eaton Museum is open 10 a.m. to 4 p.m. Monday through Saturday and 12 to 5 p.m. on Sundays. Admission is free. The museum is located at 418 W. Mercury Blvd., Hampton. For further information please call 727-6248.

## Thanks

**Quido Tuccori** wishes to thank his many friends who recently donated blood in his behalf. He underwent open heart surgery on January 4 and is recovering nicely at home.

**TAKE ADVANTAGE OF THE NEW RECOVERY TAX ACT**
**Attend the Seminar On**

**FINANCIAL PLANNING**
**UNDER THE**
**ECONOMIC RECOVERY TAX ACT OF 1981**

**Presented As An Educational Service By**

**THE OFFICE OF UNIVERSITY DEVELOPMENT**
**of**
**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY**

**In Cooperation With The Law Firm**

**McGUIRE, WOODS & BATTLE**

**Date:** February 23, 1982
**Time:** 7 — 9 P.M.
**Location:** NASA, Langley Research Center
Building 122 — Activities Center
Hampton, Virginia

Topics to be presented by a faculty of three highly experienced practitioners are:

- **Individual Income Taxes**
- **Business Taxes**
- **Gift & Estate Taxes**

*For additional information contact David Lorincz, ext. 4637*
*(there is no charge for the Seminar)*

National Aeronautics and
Space Administration

**Langley Research Center**
Hampton, Virginia
23665

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ROBERTSON, JAMES B.,
MAIL STOP 473 BLDG 1202

# Retirement Parties

A retirement party honoring **Kermit A. Edwards** and **Howard L. Evans** National Transonic Facility Project Office, will be held Monday, March 1, at the Activities Center. A cash bar with hors d'oeuvres will begin at 4:30 p.m. The cost will be $6 per person. Contributions for gift only are welcome. Make reservations and send payment to Shirley M. Freeman, Mail Stop 267, by February 18.

**James H. Daus**, who retired recently from the Research Information and Applications Division, will be honored with a retirement social Wednesday, February 17, at the Activities Center. The cash bar social will be held from 4:30 to 7:30 p.m. and the cost is $6 per person, including gift. Contributions of $2 for gift only are welcome. Make reservations and send payment to Skip Watson, Mail Stop 426, by February 12.

**Nellie Dick** will be honored with a retirement party (hors d'oeuvres and cash bar) Tuesday, March 2, at 4:30 p.m. at the Activities Center. The cost, including gift, will be $5. For reservations, send check to Dorothy Howell, Mail Stop 406, by February 25.

# swap and shop

**FOR SALE**

**Articles**

Mattress, springs, frame, headboard for king-size bed, VGC, $165. Call Youngblood after 5 p.m. 877-1224.

English Saddle: Zaldi, Jupiter model, brand new, used twice. Suede knee-rolls, 17 ½ inch seat, complete with leathers, stirrups and girth. Cost $525 new, will sell for $375. Call Susan Bonner, ext. 4135 or 642-6374 after 6 p.m.

**Real Estate**

Gloucester: Custom built 2,700 sq. ft. traditional home, 4 BR, 2 ½ baths, LR, DR, kit./BR, 2 fps, unf. rm over dbl. car gar., on 5 acres w/fruit trees, s. porch, 2 decks, conv. to schools, $118,000. Call 693-5741 or 599-0422.

# Courses Offered

The Coast Guard Auxiliary courses, "Boating Skills and Seamanship" and "Sailing and Seamanship," will be offered concurrently by the Williamsburg Flotilla beginning Monday, March 1. Class sessions will be each Monday and Thursday through the first week in May, from 7 to 9 p.m. at Lafayette High.

The courses cover basic power and sailboat handling, basic boating safety and legal requirements for safety equipment, Rules of the Road, elementary piloting (navigation), and similar subjects to assist a new or prospective boater, or as a refresher for those who are experienced in boating operations.

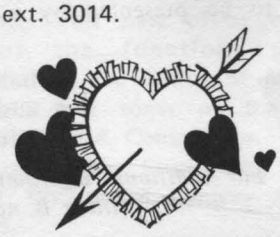
There is no course fee; optional textbooks will be available for approximately $10.00. Advance registration is not required. For more information, call Andy Swanson, the Public Education Officer for the Williamsburg Flotilla, at 229-8024.

# Housing Wanted

Do you have an extra room for added income? Would you like to have someone take care of and pay for your house or apartment this summer?

Professors from across the United States will visit Langley for the ASEE research program from approximately June 1 to August 6, 1982, and will need housing during this time.

For more information call Jeane Jones, ext. 3014.



# cafeteria menu

**WEEK OF FEB. 15 — 19**

**MONDAY:**

*HAPPY BIRTHDAY, GEORGE WASHINGTON!*

**TUESDAY:** Manhattan Clam Chowder; Lasagna Mediterranean Fish Stew; Baked Beans & Franks. Snack Bar: Ham & Cheese Club; BBQ NASA Sub.

**WEDNESDAY:** Vegetable Soup; Roast Turke Dinner; Meat Loaf; Shark Steak. Snack Bar Sausage Pizza; Polish Sausage; Steak, Onion & Cheese Sub.

**THURSDAY:** Chicken Gumbo Soup; Braise Chicken Livers; Beef Stew; Quiche Lorraine Snack Bar: Deluxe Sub; BBQ; B.L.T.

**FRIDAY:** Vegetable Beef Soup; Fish Dinne Ham Steak; Hamburger Parmesan. Snack Bar Chicken Breast; Hot Ham & Cheese; Tun Salad.

**WEEK OF FEB. 22 — 26**

**MONDAY:** Ham & Lima Bean Soup; Vea Parmesan; Chicken Chow Mein; New Englan Scrod. Snack Bar: Hot Italian Sausage Sub Chicken Breast; Egg Salad.

**TUESDAY:** Bull Island Clam Chowde Spaghetti Dinner; Chicken & Dumplings; Bee Tips. Snack Bar: Ham & Cheese Club; BBQ NASA Sub.

**WEDNESDAY:** Vegetable Soup; Fried Chicke Dinner; Beef Liver; Baked Tuna & Noodl Casserole. Snack Bar: Sausage Pizza; Polis Sausage; Steak, Onion & Cheese Sub.

**THURSDAY:** Chicken Vegetable Soup; Braise Chicken Livers; Seafood Quiche; Salisbur Steak. Snack Bar: Deluxe Sub; BBQ; B.L.T.

**FRIDAY:** Turkey Noodle Soup; Fish Dinne Chicken Pot Pie; Ham & Cheese Omelett Snack Bar: Chicken Breast; Hot Ham & Cheese; Tuna Salad.

# LFCU Reduces Auto Rates

Beginning February 1, the Langle Federal Credit Union will promote ca loans with a car loan sale. For 60 days new car loans will be a low 14 percen APR or 15 percent APR, depending o the term of the loan. Used car loans ar reduced to 16 percent APR.

For more details, call the LFCU 827-7200.

National Aeronautics and
Space Administration

**Langley Research Center**

NASA

# Langley Researcher

Volume 21 Issue 4

February 26, 1982

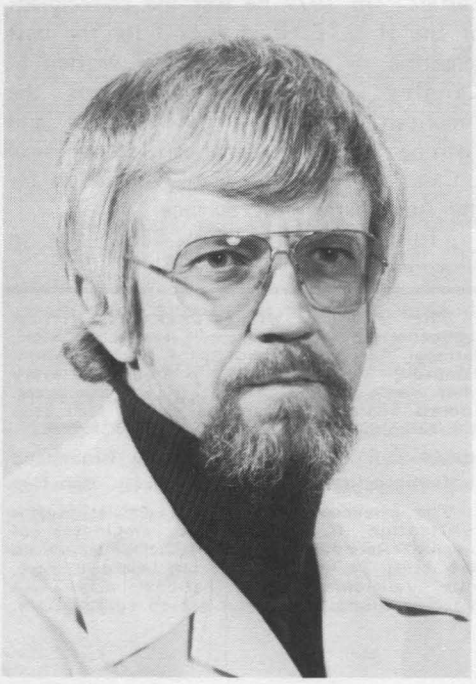
***Office of the Director***

## Tolson Named Langley's Chief Scientist

Robert H. Tolson is Langley's new Chief Scientist. He replaces Dr. Frank Hohl, who died December 6, 1981. Tolson is former Head, Atmospheric Sciences Branch, Atmospheric Environmental Sciences Division.

As Chief Scientist, Tolson is the principal advisor to the Director and Deputy Director for the overall quality and character of the Langley in-house, contractual and university research programs, and he advises on the needs and attitudes of the Langley research staff. Tolson also has operating responsibility for the Director's Discretionary Fund, the Distinguished Research Associate Program, the Fund for Independent Research, the Floyd L. Thompson Fellowship Program, and the selection of the H. J. E. Reid Award recipient.

Tolson began his career at Langley in 1953 in the cooperative training program. As a co-op student, he was assigned to model fabrication shops and aerodynamic test facilities. While a senior at Virginia Polytechnic Institute, he wrote a paper on hypersonic stability which was selected as the best technical paper in a nationwide competition sponsored by the Institute of Aeronautical Sciences.



After receiving a bachelor of science degree in aeronautical engineering in 1958, he worked in the Theoretical Mechanics Division, doing early studies of manned and unmanned lunar missions. He received a master of science degree in physics from VPI in 1963. Upon completion of a two-year fellowship in mathematics in 1964, Tolson returned to Langley to work on the Lunar Orbiter mission as a co-investigator on the Selenodesy Experiment. He received a NASA Group Achievement Award and a Langley Special Service Award for his participation in the mission.

In 1969 Tolson became Navigation Analysis Manager in the Viking Project Office, where he was responsible for spacecraft navigation during the interplanetary cruise and Mars orbital phases of the mission. He was appointed Head of the Planetary Physics Branch in the Environmental Space Sciences Division in 1972. During this time he was a member of the Viking Radio Science Team, responsible for the atmospheric and geophysical studies to be performed at Langley using Viking data. He was awarded the NASA Exceptional Service Medal for his work in these activities. He also was selected

Continued on page 2.

NACA

## Reunion Planned for November

The first NACA reunion, held almost six years ago in Asheville, N.C., attracted approximately 600 people who were a part of NACA from 1915 to 1958. The group and their spouses traveled from all parts of the country to spend a weekend renewing acquaintances.

Since that time a great deal of interest has been expressed to have a second get-together. The NACA Reunion Committee is making final plans for this reunion to be held in November 1982 in Williamsburg.

The Williamsburg Hilton Conference Center on Route 60 has been reserved from November 12 through November 14. The Hilton is new, attractive and large enough for a big gathering. A package deal has been arranged to cover lodging, meals and entertainment for Friday through Sunday brunch. Another package has been prepared for those who do not plan to spend the nights in Williamsburg. The hotel also offers special rates for Thursday arrivals or late Sunday departures.

Special rates are available for touring Colonial Williamsburg, including the newly decorated Governor's Palace, and golfers can arrange to play at nearby Kingsmill Golf Course or at several other courses in the area. Buses or rental cars can be obtained if desired.

For those who plan to fly to the reunion, special air fares have been obtained from San Francisco; Huntsville; Cleveland; Washington, D.C.; Houston; and Orlando to airports at Newport News, Norfolk and Richmond.

NASA employees who also worked for NACA are welcome to participate in the reunion. For a reservation form, please call 722-8454 or 722-8768, or write to NACA Reunion Committee, 20 Lakeshore Drive, Newport News, Va. 23602.

*– photo by Bob Nye*

**Harvey's Janitorial Service has been awarded a $2.9 million contract to provide custodial services at Langley. The contract was awarded by NASA and the Small Business Administration (SBA) under Section 8(a) of the Small Business Act of 1953. This section authorizes the SBA to enter into procurements with federal agencies who in turn subcontract work to small disadvantaged businesses. Robert R. Moore, Jr., Chief, Acquisition Division, and Freddie Harvey, Harvey's Janitorial Service, are pictured seated above as Harvey signs the contract. Standing are Samuel J. Scott and Debra White, Small Business Specialists, and Joseph Donohue, Contract Specialist.**

# Visitor Center Presents 'Aircraft - The Safety Factor'

"Aircraft – The Safety Factor" is the theme of the Langley Visitor Center's March program. Exhibits and video presentations on aircraft safety research will be featured March 1 through 31.

The video presentation, "The Safety Factor," will be presented at 12 and 2 p.m. daily. Originally produced for the public television series, "Nova," the hour-long film follows a DC-10 flight from London to Los Angeles, giving close consideration to all the safety factors involved in the flight. Some major aircraft crashes of recent history are evaluated and a number of safety research efforts are presented.

Displays will tell the story of impact dynamics studies, in which small planes are intentionally crashed for safety research and will show Langley's research efforts to understand the stall/spin problem.

# Hours Change

Effective March 1, the new hours of the Imprest Fund Cashier, located in Building 1192, will be 10 a.m. to 12 p.m. and 2 p.m. to 4 p.m. Travel advances and cash disbursements will be made only during these hours.

# Thanks

**James F. Montgomery** writes, "Thanks to my friends at Langley for the time, effort, gifts and friendship that went into such a fine retirement party. I hope to see you all from time to time."

# Tolson

Continued from page 1.

as a principal investigator on the GEOS-3 mission to determine the geoid from satellite altimeter data and was a co-investigator on the Pioneer Venus Orbital Drag Experiment.

In 1976 Tolson became Head of the Atmospheric Sciences Branch, AESD, responsible for completion of the Viking Radio Science experiments and for theoretical and data analysis research to study anthropogenic effects on the stratosphere and troposphere. In 1976 he was appointed Head of the Phobos-Deimos Encounter Team. This experiment, conceived at Langley, was part of the Viking Extended Mission, and resulted in the Viking Orbiter's passing within 100 kilometers of both of the moons of Mars, yielding high-resolution images of the surfaces of both satellites and a determination of their masses. He received the NASA Medal for Exceptional Scientific Achievement and the NASA Group Achievement Award for his work on this experiment.

Tolson has authored or co-authored over 50 technical publications, including NASA documents and articles in "Science," "Journal of Geophysical Research," "Journal of Spacecraft and Rockets" and "Geophysical Research Letters." In 1977 he was the co-recipient of the H. J. E. Reid Award for the best scientific or engineering paper written at Langley. He is a member of the American Institute of Aeronautics and Astronautics, the American Geophysical Union, and the American Association for the Advancement of Science.

Tolson and his wife, Carol, live in Newport News.

The *Langley Researcher* as official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other week in the interest of its employees. Address contributions to the Editor, Mail Stop 154, telephone 2934.

Editor . . . . . Jean Drummond
Staff Photographer . . . . . Bob Nye

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex, or national origin. All materials submitted are subject to editing.

## Miller Fund Established

A memorial fund in the name of **G. Kimball Miller, Jr.**, is being established at Grace Episcopal Church in Yorktown. The family has requested that expressions of sympathy be in the form of donations to this fund. Checks, made payable to Grace Church Memorial Fund, should be sent to Linda Rowell, Control Theory & Flight Management Division, Mail Stop 152.

In the 22 years that Miller worked at Langley, he made many significant contributions to flight research with particular emphasis on simulation studies of piloting procedures. These efforts led to the publication of over 36 technical reports.

In a letter to Mrs. Miller, Langley Director Don Hearth said, "We will miss him as a friend and fellow worker, especially his infectious spirit of enthusiasm and joy in work well done."

## Edelson Succeeds Stofan at OSSA

Dr. Burton I. Edelson, senior vice president of COMSAT General Corp., has been named NASA Associate Administrator for Space Science and Applications, effective Feb. 14.

He succeeds Andrew J. Stofan, who has been in the position in an acting capacity. Stofan will remain as an advisor to Edelson until he moves into another senior management position within NASA.

Edelson will be responsible for all of NASA's Space Science and Applications programs, as well as the activities of the Jet Propulsion Laboratory at Pasadena, Calif., and the Goddard Space Flight Center, Greenbelt, Md.

Edelson joined the Communications Satellite Corp. in 1967 as assistant director for COMSAT Laboratories and in 1973 was named director of COMSAT Laboratories.

In March 1979 he was elected vice president of COMSAT, and he assumed his present position in September 1980. Prior to joining COMSAT, he served as an engineering officer in the U.S. Navy with assignments on the staff of the National Aeronautics and Space Council at the White House and in the Office of Naval Research.

A graduate of the U.S. Naval Academy, Edelson earned his master's and doctorate degrees from Yale University.

He is a Fellow of the Institute of Electrical and Electronics Engineers and of the American Institute of Aeronautics and Astronautics. He is a member of several U.S. government advisory committees and recently served on the NASA Transition Team for the Reagan Administration.

## 'Personal Financial Planning' Course Offered

In cooperation with Thomas Nelson Community College, Langley will again offer the non-credit course, "Personal Financial Planning," beginning Thursday, March 4, and ending April 22. Class will meet for eight Thursdays, from 4:45 to about 7 p.m., in Building 1194-A, Room 203-4. Employees will be expected to pay their own tuition for this course (about $45) and to purchase a textbook.

The course will cover an introduction to financial planning; monthly cash flow and its review and analysis; setting financial goals; relation of income to inflation and taxes; investing versus savings; investing in real estate and energy; income versus taxation; risk management and life insurance; casualty protection and planning for retirement; estate planning; and developing a financial plan.

Malcolm G. "Fritz" Fries, who is a certified financial planner, will be the instructor. Fries has a bachelor of arts degree in political science and a master of arts degree in business management. He has recently taught a course in "Tax Shelters" at Langley.

Persons who wish to enroll in the course or who have questions concerning it should call Eloise McGehee, Training and Educational Services Branch, ext. 2611.

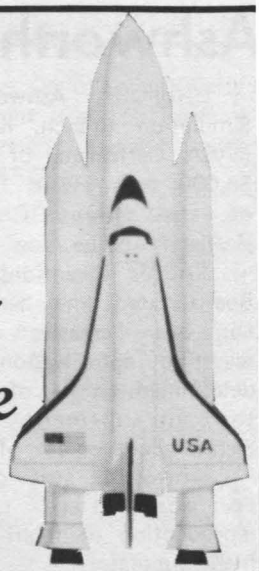
## Housing Wanted

Do you have an extra room for added income? Would you like to have someone take care of and pay for your house or apartment this summer?

Professors from across the United States will visit Langley for the ASEE research program from approximately June 1 to August 6, and will need housing during this time.

For more information call Jeane Jones, ext. 3014.

## Space Shuttle Update




The cryogenic tanking test, at press time scheduled to begin Thursday, February 25, should be completed today at 2 p.m. The test involves loading liquid hydrogen and liquid oxygen and is a direct countdown simulation of loading operations on launch day. The external tank for STS-3 was delivered directly to Cape Kennedy from the Michoud Facility, New Orleans and has not previously been test loaded with cryogenic propellants, as was the case with STS-1 and 2 external tanks at this point. At the end of the tanking test, the propellants will be pumped back into their storage tanks at the pad for later use.

During the week of March 1, hypergolic propellants will be loaded for the OMS (Orbital Maneuvering System) and the RCS (Reaction Control System for attitude control). It was during hypergolic loading for STS-2 that a small spill occurred, delaying the targeted launch date for that mission.

Countdown preparations will highlight activities the following week, beginning March 8.

March 22 remains official launch date for the Space Shuttle Columbia's third flight. Launch window for that date extends from 10 a.m. to 1:16 p.m. EST.

FEBRUARY, the shortest month of the year, is truly a month of hope . . . for soon we will be enjoying warmer days and green and grassy slopes. We await with a joyful expectancy the blossom-laden boughs of trees and bushes and the bright yellow heads of daffodils popping out of the sun-warmed earth.

# Ashworth Receives NASA Award

Billy R. Ashworth, Analysis and Simulation Branch, has been awarded a NASA Certificate of Recognition and a $5,000 cash award for his development of the "Seat Cushion To Provide Realistic Acceleration Cues."

NASA's Inventions and Contributions Board cited the aerospace technologist for his "creative development of a scientific contribution which has been determined to be of significant value in the advancement of the aerospace technology program of NASA."

Ashworth's seat cushion is designed to contribute to the realistic reproduction of flight characteristics in a flight simulator.

Flight simulation is achieved by mathematically modeling a vehicle's aerodynamics, controls, propulsion system, structures, avionics and environmental characteristics to give the pilot the illusion of actual flight. Simulated flight also makes use of computer controlled displays and a control feel system to further the effect.

When in control of an aircraft, the kinesthetic cues or "seat-of-the-pants" feel provides a pilot with important information concerning the aircraft's dynamic state. Pilots sense such kinesthetic cues as buffet, control forces and linear and angular accelerations. Under positive normal acceleration, the pilot is subjected to an increase in weight for each part of the body.

The increased body weight causes increased pressure on the "seat-of-the pants" as the seat cushion padding becomes fully compressed and no longer conforms to the pilot's buttocks. This causes a change in the pressure distribution on the buttocks.

The "seat-of-the-pants" feel seems to be one of the most noticeable cues of acceleration. In view of this, Ashworth's seat cushion is designed to compress the seat padding in a flight simulator so that the seat itself reproduces the feeling that the pilot weighs more.

Ashworth's seat reproduces that effect through utilization of air pressure control. The cushion is made of air pliable rubber with four air cells per seat and back cushion. There are individual pressure controllers for each of the eight cells. A non-compressable surface (wood) is used underneath the air cushion.

The seat is initially biased so the air conforms to the pilot to support most of his weight. Then as simulated accelerations increase, air is removed from the seat. This simulates the cushion material being compressed by gravity forces on the pilot's body and causes more of the pilot's weight to be supported by his buttocks (just as acceleration in actual flight does).

The seat cushion's ability to respond to the simulated aircraft's dynamics with minimum time lag is one of its most important features.

Pilots have attested that the seat cushion provides excellent normal acceleration cues and adds to the realism of the simulated flight.

Virtually all major simulator manufacturers have now adopted Ashworth's seat design. Although originally used in high performance aircraft simulators, the seat cushion has also been used recently in transport and helicopter simulators.

Ashworth, a native of Nashville, Tenn., graduated from Tennessee Technological University with a bachelor of science degree in electrical engineering in 1965. He received his master's degree in electrical engineering from the University of Virginia in 1975. And he has been awarded his doctorate in electrical engineering and computer science from Old Dominion University.

*— photo by Don Ward*

**Billy R. Ashworth is presented a Certificate of Recognition and check from Maurice K. Morin Chief of the Analysis and Computation Division. Ashworth's Space Act award was presented for his invention "Seat Cushion to Provide Realistic Acceleration Cues."**

## Car Passes Available

Employees interested in obtaining a car pass for the Shuttle launch, scheduled for March 22, should call Ann Suit, ext. 3341.

## Key Position

**Wayne C. Hogge** has been selected Head, Facilities Support Section, Construction Branch, Facilities Engineering Division, under Competitive Placement Plan 82-1.

## Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

82-9 -- AST, Technical Management; GM-0801-14; Office of Director for Systems Engineering and Operations; National Transonic Facility Project Office; Closes March 1, 1982; NASA-Wide.

82-10 -- Engineering Technician; GS-0802-9 or 10; Operations Support Division; Tunnels Operations Branch; Technical Support Section D; Closes March 1, 1982.

82-11 -- Supervisory Electrical Engineering Technician; GS-0802-12 or GM-13; Operations Support Division; Electrical Support Branch; Laboratory and Plant Electrical Section; Closes March 1, 1982.

82-12 -- Supervisory Electronics Engineer; AST, Measurement and Instrumentation Systems; GM-0855-14 or 15; Office of Director for Electronics; Flight Control Systems Division; Fault Tolerant Systems Branch; Closes March 8, 1982; NASA-Wide.

82-13 -- Supervisory Aerospace Engineer; AST, Control and Guidance Systems; GM-0861-14 or 15; Office of Director for Electronics; Flight Control Systems Division; Cockpit Systems Branch; Closes March 8, 1982; NASA-Wide.

82-14 -- Supervisory Electronics Engineer; AST, Measurement and Instrumentation Systems; GM-0855-13 or 14; Flight Control Systems Division; Fault Tolerant Systems Branch; Avionics Integration Research Laboratory Operations Section; Closes March 8, 1982; NASA-Wide.

82-15 -- Program Analyst; GS-0345-7; Facilities Engineering Division; Construction Branch; Facilities Administration Section; Closes March 5, 1982.

82-16 -- Assistant Chief, Fabrication Division; GM-1601-13 or 14; Office of Director for Systems Engineering and Operations; Fabrication Division; Office of the Chief; Closes March 12, 1982; NASA-Wide.

82-17 -- AST, Experimental Facilities and Equipment; GS-0801-9; Systems Engineering Division; Aeronautical Systems Engineering Branch; Model Engineering Section; Closes March 5, 1982.

## NASA News

**Wallops Flight Center** and **Goddard Space Flight Center** successfully completed the launch operations of the Cleft Energetics Transport and Ultraviolet Radiation (CENTAUR) Project in December 1981. CENTAUR is a cooperative international project conducted by NASA and the National Research Council of Canada (NRCC) to study the dynamics of the cleft region of the earth's magnetic fields.

Between November 30 and December 13, 1981, five large rockets were launched from Cape Parry on the Arctic Ocean into the pre-noon, noon and post-noon cleft region (three NASA and two NRCC). The rockets were launched in accordance with desired magnetospheric activity, cleft locations and favorable weather.

The WFC payload was instrumented with optical sensors to make spectrophotometric observations of far and extreme ultra-violet radiations from very soft particle precipitation in the cleft. The GSFC payloads were instrumented with an array of sensors to measure magnetic fields, electron densities, ion masses, soft particles and high energy particles. The NRCC payloads were instrumented to measure energetic electron and ion distribution, electron/ion temperature, flux and spectrum of incoming electrons, electron and ion densities, and magnetic and field aligned currents.

Extensive ground based instrumentation was installed at Cape Parry and Sachs Harbour on Banks Island about 150 miles to the north.

Preliminary data have shown the overall result of the project is highly successful. By sharing and correlating data, the cooperative effort will greatly enhance the scientific results at significantly reduced cost to both organizations. Final results and publication are pending detail analysis and the correlation and sharing of data through a series of planned CENTAUR workshops.

**Jet Propulsion Laboratory.**

Evidence of four, and possibly six, undiscovered satellites of Saturn have been found in data from Voyager 2's Saturn encounter by Jet Propulsion Laboratory's Dr. Stephen P. Synnott.

The discoveries bring the number of known Saturnian satellites to between 21 and 23. The two "possible" satellites were seen in only one observation each, so their orbits are not yet confirmed.

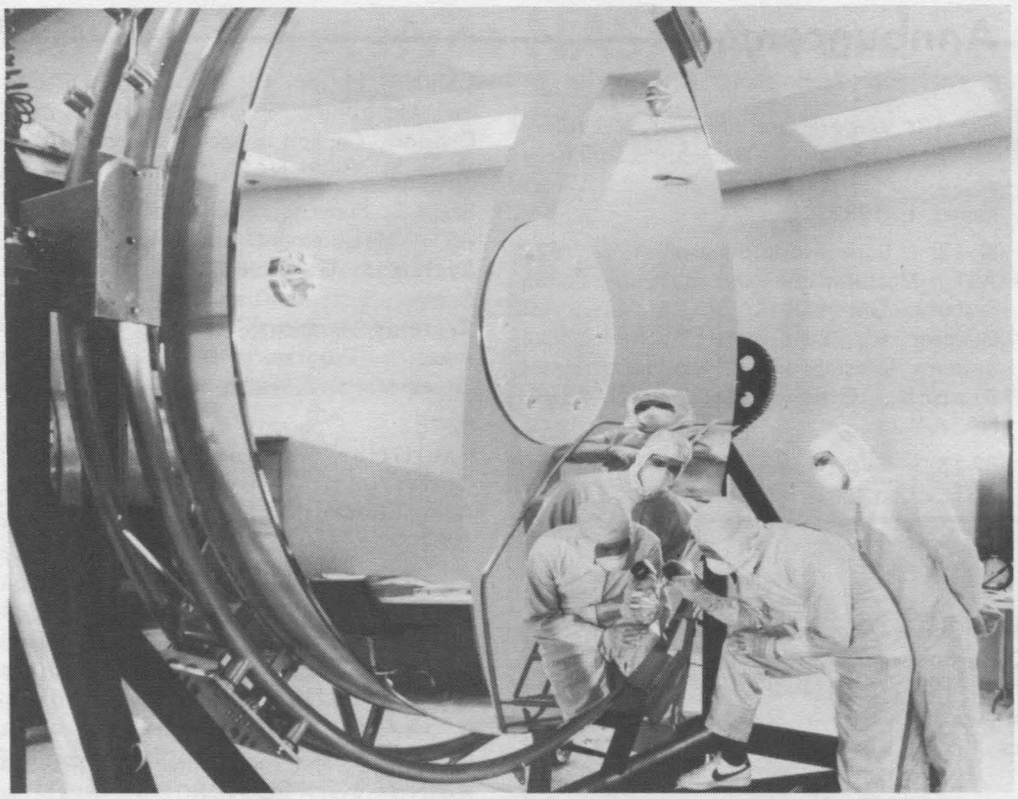
Of the four satellites found by Synnott, the innermost satellite moves at about the same orbital distance from Saturn as the already-known satellite, Minas. Synnott also found a third companion of the satellite Tethys that appears to move in what Synnott calls a "horseshoe" orbit. Another satellite was found by Synnott at a point about 60 degrees ahead of the satellite Dione. Synnott found yet another satellite about 350,000 kilometers (217,000 miles) from Saturn, between the orbits of Tethys and Dione.

Synnott, a member of the Voyager navigation team, also found two new satellites at Jupiter in photos he studied after the Voyager encounters in 1979.

## Thinking Out Loud

*A retentive memory is often a good thing, but the ability to forget can be a token of greatness.*

**This is the new patch for STS-3, designed by space artist Robert McCall, along with astronauts Charles G. Fullerton and Jack R. Lousma. The patch shows the Remote Manipulator System (RMS) holding the Plasma Diagnostics Package (PDP), which is an Orbiter certification experiment scheduled for the third mission.**



*– Marshall Photo*

**Operating in the clear environment above the Earth's obscuring atmosphere, NASA's Space Telescope will enable astronomers to see virtually to the edges of the universe. The telescope's primary mirror, a major component of the project being managed by the Marshall Space Flight Center, Huntsville, Ala., recently completed its final stage of construction and is ready for installation into the telescope in 1983. Technicians at the Perkin-Elmer Corp., Danbury, Conn., are seen examining the reflective surface of the 94-inch, 1800-pound mirror after it was coated with aluminum and magnesium floride. The Space Telescope is scheduled to be lifted into space aboard the Space Shuttle in the mid-1980s.**

# Traffic Flow Can Accommodate Everyone

The increase in the number of bicycles being used at Langley indicates that employees are willing to replace gas power with foot power.

However, a number of bicyclists have had some close encounters with vehicles and pedestrians. Bikers are reminded that the rules of the road for bicycles are the same as those for other vehicles. Bikers should always ride in single file, as close to the side of the road as can be done safely. Showboating is dangerous -- whether on two or four wheels. Keep your hands on the handlebars and watch out for pedestrians and vehicles. Bike riding on the sidewalks and malls has caused a number of walkers to voice concern about some near collisions. Help us avoid creating new problems as we try to solve old ones. Courtesy is a two-way thing. Don't spoil all the advantages of two-wheel travel by causing an accident.

Just as recent good weather has led to increased bike traffic, the joggers are increasingly evident, too. Joggers should run facing traffic flow, in single file, and at the side of the road. The official jogging course at Langley is from Building 1222 to Doolittle Road around Bush, Test and Hunsaker roads. Several near misses have occurred in the vicinity of the Activities Center and Doolittle Road.

Traffic flow at Langley fortunately can accommodate everyone -- trucks, cars, bikes, joggers and walkers, but we need to practice caution and courtesy.

"LIFE IS FRAGILE –
HANDLE WITH CARE"

# Thanks

**Doris Vandeveer** writes, "I want to thank our friends at Langley for their prayers and expressions of concern during the recent serious illness of my husband, Harold. He is recovering nicely and I expect him to be home soon."

# Dog Clinic Extended

On February 14 approximately 55 persons attended the "Learning to Care for Your Dog" clinic at Thomas Nelson Community College.

Due to the interest shown and the information desired by those attending there was only time for three presentations.

The Continuing Education Departmen at TNCC, has scheduled the remainder o the clinic for Sunday, March 7: Anima Control by Fran Falls, Peninisula SPCA Grooming for Health & Comfort b Linda Adams, The Village Groome Newport News; and So You Think Yo Have a Show Puppy by Beverly Abbott Newport News, dachshund breeder.

The clinic will be held in Room 10 Diggs Hall at 1:30 p.m. There will b no additional charge for persons alread enrolled. New attendees will be charge a fee of $5, plus $1 for each addition member of a family.

# LAA Travel

Over 40 reservations have alread been made for the Greece tour schedule for October 1–11, with an optional fo day, three night Egypt extension. Plea call to make your reservations now space is limited.

A 10 percent discount per person c all cabins in category three and abo and a 5 percent discount on all oth rates are available on all Carniva Cruises sailing from Norfolk this year.

Bermuda . . . . . May 11–
Nassau . . . . . May 26–
Bermuda . . . . . September 11–
Ocean Party Cruise . September 18–

You have a choice of either a fo day or five day discounted package Los Vegas, departures every Thursd returning Sunday or depart Sunday a return Thursday, to and from Norfolk.

For additional information a reservations call Ernie Greene, ext. 23 or 838-0567.

# Retirement Party

A retirement party honoring **Mel L. Watkins**, who recently retired from t Operation Support Division, will be h Tuesday, March 9, at the Activit Center. A cash bar with hors d'oeuv will begin at 4:30 p.m. The cost will $6 per person. Contributions for g only are welcome. Make reservation a send payment to Patrick T. Bauer, M Stop 276, by March 2.

# Happenings

**HAPPY HOUR** will be held today from 4 to 6:30 p.m. in the Activities Center.

**DINNER DANCE.** A beef and burgundy dinner dance will be held in the Activities Center March 27. Music will be provided by Bob Marshall and the Crystals. Call the Activities Office, ext. 3139, for more information.

**SKI TRIPS** are planned for Thursdays, March 4, to Homestead and March 11 to Wintergreen. The cost of each trip is $36 ($7 less with own equipment). A bus will depart Newmarket South (in front of Heckingers) at 5 a.m. and return there by 9:30 p.m. A check should be made payable to Richard Bennett and sent to him at Mail Stop 397 or 11 Bosch Lane, Newport News, Va. 23606. Please specify the date you wish to ski. For further information call 599-5585.

**WALT DISNEY MOVIE.** "Freaky Friday" will be shown in the Activities Center at 3 p.m. Sunday March 14. Admission is 75 cents per person.

**"CABARET,"** the award-winning musical by Walter Kerr, is being performed tonight and tomorrow at 8:15 p.m. in the Phi Beta Kappa Hall at the College of William and Mary. Admission is $5. Call the Box Office, 253-4272, today until 6 p.m., for reservations.

**NASA GOLF ASSOCIATION** will hold an organizational meeting Friday, March 5, at the Activities Center. Plans for the 1982 tournament season will be discussed. An open bar will begin at 6:30 p.m. with the meeting to follow at 7 p.m. All interested NASA personnel, including retirees, are invited to attend. For additional information call Tom Bonner, ext. 4666, or Forrest Dickinson, ext. 4534.

**THE ATARI COMPUTER CLUB** meets on the second Wednesday of each month in the Activities Center. The next meeting is scheduled for March 10 at 5 p.m. The program agenda will include demonstrations of word processors and games.

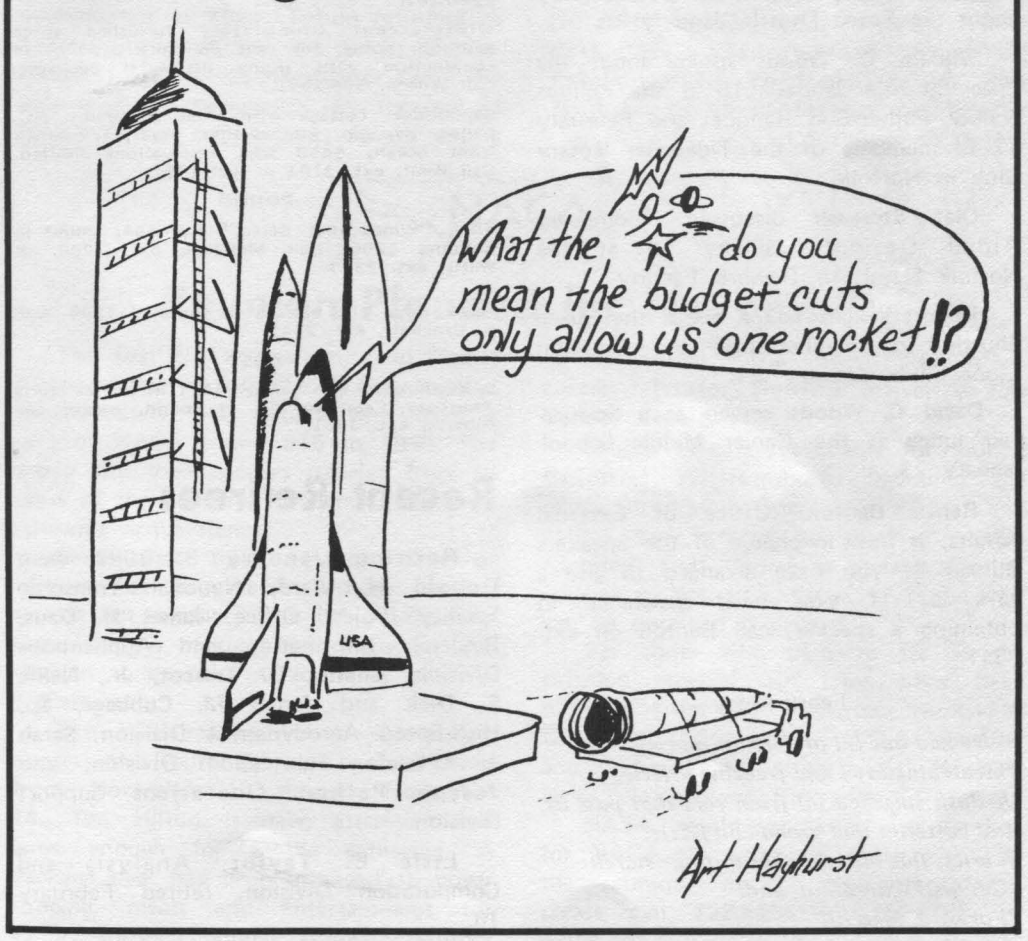
**SKI TRIP** is planned to Mont Tremblant, Canada, March 18–22. Enjoy the finest skiing in the northeast on 75 miles of trails and slopes for beginners to experts. Trip includes transportation, two nights lodging at the Chalet des Chutes, three days of skiing, a three-day lift ticket, two breakfasts and dinners. Prices start at $171. Call Norman Willey, ext. 3987 or 490-0238.

**RUNNERS' CLUB.** The next event sponsored by the Langley Runners' Club will be held Monday, March 1, at 4:45 p.m. The race will offer a 10 kilometer-(6.2 miles) event as preparation for the next intercenter meet and also a 20 kilometer event for those preparing for the Shamrock Marathon. The course will be two loops (four loops for 20 km) around the green course, and participants should meet on Doolittle Road beside the Activities Center. No preregistration is necessary and all information will be available on race day. These events are open to NASA and contractor employees and their families. For information, call Dick Layman, ext. 3511. If you have not paid your 1982 dues (see form in Intercenter Newsletter #81-4), please send to Lucy Parks, Mail Stop 152E.

**CAMP NIMROD.** Consider Camp Nimrod for your son or daughter this summer! The separate, private, brother-sister camps in the Virginia mountains near Hot Springs have been in operation for over 40 years. Camp sessions offer two to six weeks of summer fun and recreation for children 6 to 16 years old. The camp directors will be at St. Andrew's Episcopal Church, 45 Main St., Newport News, March 7 at 3 p.m. for a "get acquainted" party and slide presentation. For further information, applications and camp brochures, call Ann Jobson, 596-9540.

**LITERACY COUNCIL.** A national/international dinner will be held March 19 from 6 to 7:30 p.m. in the Christopher Newport College cafeteria. Sponsored by the Basic Studies Department at CNC, the dinner will benefit the Peninsula Literary Council. The Heritage Dancers from the Folk Dance Club will perform during dinner. Donations are $5. For more information or reservations, call 838-5300 by March 17. Admission only by prior ticket purchase.

## On the light side . . .



National Aeronautics and
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# Speakers Bureau

**Dr. John N. Shoosmith** spoke to students in the Norfolk City Schools January 6 on "Solving Scientific Programs through Computers."

**James P. Arrington** discussed the Space Shuttle program at St. Lukes United Methodist Church in Yorktown January 10 and at the Hampton Medical Society January 13.

**Stuart Harris** talked to retired federal employees about Aircraft — Next 20 Years, January 11.

**Dr. Donald P. Hearth** spoke to members of the Richmond Rotary Club about the Space Shuttle January 12.

**William C. Woods** spoke about the Space Shuttle January 15 at the Phillips School Father/Son Banquet and February 12 to members of the Tidewater Rotary Club in Norfolk.

**Olaf Storaasli** discussed "Computer Aided Design" January 16 at the Norfolk Naval Air Rework Facility.

**Robert Wright** talked about the Space Shuttle to members of the Franklin Lions Club January 21.

**David C. Woods** served as a Science Fair judge at the Carver Middle School January 23.

**Renee Benton**, Office of External Affairs, is now in charge of the Speakers Bureau. If you have arranged to give a talk or if you need assistance in obtaining a speaker, call Benton on ext. 3341.

### Febru-weary

*We've had our fill of cold air masses,*
*Threatening lows and freezing drizzle,*
*Of slush splashed up from cars that pass us,*
*And batteries that groan and fizzle.*
*In brief, this month takes out our starch—*
*"Get lost!" we shout, and,*
*"Forward, March!"*

# swap and shop

### FOR SALE

**Articles**

Solid mahogany headboard, mattress, springs, frame, queen size, VGC, $150. Call Youngblood, 877-1224.

**Vehicles**

1967 GMC Handi-van, low miles, No. 5 inspection sticker, $550 OBRO. Call Hansbrough, 851-4427 after 5 p.m.

**Animals**

AKC registered Norwegian Elkhound, started on squirrels, also loving pet, two years old, $200. Call Ramey, 244-4233.

### FOR RENT

Tabb: Room for rent, private beach, private entrance, bath and sundeck. Furnished, $140 per month. Call Hastings, ext. 3611 or 229-7242.

Wintergreen: Completely furnished three bedroom home, for rent on daily basis or in conjunction with skiing lift/rental packages. Call Wilson, 596-3991.

Sandbridge: cottage with three bedrooms, AC, phone, liv. din. kit., washer, dryer, 1/2 block from ocean, $450 wk., reservations limited. Call Kent, ext. 3104 or 420-8391.

### FOUND

Film, "Winds that Serve," No. 184, found in Building 1206. Call Molchan, ext. 3263, or Watts, ext. 2370.

Black onyz clip earring in Building 1208. Call S. Crockett, ext. 2645.

### LOST

A small silver pin (initial "A") in the cafeteria Thursday, February 11. If found, please call Alberta, ext. 3431.

# Recent Retirees

Retiring January 8, 1982 were **Donald H. Ward**, National Transonic Facility Project Office; **James H. Daus**, Research Information and Applications Division; **Charles D. Trescot, Jr., Nellie S. Dick** and **James M. Cubbage, Jr.**, High-Speed Aerodynamics Division; **Sarah J. O'Keefe**, Fabrication Division; and **Joseph Parker**, Operations Support Division.

**Lisle E. Taylor**, Analysis and Computation Division, retired February 16.

# cafeteria menu

### WEEK OF MARCH 1 — 5

**MONDAY:** Vegetable Soup; Chopped Steak Fish Nuggets; Quiche Lorraine. Snack Bar: Hot Italian Suasage Sub; Chicken Breast; Egg Salad.

**TUESDAY:** Manhattan Clam Chowder; Baked Lasagna; Crab Cutlets; Baked Beans & Franks. Snack Bar: Ham & Cheese Club; BBQ; NASA Sub.

**WEDNESDAY:** Vegetable Soup; Roast Turkey Dinner; Meat Loaf; Boston Blue Fish. Snack Bar: Sausage Pizza; Polish Sausage; Steak, Onion & Cheese Sub.

**THURSDAY:** Chicken Gumbo Soup; Braised Chicken Livers; Hot Pork Sandwich; Beef Enchiladas. Snack Bar: Deluxe Sub; BBQ; B.L.T.

**FRIDAY:** Vegetable Beef Soup; Fish Dinner; Ham Steak; Knockwurst. Snack Bar: Chicken Breast; Hot Ham & Cheese; Tuna Salad.

### WEEK OF MARCH 8 — 12

**MONDAY:** Ham & Lima Bean Soup; Veal Parmesan; Chicken Chow Mein; New England Scrod. Snack Bar: Hot Italian Sausage Sub; Chicken Breast; Egg Salad.

**TUESDAY:** Bull Island Clam Chowder; Spaghetti Dinner; Chicken & Dumplings; Beef Tips over Rice. Snack Bar: Ham & Cheese Club; BBQ; NASA Sub.

**WEDNESDAY:** Vegetable Soup; Fried Chicken Dinner; Beef Liver; Broiled Flounder. Snack Bar: Sausage Pizza; Polish Sausage; Steak, Onion & Cheese Sub.

**THURSDAY:** Chicken Vegetable Soup; Braised Chicken Livers; Seafood Quiche; Macaroni, Franks & Cheese. Snack Bar: Deluxe Sub; BBQ; B.L.T.

**FRIDAY:** Turkey Noodle Soup; Fish Dinner; Chicken Pot Pie; Knockwurst Reuben. Snack Bar: Chicken Breast; Hot Ham & Cheese; Tuna Salad.

# Norris Wins February Drawing

**James W. Norris Jr.**, Personnel Division, won the February drawing of $20 given to car pool participants by the Langley Exchange Council.

**Otis L. Artis**, Operations Support Division, **Gordon H. Bowie**, Research Facilities Engineering Division, and **Irving Weinstein**, Loads and Aeroelasticity Division, retired February 26.

National Aeronautics and
Space Administration

**Langley Research Center**

NASA

# Langley Researcher

Volume 21 Issue 9

April 23, 1982

***Langley Researcher to Study in Australia***

## Moss Wins Floyd L. Thompson Fellowship

Dr. James N. Moss, an aerospace technologist in the Space Systems Division, is the 1982 – 83 recipient of the Floyd L. Thompson Fellowship.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Langley staff. The Fellowship allows researchers who have demonstrated continued growth in research to spend up to 12 months at an educational or research institution. It is named in memory of Dr. Floyd L. Thompson, Langley Director from 1960 to 1968. Thompson joined the Langley staff in 1926, retired in 1968 and was a consultant to the NASA Administrator until January 1973.

Moss is the ninth Langley researcher to participate in the Thompson Fellowship Program since its inception. He was chosen by the Thompson Fellowship Selection Committee, headed by Dr. Jag J. Singh. Other committee members are Frank S. Kirkham, Dr. Edmund J. Conway, Dr. Douglas F. Dwoyer and Wilmer H. Reed III.

Moss will spend one academic year at the University of Sydney in Sydney, Australia, conducting a numerical study to better define the aerothermodynamic characteristics of vehicles in the low-density flow regime. Moss said this will be accomplished by applying the direct-simulation Monte Carlo method as developed by Professor Graham A. Bird of the University of Sydney. According to Moss, this solution method is the only rigorous and practical method for calculating transitional flow problems but has been rarely used.

"The research will support the Aerothermodynamics Branch's expanding program to develop computational methods for defining the aerodynamic and aerothermodynamic environment about entry vehicles in the transitional flow regime," Moss explained. "This cooperative research with Professor Bird should advance our program in aero-assist aerothermodynamics which is urgently needed for the development of orbital transfer vehicles."

Moss said he is very pleased with being selected as a Thompson Fellow. "I anticipate that a year of concentrated research on this problem will be interesting and challenging and will enhance Langley's ability to predict the performance of candidate aero-assist vehicles."

Moss began his NASA career in August 1962 as an aerospace technologist in the Structures Division. From October 1970 to August 1974 he was assigned to the Materials Division. In August 1974 Moss began his present work, conducting

Continued on page 2

## Heyman Named a Top Young Federal Employee

Dr. Joseph S. Heyman, a section head in the Instrument Research Division, has been named as one of 10 outstanding young federal government employees of 1981. He will be presented the Arthur S. Flemming Award today by the Downtown Jaycees of Washington, D.C.

Heyman was cited for advancing the science of physical acoustics, especially important in measuring the stress tolerance of a wide variety of materials, at critical points, without harm to the material. Specifics include developments in bolt stress instrumentation that resulted in greater safety for fasteners in aircraft, spacecraft and mine structures.

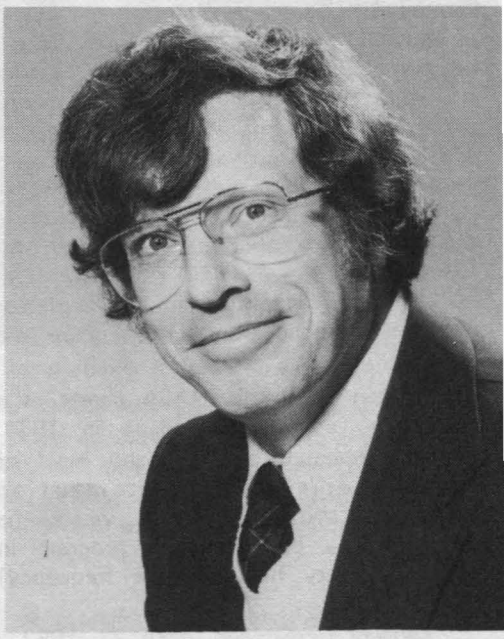
Heyman was also cited for transferring this technology from the laboratory, not only for use within NASA but for other organizations, to solve applications problems in diverse areas from earthquake monitoring to blood clot detection.

Other contributions listed for 1981 were strong leadership of his research group, stimulating students to honors achievements in a research curriculum, and for significant help in fostering a community awareness of man, his technology and directions for the future (through the NASA/College of William and Mary lecture series, "Our Future in the Cosmos").

This is the 34th year that The Downtown Jaycees have presented the Flemming award to recognize those who have performed outstanding and meritorius work for the federal government.

Dr. Arthur S. Flemming, for whom the award is named, has held a number of federal positions, including director of

Continued on page 2.



— *photo by Bob Nye*

**Dr. James N. Moss (left) of the Space Systems Division is congratulated by Robert H. Tolson, Chief Scientist, upon being named recipient of the 1982 – 83 Floyd L. Thompson Fellowship. Moss will spend the next academic year studying at the University of Sydney in Sydney, Australia.**

# Moss Wins Fellowship

Continued from page 1.

studies of the flow field and heating environment encountered by the Galileo Probe, a proposed Titan aerocapture vehicle and the Space Shuttle Orbiter. He has specialized in numerical computations, reacting flow fields, turbulence, radiation transfer and effects of transpiration cooling.

A native of Tennessee, Moss graduated from DeKalb High School in Smithville in 1958. He earned a bachelor of science degree in engineering science from Tennessee Polytechnic Institute in 1962. He received a master of science degree and a doctorate in aerospace engineering from the University of Virginia in 1968 and from Virginia Polytechnic Institute and State Unviersity in 1972, respectively.

The author or co-author of over 60 technical papers and reports, Moss is a member of the Virginia Academy of Science and the American Institute of Aeronautics and Astronautics.

Moss and his wife, Nina, live in Grafton with their three children.

# Recent Retiree

**William H. Forrest**, Project Management Systems Division, retired April 16.

# Heyman Named Top Employee

Continued from page 1.

the Office of Defense Mobilization, secretary of the Department of Health, Education and Welfare, the National Advisory Committee of the Peace Corps, U.S. Commissioner on Aging and, most recently, chairman of the U.S. Commission on Civil Rights.

A native of New Bedford, Mass., Heyman graduated from Tabor Academy in 1961. He attended Cornell University and Northeastern University, Boston, where he received a bachelor of arts degree with honors in physics in 1968. He earned master of arts and doctorate degrees from Washington University, St. Louis, in 1971 and 1975, respectively. In 1979 he was appointed adjunct professor of physics at the College of William and Mary.

Heyman began his NASA career as a cooperative education student in 1964. He is a research physicist and head of the Materials Characterization Instrumentation Section, where he coordinates a basic research program in ultrasonic (very high acoustic frequency) interactions in materials and a program of applications of ultrasonic techniques to materials physics, solid state physics and electronic materials.

Over the past 10 years, Heyman has promoted an increased awareness of the need for understanding non-destructive evaluation for materials and structures, with an ultimate goal of extending their "safe" life. Such a science base could prove invaluable in operational monitoring of space platforms, for instance.

The author or co-author of more than 100 publications and presentations, Heyman holds seven patents with four additional pending. He has received numerous awards for his research, including the IR-100 award, which is presented by Industrial Research Development Magazine for each of the 100 most significant technical developments of the year. Heyman is the first person in the history of the award to receive four IR-100s, for the years 1974, 1976, 1978 and 1981. He was presented a NASA Exceptional Service Medal in 1979 and, earlier this month was presented a Langley Technolog Transfer Award.

He is a member of Sigmi X American Physical Society, America Association for the Advancement c Science, Society of Experimental Stre Analysis, and the Institute of Electric and Electronics Engineering, Sonics an Ultrasonics.

Heyman is married to the forme Berna Judith Levine and has on daughter, Laura Dawn. They reside i Williamsburg.

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Staff Photographer . . . . . Bob Ny

The privilege of advertising articles in th publication is restricted to employees c Langley Research Center. Articles advertise here must be offered without regard to rac color, religion, sex, or national origin. A materials submitted are subject to editing.

*Technology Transfer Awards Presented*

# Langley Honors Inventors at Luncheon

Twenty-six Langley inventors who received United States patents in 1981, plus recipients of Langley's Technology Transfer awards, were honored at the annual Inventors' Luncheon Wednesday, April 7.

Dr. Donald P. Hearth, Langley Director, presented the awards. Guest speaker for the luncheon was Robert F. Allnutt, Acting Associate Administrator for External Relations at NASA Headquarters in Washington, D.C.

**Wendell W. Kelley, Franklin W. Booth** and **Dr. Frank Hohl** were recognized posthumously for their inventions, and plaques were presented to each of their widows. Kelley's inventions were a velocity vector control system augmented with direct lift control and a pitch attitude stabilization system using engine pressure ratio feedback signals; Booth's was an air removal device; and Hohl's was a large volumn multiple-path nuclear pumped laser.

Other inventors receiving awards were **John M. Franke**, for a direction sensitive laser velocimeter; **Harold G. Bush**, for lightweight structural columns; **Billy R. Ashworth, Alton C. Hall** and **Clyde E. Clark**, for a helmet weight simulator; **Dr. Judd R. Wilkins**, for indirect microbial detection; **Liam R. Jackson, John P. Weidner, James A. Martin** and **William J. Small**, for an orbiter/launch system; **Stephen C. Irick**, for a hydraulic actuator mechanism to control aircraft spoiler movements through dual input commands; **Pierce L. Lawing**, for a cooling system for high-speed aircraft; **Gerald C. Purgold**, for an automated syringe sampler; **Dr. Harry A. Benz**, for an image readout device with electronically variable spatial resolution;

**Nelson J. Groom, Dr. Willard W. Anderson** and **William H. Phillips**, for a rim inertial measuring system; **Lana M. Couch**, for a wind tunnel supplementary Mach number minimum section insert; **Robert A. Bruce**, for an air removal device; and **Reid A. Hull**, for a moving body velocity.

**Anne K.** and **Dr. Terry L. St. Clair** received a plaque for their invention of aluminum ion-containing polyimide adhesives. Dr. St. Clair also received an award for a tackifier for addition polyimides containing monoethylphalate.

Technology Transfer awards were presented to **Dr. Joseph S. Heyman** and to the **Materials Division**. The citation accompanying Heyman's award read, "Outstanding Leadership in the Transfer of Technology, Through Applications Projects, Tech Briefs, Seminars, and Conferences, Resulting in an IR-100 Award, Assistance to Industry and Other Government Agencies, and the Commercialization of NASA Technology, Which Provided Substantial Benefits to the Public and Industry and Reflected Great Credit to NASA."

The division's award, accepted by **Charles P. Blankenship** and **Louis A. Teichman**, was given for "Outstanding Accomplishments in the Transfer of Materials Technology to the Public Sector, Industry, and Other Government Agencies, Resulting in Significant Benefits to the Recipients and Reflecting Great Credit to NASA."

## Change Clocks

Daylight Savings Time begins at 2 a.m. Sunday, April 25. Remember to turn clocks forward one hour before retiring Saturday night.

## LFCU Officers Elected

At a recent reorganizational meeting of Langley Federal Credit Union's Board of Directors the following officers were elected: Lt. Col. Charles R. Ritchie (USAF–Ret), President; Albert L. Braslow, 1st Vice President; George R. Hayes, 2nd Vice President; Richard C. Meinberg, Secretary; and Jean M. Yokum, Treasurer.

Bruce Fowler was newly elected to the Board at the March 29 Annual Meeting.

*– photo by Hubert Lloyd and Robin Brannon*

**Inventors who received United States patents in 1981 and recipients of Langley's Technology transfer awards were presented awards at the annual Inventors' Luncheon April 7. Attending the luncheon were (front row from left) William J. Small, Liam R. Jackson, Stephen C. Irick, Nelson J. Groom, William H. Phillips, Reid A. Hull, Anne K. St. Clair, Louis A. Teichman and Gerald C. Purgold; (back row from left) Pierce L. Lawing, John P. Weidner, James A. Martin, Willard W. Anderson, Harold G. Bush, Billy R. Ashworth, Robert A. Bruce, Alton C. Hall, Terry L. St. Clair, Charles P. Blankenship and Joseph S. Heyman. Technology Transfer awards were given to Teichman and Blankenship, who accepted the award for the Materials Division, and to Heyman.**

# Status Review Set for Monday

The agenda for the Monthly Status Review is given below, so that researchers may attend talks of particular interest. The review is held on the fourth Monday of each month in Room 225, Building 1219, unless otherwise announced.

The following technical sessions are planned for Monday, April 26; the morning session will begin at 8:30 a.m. and include presentations by:

**AERONAUTICS**

Vortex Flow Aerodynamics – An overview

Theoretical Estimation of Vortex Flow Aerodynamics

Vortex Flap Analysis and Design

**ELECTRONICS**

Development of Bubble Technology for Aerospace Memory Systems

A Unique Method for Detecting Outgassed Species from Polymers

**SYSTEMS ENGINEERING & OPERATIONS**

NTF Update

High Speed Arresting Gear Test for ALDF

The morning session will also include presentations by Management Operations and External Affairs.

The afternoon session will begin at 1:20 p.m. and will include presentations by:

**STRUCTURES**

Helicopter Blade Vortex Interaction Noise

A Simple Test for the Interlaminar Fracture Toughness of Composites

**PROJECTS**

ACEE/EET Nacelle Aerodynamics and Inertial Loads (NAIL) Overview and Film

**SPACE**

High-Altitude Solar Aircraft Study

Space Station/Launch Vehicle Interface

DIGIKON -- A Flight Control Systems Design Program for an Interactive Computer-Aided Design System

The review will be concluded by 4 p.m. Copies of the complete agenda will be available at the meeting or may be obtained by calling Raoul'd M. Price, ext. 2417.

# Langley to Host Governor's School for Gifted

The Langley Research Center is one of four locations in the state of Virginia selected to host the 1982 Governor's School for the Gifted.

The Governor's School was established in 1973 to provide intellectually challenging and enriching experiences for a limited number of rising junior and senior high school students who are academically gifted and/or artistically talented.

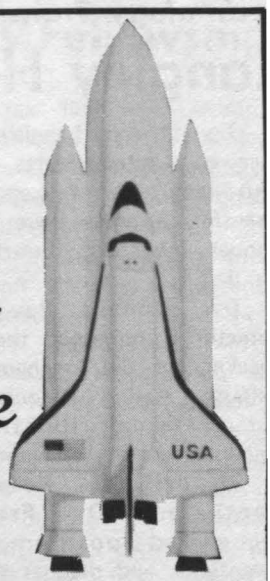
This is the first time that Langley has participated in the program and the first time that the school has offered a curriculum specifically in engineering, mathematics and computer science. There are approximately 475 students participating in the school this year, with 22 being assigned to Langley. The other school locations are Longwood College, Farmville, Va.; Mary Washington College, Fredericksburg, Va.; and Randolph-Macon Woman's College, Lynchburg, Va.

For the six-week program, June 2 through July 30, students will be housed at Hampton Institute where two NASA employees will act as chaperones during the evenings and weekends. During the 40-hour work week, the students' curriculum will include classes, seminars, workshops and independent studies which relate to various NASA programs. Each student will be assigned to a NASA scientist or engineer who will act as a mentor.

The Governor's School participants were selected by the State Department of Education from over 600 students nominated by high school principals and teachers. Selections were made based on grade point average, extra curricular activities, teacher recommendations and a written paper.

If there are any scientists or engineers interested in working with the students this summer, please call Roger Hathaway, ext. 3017, or Hal Mehrens, ext. 3966.

# Space Shuttle Update




Turnaround time between flights continues to shrink as preparations for Columbia's next launch take on an almost routine cadence. The fourth external fuel tank has been mated with the reusable solid rocket boosters. The remote manipular arm has been tested. All hypergolic fuels have been drained from Columbia. A week-long inspection of main engine fuel pumps is continuing (as of Wednesday).

Meanwhile, a total of 846 tiles have been removed, representing nearly all those identified for densification or repair. Most of those are white tiles slated for densification even before the first flight of Columbia, so the number to be repaired as a result of the last flight is a relative few. Between each of the flights thus far, more and more white tiles have been densified. That program is nearly complete. More than 100 of those tiles slated for densification between flights three and four have been densified and rebonded.

Columbia's rollover to the Vehicle Assembly Building for mating to the external tank and solid rocket boosters is penciled in for mid-May. After that, a target launch date will be set. For now, Cape Kenedy officials are sticking with an earlier announcement that launch will take place no earlier than June 27.

# Langley Researchers Play Principal Roles in UARS

Langley researchers Dr. James M. Russell III and Dr. William L. Grose are principal investigators for two research teams assigned to NASA's Upper Atmosphere Research Satellite (UARS) program.

Russell leads the science team for the Halogen Occultation Experiment (HALOE), a solar tracking instrument that will measure key gases in the ozone layer of the stratosphere.

Grose is on a team that is constructing a theoretical model to use in analyzing and interpreting information gathered by UARS to study the stratosphere's transport process, its budgets of trace chemicals and its energetics.

Both scientists work in the Atmospheric Sciences Division.

UARS, to be launched from a Space Shuttle in the fall of 1988, will contain nine scientific experiments to gather information that will help scientists predict the upper atmosphere's susceptibility to change.

Operating for 18 months, the UARS instruments will make direct measurements of critical chemicals, upper atmosphere winds, solar ultraviolet irradiance and measure energetic particle interactions.

The potential depletion of atmospheric ozone, which protects Earth from the Sun's harmful ultraviolet rays, concerns scientists. They are concerned about the potential influence these processes exert on biological and climatic behavior on Earth. They want to learn more about the chemical and physical processes of the upper atmosphere, so that possible adverse effects due to man's activities can be measured.

Emissions from high-flying aircraft and the large-scale use of chlorofluoromethanes (such as those used as aerosol can propellants, foaming agents and refrigerants) are some of the suspected causes of destruction of the atmospheric ozone layer.

Nine teams are developing instruments for UARS. Ten other teams are developing theoretical models of the upper atmosphere that, when substantiated by new information from the satellite, should significantly increase understanding of the area's physical processes.

HALOE's development was stimulated by the question of ozone destruction by chlorine compounds. The instrument will measure the amount of hydrogen chloride, hydrogen fluoride, methane, water vapor, ozone, nitric oxide and nitrogen dioxide in the stratosphere.

Measurements will be made during the sunrise and sunset hours of each day throughout the UARS mission, providing semi-continuous observations and nearly global coverage for the experiment.

During the UARS mission, some experimental gases will be sealed in special cells. These cells will be constructed of material inert to attack by the chemicals. The other HALOE measurements will be made by more conventional means.

The theoretical models are being developed for UARS because observational data alone can never completely define the physical and chemical state of the upper atmosphere. Scientists must rely on theory -- expressed through simulation models -- to provide understanding about atmospheric processes that are not readily measured. The models also help scientists predict the future state of the atmosphere.

The theoretical models constructed by the teams should simulate the underlying physics and chemistry of the regions examined by the UARS instruments.

The main difficulty of creating suitable simulation models is in reproducing the coupled effects of solar and thermal radiation, minor species chemistry and dynamic motion. Information provided by UARS on the chemistry of the stratosphere and spatial and temporal variability of the upper atmosphere will be used by Grose's team to corroborate and correct their simulation models.

# Microprocessor Course Offered by AIAA

The American Institute of Aeronautics and Astronautics Hampton Roads Section, in conjunction with the National Headquarters, is offering a three-day seminar on "Microprocessors: The Fundamentals and Applications," May 3 – 5 at Langley.

The seminar's unique **hands-on** class participation makes this course a must for anyone involved in electromechanical approaches. The required theory is presented in the first four hours and it's **hands-on** learning thereafter.

Emphasis is placed on learning-by-doing and where motivation for accomplishment is high. If the microprocessor is having a profound and relentless impact in the many areas of your technology, then this course is for you.

No prior microprocessor or computer experience is required for this course. For further information call Larry Leavitt, ext. 2673.

# Key Positions

**Walter L. Snow** has been selected Head, Photo-Optical Instrumentation Section, Instrument Application Branch, Instrument Research Division, under Competitive Placement Plan 82-2.

**Andronicos G. Kantsios** has been selected Head, Thermal Instrumentation Section, General Research Instrumentation Branch, Instrument Research Division, under Competitive Placement Plan 82-3.

**Dr. Robert L. Stermer, Jr.** has been selected Head, Physical and Optical Electronics Branch, Instrument Research Division, under Competitive Placement Plan 82-7.

**John F. Wilson** has been selected Construction Manager, National Transonic Facility Project, National Transonic Facility Project Office, under Competitive Placement Plan 82-9.

AEROSPACE
Penpoints
by Wesley Berryman

AN AIRMAN'S BLESSING

*May long runways stretch before you,*
*And the winds aloft be ever at your back.*
*May your power plants run smoothly.*
*Your altitude sustain you, and*
*May fuel be always present in your tanks.*
*May clear skies and sunshine warm you,*
*Your training stand behind you,*
*And until you land again,*
*May God hold you in the hollow of His hand.*

**Many Tidewater residents were pleasantly surprised when STS-3's TV cameras zoomed in on the U.S. eastern shoreline, pinpointing the Tidewater area. While this reproduction from the STS-3 TV transmission does not contain the breathtaking grandeur that the live color shots portrayed, it still clearly delineates the eastern coastline. Most of the frame is filled with the Atlantic Ocean, but with careful observation the Chesapeake Bay area is visible. Part of the Columbia's cargo bay, vertical stabilizer and orbital maneuvering system (OMS) pods are visible in the lower right corner.**

## Hearth to be on TV

Langley Director Donald Hearth will appear on the cable television program "Crossroads: Decisions for the '80's" next week.

Hearth will talk with the program's host, Dr. James Morris of Christopher Newport College, about NASA's directions in space and aeronautics research during the next ten years.

The half-hour program will be shown at 9 p.m. Monday, April 26, and be repeated at the same time Wednesday and Friday, April 28 and 30. It is available on cable channels 14 in Newport News and 25 in Hampton and Norfolk.

## Thanks

**Nellie S. Dick** writes, "Many, many thanks to my friends for the wonderful retirement party. I shall always cherish your friendship and the beautiful gift. I will be looking forward to seeing all of you."

**James Daus** writes, "A note of thanks to all who participated in my retirement party. It provided just the proper climax and the memory will always be cherished along with all the friendships established at Langley."

***Kraft to Retire in November***

# New Directors Appointed at Johnson and Goddard

Christopher C. Kraft, Jr., will be retiring as director of Johnson Space Center after the **Columbia's** first operational flight, which is scheduled for November. Kraft is timing his retirement to coincide with what he designates "a transition period for activity at the Johnson Space Center."

Kraft, a Phoebus native, graduated from Hampton High School in 1941 and has a Hampton elementary school named for him. He began his NASA career at Langley in the late 1950's.

In 1958, Kraft was among the 35 members of the "Space Task Group" at Langley. He served as flight director when the task group managed the Mercury Project. In the early phases of Mercury, Kraft was a major contributor to many of the basic flight control techniques used in the manned space missions.

Kraft and other task group members left Langley for Houston in 1962 to assume responsibilities for the later Gemini, Apollo and Skylab missions.

Kraft directed the design and implementation of Mission Control in Houston and in 1972 was appointed director of the space center.

After a decade under Kraft's administration, Johnson's new director will be Gerald Griffin. James M. Beggs, NASA Administrator, has appointed Griffin to succeed Kraft. Griffin joined NASA in 1964 at the Houston Center. He was named flight director in 1968.

Griffin helped direct all 11 manned Apollo missions and later served as deputy director at both Dryden Flight Research Center and at Kennedy Space Center.

Griffin left NASA last August to become vice president of Scott Science and Technology, Inc., in Scottsdale, Ariz. Beggs said Griffin will return to NASA initially to assist Gen. James A. Abrahamson, NASA's Associate Administrator for Space Transportation Systems. He will later join the center in Houston.

Goddard Space Flight Center is destined to become the third NASA center to undergo a change of directors in 1982. Beggs has appointed Noel W. Hinners to replace A. Thomas Young as director of Goddard. Young left Goddard in March to accept a position as Vice President of Research and Engineering for Martin Marietta Aerospace, Bethesda, Md.

Hinners is currently director of the Smithsonian's National Air and Space Museum. Hinners was previously associated with NASA for nearly seven years, serving as Associate Administrator for Space Science from 1974 – 79. Prior to that, he was director of Lunar Programs in NASA's Office of Space Science.

Before joining the NASA staff, Hinners was head of Lunar Science and head of the Lunar Exploration Department at Bellcom, Inc., a company that provided systems engineering support for NASA's Apollo program.

Hinners currently chairs NASA's Solar Systems Exploration Committee.

# Happenings

**HAPPY HOUR** will be held today from 4 to 6:30 p.m. in the Activities Center.

**BINGO** is played every Thursday at 7:20 p.m. in the Activities Center.

**CHORAL SOCIETY GARAGE SALE.** Celebrate May Day at the Virginia Choral Society Garage/Yard Sale. The benefit sale will be held May 1 from 10 a.m. to 6 p.m. at the Peninsula Community Theater on Marshall Avenue near Newmarket South. Call Burt Lightner, ext. 3968 or 877-5365, for more information or to contribute articles.

**LAWN OR GARDENING PROBLEMS?** Virginia Tech's extension agent, John Gray, will be on hand April 27 from 7:30 to 9 p.m. in the Activities Center to explain the services of the local cooperative extension service and help trouble shoot your lawn and gardening problems. All Va. Tech alumni, NASA employees, contractors, and friends are invited to attend.

**SUNTREK '82.** The Tidewater Solar Energy Association is sponsoring a tour of 13 solar-designed buildings and houses May 1 in Norfolk. Examples of proven solar designs will be featured, including active and passive systems, a solar greenhouse and a sunroom. Homes are of both new and retrofit construction and visitors will be able to talk to solar homeowners. The tour starts at either of two reception centers: SOLAR ONE, LTD., 777 Seahawk Circle, Virginia Beach, Va.; and FAMILY DENTISTRY, 900 West Little Creek Road, Norfolk, Va., between 9:30 a.m. and 3:30 p.m. Admission and guidebook are $3 per person. For more information, call 427-6300 or 482-5464.

**COMPUTER SHOW.** The Virginia-Carolina Computer Show, sponsored by Computer Expositions, Inc., will be held at the Pavilion in the Virginia Beach Convention Center April 23–25. Literally, thousands of computers and office machines will be gathered in the Pavilion for the largest public computer show and business equipment exposition ever held in the Tidewater area. The show hours are 11 a.m. to 6 p.m. on Friday and Saturday and from noon to 6 p.m. on Sunday. Admission is $4 for adults and $2 for children 12 years and under. Parking is free.

**THE CREATIVE CAREER DEVELOPMENT GROUP** will meet April 30 from 11:30 a.m. to 12 p.m. in Building 1194A, Room 203-204, for a brown bag lunch and program. A professional color consultant will discuss dressing for success. Anyone who is interested may attend. Bring your lunch.

**SHAKESPEARE '82.** The fifth season of the Virginia Shakespeare Festival will be held July 15 through August 22 in the Phi Beta Kappa Hall in Williamsburg. This year's festival includes three plays, "Merry Wives of Windsor," "Richard III" and "All's Well That Ends Well." Single and season tickets are available by calling 253-4469.

**LUAU.** The Langley Activities Association will hold its annual "LUAU" Saturday, May 15, in the Activities Center at 6:30 p.m. Polynesian music will be provided throughout the evening and "AMATA and Her Polynesians" will perform during the after-dinner program. A cash bar will be available featuring Mai-Tais and Pina Coladas and also conventional drinks, at very reasonable LAA prices. The dinner menu includes roast pork, Teriyaki beef, Chinese noodles, egg rolls, ambrosia, fried rice, salad bar and fresh fruit. The cost of the event will be $12.50 per person. Tickets can be purchased at the LAA Office.

## Thanks

**Donald H. Ward** writes, "I'd like to thank all of those who attended my retirement party on April 2 and made the evening one I will remember for the rest of my life. The people of Langley make it one of the greatest places in the world to work and I hope that Langley's future will continue to be as great as the past has been."

**"AMATA and Her Polynesians" will provide music and perform at the LUAU sponsored by the Langley Activities Association Saturday, May 15. Polynesian music will be played throughout the evening. See Happenings column for further information.**

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# swap and shop

FOR SALE

**Articles**

Freezer: Montgomery Ward, 16 foot upright, deluxe; three years old; just like new; avocado; $250 or best reasonable offer. Call Moore, ext. 3871 or 898-4692 after 5 p.m.

FOR RENT

Sandbridge: Cottage with three bedrooms, AC, phone, liv.-din.-kit., washer, dryer, 50 yards from ocean, $450/wk., reservations limited. Call Kent, ext. 3104 or 420-8391.

Apartment: Completely furnished, ideal for one person, kitchenette, cable/HBO hook up, AC, gas heat, $180/mo. Call 595-8982 after 5 p.m.

Hatteras Island at Frisco: Low cost vacation at "Buzzards Roost," oceanside, 50 foot house trailer, furnished including dishes, two BR, full bath, sun porch, outdoor shower, AM/FM stereo, walking distance to beach and fishing pier, five-min. drive to Sport Fishing Center and charter boats, $160/wk., first three rentals will save 10 percent. Call Fogal, ext. 2651 or 826-6177.

LOST

Aignor wallet lost in Building 1205 March 29. Reward for return. Call Olsen, ext. 2143.

WANTED

Anyone who desires to change their attitudes. Several interested persons are getting together weekly to explore the benefits of positive thinking. We would like to challenge anyone who desires to change their attitudes (or maybe ours!) to join us. For details, call Eric Sandberg, ext. 3911 or 595-8399 after 5 p.m.

# Retirement Parties

**Gordon H. Bowie**, Facilities Engineering Division, will be honored with a retirement party Tuesday, May 11, at Fort Monroe Officers' Club. The cash bar social will begin at 6 p.m., followed by the steamship round dinner at 7 p.m. The cost including gift contribution, will be $10 per person. Donations for gift only will be appreciated. Please forward payment to Diana Park, Mail Stop 438, or Butch Barringer, Mail Stop 440, by May 4.

**Frances M. Arnn**, Office of the Director, will be honored with a retirement party Wednesday, May 12, in the Activities Center. A cash bar, with heavy hors d'oeuvers, will be held from 4:45 to 7 p.m. The cost will be $7 per person or $13 per couple. Contributions for gift only are welcome. For reservations send check to Kim Cannon, Mail Stop 106, by May 5.

# LAA Travel

This is the last call for the May 11 cruise sailing from Norfolk to Bermuda for seven days and the May 26 cruise sailing to Nassau for four days with an optional two-day stay-over (fly-back).

For additional information and reservations call Ernie Green, ext. 2312 or 838-0567, or the Activities Office, ext. 3139.

# Training Information

Three courses will be offered at Langley for engineers and scientists during the next two months.

1. Polymer Chemistry: May 17 – 28; 8:30 to 11 a.m. each day
2. Kalman Filtering: June 15 – 17 (tentative); 8:30 a.m. to 4:30 p.m. each day
3. RSX-11M Operating Systems Internals: June 28 to July 2; 8:30 a.m. to 4:30 p.m.

If you are interested in additional information and/or wish to be considered for enrollment, please contact your Training Coordinator.

If you are thinking about applying for full-time graduate study for the 1982 – 83 academic year, please contact the Training Office, ext. 2611, if you haven't done so already. It is anticipated that the Committee on Advanced Study will review all full-time graduate study requests during the May – June time period.

**W. Hugh Forrest**, Projects Management Systems Division, will be honored with a retirement party Tuesday, May 11, in the Activities Center. A cash bar with heavy hors d'oeuvers will be held from 5 to 7 p.m. The cost will be $7 per person or $13 per couple. For reservations send check to Barbara Clark, Mail Stop 158, by May 6. Contributions for gift only are welcome.

# Cafeteria menu

WEEK OF APRIL 26 — 30

**MONDAY:** Ham & Lima Bean Soup; Roas Pork; Crab Cutlets; Beef, Macaroni & Tomatoes. Snack Bar: BBQ; Chick NASA NASA Sub.

**TUESDAY:** Manhattan Clam Chowder Salisbury Steak; Broiled Fish; Turkey Breas Nuggets. Snack Bar: BBQ; Deluxe Sub; Ho Ham & Cheese.

**WEDNESDAY:** Vegetable Beef Soup; Frie Chicken; Braised Beef; Quiche Lorraine. Snac Bar: BBQ; Polish Sausage; Hot Italian Sausag Sub.

**THURSDAY:** Chicken Noodle Soup; Yanke Pot Roast; Baked Tuna & Noodle Casserole Chicken Livers. Snack Bar: BBQ; Chick NASA NASA Sub.

**FRIDAY:** Vegetable Soup; Fried or Broile Fish; Chicken Pot Pie; Ham & Swiss Quiche Snack Bar: BBQ; Hot Ham & Cheese; Delux Sub.

WEEK OF MAY 3 — 7

**MONDAY:** Ham & Lima Bean Soup; Bake Lasagna; Beef Liver; Salisbury Steak. Snac Bar: BBQ; Chick NASA; Hot Italian Sausag Sub.

**TUESDAY:** Vegetable Soup; Fried Chicken Spaghetti; Quiche Alpine. Snack Bar: BBQ NASA Sub; Hot Ham & Cheese.

**WEDNESDAY:** Chicken Noodle Soup; Roas Turkey; Beef Pot Pie; Seafood Quiche. Snac Bar: BBQ; Polish Sausage; Chick NASA.

**THURSDAY:** Vegetable Beef Soup; Chicke Livers; New England Scrod; Quiche Lorraine Snack Bar: BBQ; Deluxe Sub; Hot Italia Sausage Sub.

**FRIDAY:** Bull Island Clam Chowder; Fried o Broiled Fish; Meat Loaf; Baked Chicken. Snac Bar: BBQ; Hot Ham & Cheese; Chick NASA

# Meet Update

The cool weather this week h brought out a lot of runners and walke for the first week of the intercent meet. Langley, however, is far short the participation needed to win th meet.

There are still several days left f employees to take part in this meet. O Monday, April 26, and on Tuesday, Ma 4, 10-kilometer races will be held; o Thursday, April 29, and on Tuesda May 4, 2-mile races will be run. A races will begin on Doolittle Road at p.m. A 2-mile race will begin at 12 p.m April 29 at Bethel High School.

For more information, call Dic Layman, ext. 3511.

National Aeronautics and
Space Administration

**Langley Research Center**

NASA

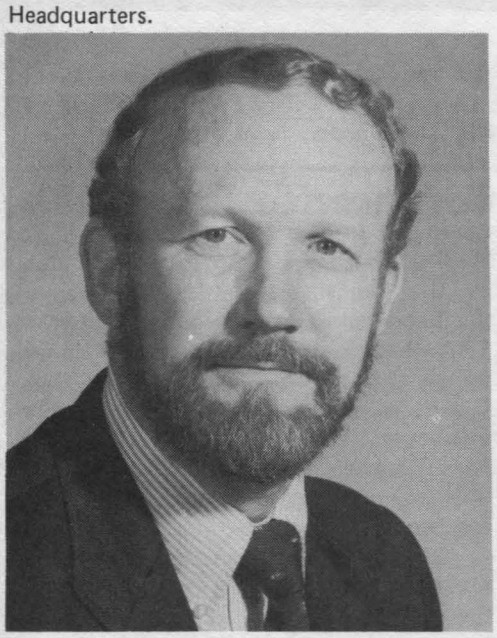
# Langley Researcher

Volume 21 Issue 13

June 18, 1982

## Breckenridge to Participate in SES Candidate Program

Dr. Roger A. Breckenridge, Head, Information Systems Research Branch, Flight Electronics Division, has been selected to participate in the 1981-82 Senior Executive Service (SES) Candidate Development Program at NASA Headquarters.



The year-long program provides NASA with highly qualified candidates for competitive SES positions. The nominees have high potential for entry into SES after they complete the program. Breckenridge is one of six participants from throughout NASA.

He will report to Headquarters in September, where he will work as deputy to Lee Holcomb, Head of Information Systems in OAST's Space Systems Division.

Breckenridge began work at Langley in early 1962, investigating radiation defects in solids and radiation effects in semiconductor devices. He became leader of a group studying radiation effects in electronic components and optical materials in 1966.

He was named Head of the Electronic Components and Devices Section in 1969, Assistant Head, Information Systems Research Branch, in 1977, and began his present job in 1980.

Breckenridge earned a bachelor of science degree (with distinction) in physics from the University of Oklahoma in 1961. He received a master's degree in physics in 1967 and a doctorate in solid state physics in 1974, both from the College of William and Mary.

He is the author or co-author of 18 technical publications. He is a member of the American Physical Society, and he has received an Outstanding Achievement Award for his work in the development of electronic devices.

He and his wife, Vivian, live in Newport News with their two children.

### *Langley Employees to Present Papers*

## Propulsion Conference Set Next Week

Nine Langley employees will participate in the 18th National Joint Propulsion Conference next week in Cleveland, Ohio.

Dr. John S. Mixson, Dr. Fereidoun Farassat and Dr. Jack Leatherwood, Acoustics and Noise Reduction Division; Charles Mercer and Laurence Leavitt, Transonic Aerodynamics Division; James Martin, Space Systems Division; and Scott Thomas, Robert Guy and Ernest Mackley, High-Speed Aerodynamics Division, will present papers at the three-day conference June 21-23.

The conference, which includes 54 technical sessions with 275 papers being presented, is sponsored by the Northern Ohio Section of the American Institute of Aeronautics and Astronautics and the Cleveland Chapters of the Society of Automotive Engineers and the American Society of Mechanical Engineers.

The conference brings together over 600 technical professionals and key management representatives from worldwide organizations engaged in research and development; manufacture; and application of propulsion systems for aircraft, space, surface and marine vehicles. The Lewis Research Center also plays an integral part in this year's conference.

Continued on page 2.

## Hearth Receives Doctorate Sunday

Director Donald Hearth will receive an honorary doctoral degree from Northeastern University, his alma mater, this Sunday, June 20.

The degree of Doctor of Engineering is being presented to Hearth as an outstanding alumnus of the university. He will be cited for his career as a research engineer with the National Advisory Committee for Aeronautics (NACA) and with industry, and for his progressively responsible management positions with NASA, culminating in his directorship of Langley.

The honorary doctorate will be presented to Hearth at morning commencement exercises for about 2,000 undergraduate students of the Boston university. The Honorable Thomas P. O'Neill Jr., Speaker of the U.S. House of Representatives, will be the commencement speaker.

Hearth graduated from Northeastern University in 1951 with a bachelor of science degree in mechanical engineering. He was awarded an honorary Doctor of Science degree by George Washington University in 1978.

**The Monthly Status Review, scheduled for June 28, has been cancelled.**

*– photo by Hubert Lloyd*

**John T. Craigs Jr., (left) of the Acquisition Division, and Fred C Wilson, who has retired from the Operations Support Division, were honored recently for 40 years of faithful service to NASA and to the U.S. government. In a special ceremony, Langley Director Donald Hearth presented both Craigs and Wilson with a NASA pin, a certificate and a letter of recognition and appreciation from NASA Administrator, James Beggs.**

# LAA Announces 1982 Carnival Plans

The Langley Activities Association will sponsor the 1982 Carnival August 27 and 28 on the picnic grounds.

Special activities are being planned, including the crowning of the 1982 Carnival Monarch. The LAA is looking for candidates for the Carnival Monarch Contest. Anyone interested in running should submit their name, mail stop and telephone number to Fran Sabo, Mail Stop 286. First prize is $100, second is $50 and third is $25. Deadline for nominations is June 25. Pictures of candidates will be published in the July 2 *Researcher*.

Prizes for Friday night are $100 to be drawn at 6 p.m., $500 at 9 p.m. and $1,200 at 10 p.m. Saturday's prizes are $100 at 6 p.m., $500 at 9 p.m. and $1,500 at 10 p.m.

Tickets are now on sale at the Activities Office.

# FWP Sponsors Program

The Federal Women's Program will sponsor the second in a series of four "Be Prepared for Success" seminars. The second lunch-time program will be with Christopher Newport College. CNC will present information on admission and curriculums in the areas of technical support, administrative, and professional and clerical positions. Information on other courses of interest can also be obtained.

The program will be held June 23 from 11:30 a.m. to 12:30 p.m. in the Activities Center. Bring your lunch and learn what courses are available that will enhance your career.

# Request for Graduate Study Information

If you will complete the requirements for your graduate degree program during Fiscal Year 1982, and **have not** notified the Training Office, please call either Susan Little or Frank Owens at extension 2611.

# *Thought For the Day*

To look backward is to leave a crooked furrow; a sidewise look may result in defeat; a downward glance is one of discouragement; but a look forward makes a straight furrow; and an upward look will result in a righteous life.

# Conference Set

Continued from page 1.

The welcoming address will be given by Dr. Reuben F. Mettler, Chairman of the Board and Chief Executive Officer of TRW, Inc., and the keynote address will be by U.S. Senator John Glenn of Ohio. Glenn will be honored for the 20th anniversary of the first U.S. orbital flight. James Beggs, NASA Administrator, will be the speaker at the awards luncheon.

General Co-Chairmen are Dr. John F. McCarthy, Jr., Director of Lewis, and Bruce H. Pauly, Vice President, Engineering and Research, Eaton Corporation. Langley's James Martin is a member of the Program Committee.

# Recent Retirees

**Ernest A. Gurganus**, Atmospheric Sciences Division, retired June 12.

**David C. Grana**, Low-Speed Aerodynamics Division, retired June 18.

The *Langley Researcher* as official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other week in the interest of its employees. Address contributions to the Editor, Mail Stop 154, telephone 2934.

Editor . . . . . Jean Drummond
Staff Photographer . . . . . Bob Nye

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex, or national origin. All materials submitted are subject to editing.

# Happenings

**HAPPY HOUR** will be held today from 4 to 6:30 p.m. in the Activities Center.

**CALLIGRAPHY CLASS:** An introductory Calligraphy Course will begin at Thomas Nelson Community College Tuesday, July 6. The course runs for eight weeks. Call the Office of Continuing Education at 825-2936 to enroll. Wesley Berryman is the instructor.

**HONEY BUNCH.** The NASA-Langley Apicultural Club will meet Monday, June 21, from 7 to 9 p.m. in Room 180 of Building 1209. After a brief business meeting, a slide program on "Honey Extracting" will be shown.

**ARMY CONCERTS.** The United States Continental Army Band's annual "Music Under the Stars" summer series will continue through August every Thursday evening at 8 p.m. Bring your chairs and blankets and enjoy outdoor concerts at Continental Park (across from the Chamberlin Hotel) on historic Fort Monroe.

**NATIONAL HERITAGE WEEK.** Fort Monroe is sponsoring National Heritage Week June 30 through July 4. In honor of the week, the community is invited to participate in the first annual Fort Monroe Volksmarch from 7 a.m. to 1 p.m. on July 3. All entrants who complete the 10-kilometer course will be awarded a medallion featuring the historic moat design. A higher medal will be awarded to those entrants who walk 20 kilometers (double the course) or to children under 10, women over 55, men over 60 and persons with walking disability. There is a $4 preregistration fee to reserve a start card for a medal. Entrants may also register July 3 for $5. To preregister, send a check for $4 per entrant to Fort Monroe Volksmarch Club, P. O. Box 387, Fort Monroe, VA 23651. Call 727-4122 for additional information.

**TIDEWATER DINNER THEATER.** "Hello Dolly" will be performed at the Tidewater Dinner Theater in Norfolk through June 27. "My Fair Lady" will play from July 1 through September. Tickets are on sale at the Activities Center at special prices.

**COMPUTER USERS GROUP.** A VIC-20 Computer Users Group has been formed and will meet regularly. Anyone interested in joining is encouraged to contact Harry Fuller, ext. 3585 for details.

**"RETURN TO OZ,"** a new musical fantasy sequel to the "Wizard of Oz" is being presented for the first time anywhere by Rainbow Productions at the Peninsula Community Theatre. This two-act spectacle features the old favorites – Dorothy, the Scarecrow, the Tin Man, the cowardly Lion and many new story book characters.

Performances are scheduled for Friday, June 25, at 7:30 p.m.; June 26 at 3 and 7:30 p.m.; June 27 at 3 and 7:30 p.m. Also, Friday, July 9, at 7:30 p.m.; July 10 at 3 and 7:30 p.m.; and July 11 at 3 and 7:30 p.m. Admission is $4 for adults and $2.75 for children; special rates for groups of 10 or more. Call 596-8717 or 851-3242 for more information.

**BUSCH GARDENS** season passes for $40 each and daily passes for $10.50 each are on sale at the Activities Office.

**KINGS DOMINION** tickets are on sale for $9.25 at the Activities Office.

**A COUNTRY AND WESTERN DANCE** will be held July 17 in the Activities Center beginning at 7:30 p.m. "Jump Street Western Swing Band" will provide music for your dancing and listening pleasure and the Peninsula Cloggers will entertain during the band's intermission. Beer and setups will be available and prizes will be given for the best western costumes. The cost for the dance is $5 per person. Call the Activities Office, ext. 3139, for more information.

**THE COMPUTER SCIENCE SEMINAR** will be held Tuesday, June 29, from 3 to 4:30 p.m. in the Activities Center's Langley and Hampton rooms. Jim Schwing will speak on "Visual Realism." His talk will be an overview of various techniques currently used in the computer representation of three-dimensional objects. The techniques considered will include hidden line/surface removal, surface smoothing, and shading.

*– photo courtesy of Wallops Flight Center*

**WINGLETS ADD TO SPRAY RESEARCH – In flight over Virginia's Eastern Shore, this NASA research aircraft undergoes performance testing on wing tip modifications designed to improve efficiency in application of agricultural sprays. Winglets, or vertical wings at the tip of a main wing, are known to offer fuel savings on some aircraft; in the case of this modified Ayres Thrush 800, however, the objective was to better control the vortices – or movement of air – that swirls off the end of wings. Moderation of those vortices can improve the spray pattern and reduce drift of agricultural materials out of the target area. The flight tests evolved from scale model studies conducted during the late 1970s in Langley's wake vortex research facility. Test data are being used to validate computer models that predict spray-wake interaction. The program is managed by Langley, where researchers hope to develop tools manufacturers can use to develop future agricultural aircraft.**

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# Retirement Parties

A retirement party honoring **Simeon Hunnicutt,** Systems Safety, Quality and Reliability Office, will be held June 29 at the Activities Center. A cash bar and heavy hors d'oeuvres social will be held from 4:45 p.m. to 7 p.m. The cost will be $7 per person or $13 per couple (including contribution for gift). Contributions for gift only are welcome. For reservations, send check to Abner Askew, Mail Stop 429, or Judy Neil, Mail Stop 446, by June 24.

**Jane A. Swartzwelder,** Personnel Division, will be honored with a retirement party Tuesday, July 13, in the Activities Center. A cash bar, with heavy hors d'oeuvers, will begin at 4:45 p.m. The cost will be $6 per person. Contributions for gift only are welcome. For reservations, send check to Linda Park, Mail Stop 174, by July 7.

A retirement picnic, honoring **Ralph E. "Gene" Maston,** of the Operations Support Division, will be held at the Activities Center picnic area June 24 at 4:30 p.m. The menu includes cold cuts, soft drinks and beer. The cost is $4.50 per person, including gift contribution. Donations to gift only and/or reservations should be sent to Dolan Clontz or Jimmy Goodwin, Mail Stop 171, by June 21.

A retirement party honoring **Kaz Romanczyk,** Flight Control Systems Division, will be held June 26 at the Activities Center. A cash bar and heavy hors d'oeuvres social will be held from 6:30 to 9:30 p.m. The cost will be $7 per person (including contribution for gift). Contributions for gift only are welcome. For reservations, send check to Phyllis Jones, Mail Stop 494, by June 21.

# Swap and Shop

**FOR SALE**

**Articles**

Wedding ring set, 1/4 carat diamond, size 5, $175. Call Dinwiddie, 722-8641.

**Vehicles**

Schwinn Varsity bicycle: Child's 10-speed bike, 18-inch frame, 24-inch wheels, 1/2 price, $100. Call Mathis, 722-7629.

Boat: Fifteen foot, 45 hp Chrysler motor, used one year, $1,550. Call 642-9594.

**FOR RENT**

Cape Hatteras: Waterfront four BR cottage, Breezy Point on Sound, $300/wk. Call 877-3736.

Hatteras Island at Frisco: Low cost vacation at "Buzzards Roost," oceanside, 50-foot house trailer, furnished, including dishes, two BR, full bath, sun porch, outdoor shower, AM/FM stereo, walking distance to beach and fishing pier, five-min. drive to Sport Fishing Center and charter boats, $160/wk.; $65/weekends; $20/day weekdays. Call Fogle, 826-6177.

# Wings Smooth Way

Continued from page 5.

says. Rain can temporarily do the same thing, as proven in flight and in wind tunnels. Tests are planned during the next year to evaluate concepts intended to eliminate ice and insect-sticking problems on laminar flow wings.

The additional effort to keep wings and other lifting surfaces clean should be worthwhile. The payoff in fuel efficiency promises to be high. About half of the total drag on an airplane at cruise speeds is caused by friction between the air and the airplane skin surface. Explains Holmes: "That friction can be very low with laminar flow. However, if the flow is turbulent, that friction can be as much as seven or eight times greater."

Taking full advantage of maximum laminar flow will probably require new airplane designs according to Holmes, because the same slippery qualities that can make wings aerodynamically efficient can be applied to the fuselages of certain designs as well.

In spite of the challenges that remain, Holmes and others at Langley are excited about documenting the possibilities of natural laminar flow on "real airplanes that fly in the real world."

It's also been fun," muses Holmes, "for us to work in a classical research area that Langley pioneered."

# cafeteria menu

**WEEK OF JUNE 21 — 25**

**MONDAY:** Vegetable Beef Soup; Teriyaki Beef Strips; Roast Pork; Meatloaf. Snack Bar: BBQ; Chick NASA; NASA Sub.

**TUESDAY:** Manhattan Clam Chowder; Roast Turkey; Broiled Fish; Baked Lasagna. Snack Bar: BBQ; Deluxe Sub; Hot Ham & Cheese.

**WEDNESDAY:** Chicken Gumbo Soup; Fried Chicken; Beef Liver w/Onions; Spinach & Bacon Quiche. Snack Bar: BBQ; Polish Sausage; NASA Sub.

**THURSDAY:** Vegetable Soup; Braised Chicken Livers; Braised Beef & Vegetables; Macaroni, Franks & Cheese. Snack Bar: BBQ; Hot Italian Sausage; Chick NASA.

**FRIDAY:** Ham & Lima Bean Soup; Fried or Broiled Fish Filet; Veal Parmesan; Knockwurst & Sauerkraut. Snack Bar: BBQ; Hot Ham & Cheese; Deluxe Sub.

**WEEK OF JUNE 28 — JULY 2**

**MONDAY:** Vegetable Soup; Chopped Steak; Beef Enchiladas; Sweet & Sour Pork. Snack Bar: BBQ; Chick NASA; Hot Ham & Cheese.

**TUESDAY:** Bull Island Clam Chowder; Seafood Quiche; Roast Pork; Braised Beef & Vegetables. Snack Bar: BBQ; NASA Sub; Hot Italian Sausage Sub.

**WEDNESDAY:** Chicken & Rice Soup; Fried Chicken; Baked Fish; Beef Stew. Snack Bar: BBQ; Deluxe Sub; Polish Sausage.

**THURSDAY:** Vegetable Beef Soup; Chicken Livers; Baked Lasagna; Salisbury Steak. Snack Bar: BBQ; Hot Ham & Cheese; NASA Sub.

**FRIDAY:** Ham & Lima Bean Soup; Broiled or Fried Fish Filet; Beef Liver; Teriyaki Chicken. Snack Bar: BBQ; Chick NASA; Deluxe Sub.

# Speakers Needed

The Langley Speakers Bureau is looking for additional speakers to give presentations on the Space Shuttle Program. Interested persons should contact Renee Benton, ext. 3966.

National Aeronautics and
Space Administration

**Langley Research Center**

NASA

# Langley Researcher

Volume 21 Issue 25

December 3, 1982

*Langley Colloquium*

## Engen Addresses Aircraft Accident Research

Although the safety record of modern aircraft is excellent, some accidents must be expected. Major aircraft accidents, as they relate to the cooperative research between the National Transportation Safety Board and NASA to determine methods of minimizing damage, will be discussed at a Langley colloquium Monday, December 13.

Donald Engen, Vice Admiral, U.S. Navy, Retired, will speak on "Aircraft Accident Investigation Technology" in the Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

The NTSB and NASA work cooperatively to enhance aviation safety. Engen said the NTSB has evolved between 1926 and now to be responsible to Congress and the public as "watchdogs" of safety for land, see and air transportation. NASA nas responded to requests and provided on its own initiative, technical data leading to increased aviation safety.

Engen, a native of Virginia, was appointed to the Safety Board by President Reagan in June 1982.

He served 36 years in the U.S. Navy and retired as deputy commander-in-chief, U.S. Atlantic Command and U.S. Atlantic Fleet.

He has broad background and experience in aviation and maritime safety, including the conduct of many investigations of aircraft and ship accidents from 1944 through 1980. He is an active pilot with commercial license and instrument rating and has flown his own aircraft throughout the United States and Europe. He has been an engineering test pilot in the United States and the United Kingdom, specializing in the evaluation of flying qualities of airplanes as well as in new equipment designed to improve air traffic control in instrument conditions.

Engen has managed complex flight operations and large numbers of pilots. He has flown more than 160 models of aircraft during his 40-year career in aviation. He has commanded an ammunition ship and the aircraft carrier USS America. Many of his positions directly involved the establishment of aviation and maritime safety policy.

Among his 29 wartime decorations is the Navy Cross — the Navy's highest award for valor — which was presented to him for his actions in the sinking of a Japanese carrier in the Second Battle of the Philippine Sea in October 1944. He also has been awarded two Distinguished Service Medals, the Defense Meritorious Service Medal and two Legions of Merit.

*CFC Comes to a Close*

## Success Again

One more cheer and many thanks to you, Langley. Records were broken in this year's Combined Federal Campaign. Contributions of more than $202,000 were received. Our goal of 190,000 was topped by 6 percent. Contributors totaled 2,940, with an average gift of $68.80.

A special thanks to our retirees who contributed over $13,000, with a big hurrah to a couple of individuals who donated $1,000 each.

We give special recognition to the Union leaders for their strong support. Also, the many volunteers, key workers, and division chairpersons deserve special recognition for their fine efforts. Finally, the real salute goes to the hundreds of contributors who gave so generously this year, even in the face of economic uncertainty.

On behalf of the CFC committee, thanks again; we enjoyed working with such an outstanding staff.

Charles P. Blankenship
Chairman, 1982-83 CFC

## NASA's New Age in Space

The first operational success of the Space Shuttle is now history. Your efforts have brought NASA and the nation to this new beginning. We can all be proud of our contribution as we are embarked on a new age in space, with all the significance of the first train to roll over the Golden Spike inaugurating U.S. transcontinental rail service or Lindberg's flight across the Atlantic.

In the midst of our success, we should also dedicate ourselves to the challenges before us. For this new age can only be realized by our continued efforts and imagination, not only in the Space Shuttle, but also in every aspect of NASA's important national and international mission. I send Dr. Mark's and my congratulations to all who participated in and supported our "We Deliver" mission as well as my personal appreciation for an excellent effort.

James M. Beggs
NASA Administrator

# Langley Newspaper is 40 Years Old

*— by Maurice Parker*

November 23 was the fortieth anniversary of Langley's official newspaper, the *Langley Researcher* and its prececessors.

The year 1942 was a time of many changes at NACA's Langley Memorial Aeronautical Laboratory. Work required by World War II was filling Langley's wind tunnels and new researchers were pouring into the laboratory at a tremendous rate. From a neighborly staff of about 700 in 1940, the center had almost doubled its complement to more than 1,200. With so many new people around, news didn't travel as easily as it had before, and a center newspaper was considered a good way to let employees know about activities, official and social, that might interest them.

The paper began as the LMAL Bulletin, but two years later, on Dec. 1, 1944, the name was changed to Air Scoop. That breezy and appropriate name remained for almost 20 years.

After the birth of NASA in 1958, and Langley's increasing research beyond airplanes and into space and planetary studies, the name Air Scoop seemed rather confining. The present name of the paper, the *Langley Researcher*, was adopted Sept. 28, 1962 (although many people, into the mid-1970's, continued — fondly or forgetfully — to call it the Air Scoop).

The paper has had only six editors in 40 years, beginning with two short-timers, Joseph Doyle Jr. and H. Lee Dickinson. Both of them went into military service after a few months on the job, and they were followed by E. M. (Tiny) Hutton, who was editor for almost two-and-a-half years.

In 1946 Ruth Angel (later Ruth Verell) began an editorship that lasted an almost unbelievable 28 years. Ruth became a Langley institution, and she knew a lot more about the people of Langley than ever found its way into the Researcher.

Karen Miller Kleinsorge, now at NASA Headquarters, was editor for almost five years, from 1974 to 1979. Jean Saunders, editor since 1979, has given the paper her own stylistic touches, but continues to walk the fine line of compromise between news of research, management, social and personal activities 25 times a year.

Most of the photographs in the *Bulletin/Air Scoop/Researcher* have been taken by two people, Bill Taub and Bob Nye, but they were ably assisted through the years by many others of the Photo Lab.

Footnote: Langley's official newspaper was preceded by a very unofficial, possibly undergound newspaper called The Stabloid. Now that the statute of limitations has expired, we can report that The Stabloid was written by two researchers named Jerry Kayten and Marvin Pitkin, who also wrote for the LMAL Bulletin in its early days.

# Retreat Reviews NTA Chapters' Activities

Five Langley employees participated in the National Technical Association (NTA) Region II Fall Retreat Nov. 19-20 at the Motor Conference Center in Gloucester, Va. NTA was established in 1926 by minority professionals concerned about the lack of minority participation in the architectural and engineering activity in the United States.

Today NTA's concerns have not changed, but have expanded to include encouraging minority youth in meeting the challenge of modern technology. NTA has spent years gaining national attention through its programs of encouragement for students and professionals in areas of serious scholarship and technical excellence. It also assists government and industry in identifying minority technical talent. And it helps to inform minority youth about the opportunities open to them.

The conference, hosted by the Hampton Roads Chapter, brought together representatives from the four NTA chapters in Region II for a review of each individual chapter's 1982 program activities.

Each chapter's activities were evaluated in terms of their effectiveness in providing for technical interchange among minorities and providing career opportunity information. The chapters were also evaluated on how effectively they motivated minority youth to consider technical careers and removed barriers to minorities entering technical professions.

Langley personnel participating in the retreat were Gilbert A. Haynes and James L. Harris, Electronics Directorate, Marshall Rouse, Structures Directorate, Horace E. C. Bellamy, Systems Engineering and Operations Directorate, and Mary W. Jackson, Office of Equal Opportunity Programs-Office of the Director.

The *Langley Researcher*, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other week in the interest of its employees. Address contributions to the Editor, Mail Stop 154, telephone 2934.

Editor ..... Jean Saunders
Staff Photographer ..... Bob Nye

The privilege of advertising articles in this publication is restricted to employees of Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex, or national origin. All materials submitted are subject to editing.

# Status Review Set for Monday

The agenda for the Monthly Status Review is given below, so that researchers may attend talks of particular interest. The review is held on the fourth Monday of each month in Room 225, Building 1219, unless otherwise announced. The review for December 27, 1982 has been cancelled.

The following technical sessions are planned for Monday, December 6; the morning session will begin at 8:30 and includes a presentation by the Public Affairs Office.

**SPACE**

Shuttle Entry Transonic Oscillation Anomaly

Theoretical Studies in Radiation Physics

**PROJECTS**

ACEE/CPAS Technology Development for Transport Aircraft Composite Wing Structures — Overview

Fuel Containment and Lightening Protection

Critical Joints

Damage Tolerance

**ELECTRONICS**

Laser Velocimeter/Hot Wire Turbulence Measurement Study

An Overview of NASA's Fiber Optics Programs

**SYSTEMS ENGINEERING & OPERATIONS**

Overview

NTF Update

Computer-Aided Engineering of the ALDF Carriage

The afternoon session will begin at 1:30 and will include the Management operations presentation.

**AERONAUTICS**

Status of Nozzle/Afterbody Prediction Methods

Effects of Empennage Parameters on the Aerodynamic Characteristics of a Twin-Engine Afterbody Model

Thrust Reversing Effects on Horizontal Tail Effectiveness of Twin-Engine Fighter Aircraft

**STRUCTURES**

Molecular Analysis of Composite Matrices

Aeroacoustics Computation on Cylinder Wake Flow

The review will be concluded by 4 p.m. Copies of the complete agenda will be available at the meeting or may be obtained by calling Raoul'd M. Price, ext. 2417.

## *In Memoriam*

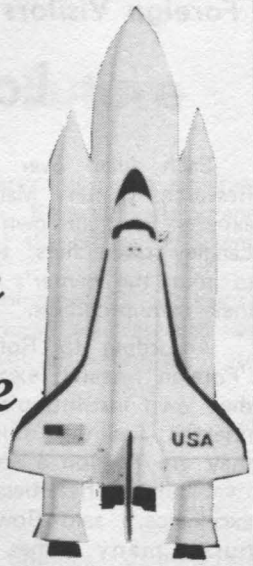
**Harold E. Mehrens,** Head of the Office of Educational Services, Office of External Affairs, died of a massive coronary Tuesday, November 23, in his home. He was 51.

Since 1972, Mehrens was responsible for NASA's educational programs and services to the education community throughout North Carolina, South Carolina, West Virginia, Kentucky and Virginia. He was involved in the President's 1980 Study Committee on Education, where he helped develop new teaching techniques for academically talented students. He established the Governor's School for the Gifted and the NASA Summer High School Apprenticeship Research Program at Langley. "He was known for his deep interest in young people, had innovative ideas and had energy and willingness to help everyone," said Jack VanNess, Head of OEA.

Mehrens joined NASA in May 1965, serving as Head, Educational Programs Branch at the Kennedy Space Center.

A native of New Mexico, Mehrens received a bachelor of science degree from Eastern New Mexico University in 1957 and a master of science degree from the University of Maryland.

## *Space Shuttle Update*




Like it was "floating on clouds," Challenger was inched through the fog early Tuesday at Kennedy Space Center, where it now sits atop launch pad 39.

No longer can the number of Shuttle flights be measured in the number of flights by Columbia, the system's first orbiter. The first launch of Challenger will be STS-6, now set for sometime between January 24 and February 4. A firmer date is expected to be picked after the craft's flight readiness firing December 20. The FRF, as it's called, is a 20-second test firing of the three main engines.

Also new for the next mission is an external fuel tank that will be approximately 10,000 pounds lighter and solid rocket booster casings that will be 4,000 pounds lighter than the original models.

A decision on a "makeup" spacewalk, that could come as early as STS-6, has not been announced.

## Thanks

**Bill Moore** writes, "I am very grateful to my many friends at Langley for the enjoyable retirement party they gave me on Nov. 6. My best regards to them all."

*Foreign Visitors*

# Langley's International Reputation Soars

Each year over 100 foreign visitors tour the Langley Research Center. Many of these visitors are "the" technical experts in their own countries. Yet they come to talk with Langley researchers, to hear Langley technology explained and to tour the center's unique facilities so they can then assess their own programs.

According to Robert E. Bower, Director for Aeronautics, "Foreign research experts often compare Langley Technology to their own institution's level of technology. Because most foreign research facilities must combat small staffs and low funding, they are not on a competitive level with NASA in many areas.

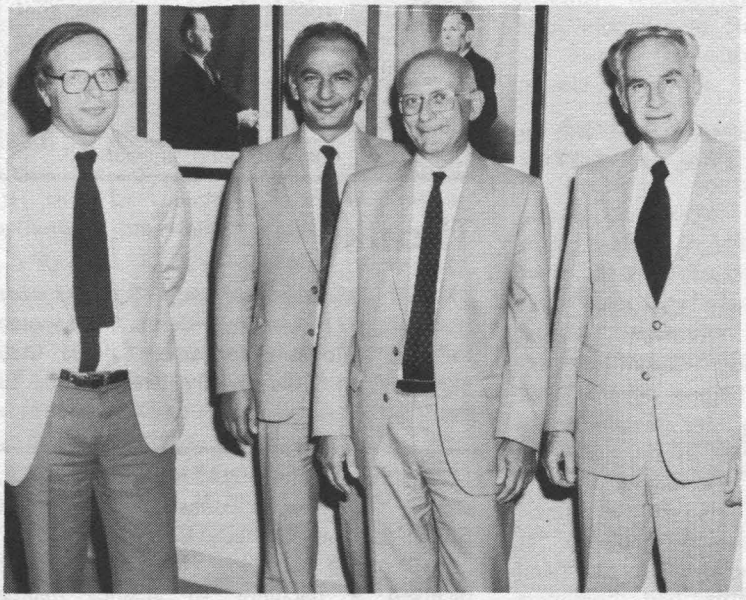
"Langley has become the yardstick of aeronautic research excellence," said Bower. "While they gauge their activities to ours, many times theirs must be on a smaller scale. Consequently, many foreign institutions are interested in cooperative programs with Langley."

**"Langley Research Center has a truly international reputation for innovative research in aeronautic and space technology. Literally thousands of technical engineers and managers from throughout the world—particularly in Europe, in Asia and in South America—are eager to visit this place."**

*James M. Beggs, NASA Administrator*

In recent months, Langley has hosted several groups of illustrious foreign visitors. One of the most prestigious groups came from France.

In September, Andre Auriol, the Director General of the Office of National Studies of Aerospace Research (ONERA) in France, arrived to tour Langley. Gerard Levy and Michel Ficheur, from the Ministry of Science and Technology were with him.



**(left to right) French ONERA officials Michel Ficheur, Gerard Levy and Andre Auriol are pictured above with Robert E. Bower during a break between Langley overview presentations.**

ONERA, the French equivalent of NASA, is a scientific and technical establishment under the Defense Minister.

The French aerospace experts heard overviews from the Aeronautics, Structures, Electronics, and Space Directorates. They also toured many of Langley's research facilities, including the National Transonic Facility and AIRLAB.

During their two-day visit, the French officials recognized Langley as a vital contributor to high technology. They also expressed a special interest in Langley's computational equipment and hardware.

Two high-ranking officials from the United Kingdom also recently visited Langley. Dr. Don Harper, who holds the dual titles of Chief Scientist of the Royal Air Force and Director General for the Air Research at the Ministry of Defense Headquarters in the United Kingdom, and Dr. Eric Rogers, Deputy Director of the Royal Air Establishment, heard overviews from several different areas of research at Langley.

The United Kingdom officials' comments during their tour reflected their admiration of Langley's research and technology. The researchers even said they were envious of Langley's excellent research programs and facilities.

Dr. Ir. O. H. Gerlach of The Netherlands is another foreign dignitary to recently visit the center. Gerlach is Chairman of the Board at the National Aerospace Laboratory in The Netherlands.

William D. Mace, Director for Electronics, hosted Gerlach during his visit. According to Mace, Gerlach was especially interested in simulation, weather modelling and handling/flying qualities of an automated aircraft.

Mace said, "Dr. Gerlach was very enthusiastic about our research programs and our facilities. In fact, he identified several areas in which he would like to see collaborative efforts."

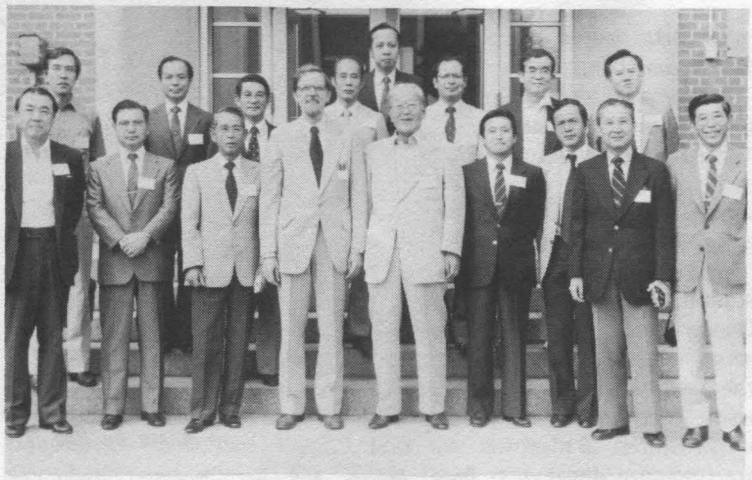
While Langley hosts large numbers of technically oriented foreign visitors each year, some guests simply fit best under the title of "VIP."

The Peninsula Economic Development Council sponsored a Virginia Peninsula–Japanese conference in September to arouse Japanese executives' interest in business opportunities on the Peninsula.

The 19 executives who took part in the conference were led by the Japanese ambassador to the United States, Yoshio Okawara. Okawara. The group of executives and public officials attending the conference included Norishige Hasegawa, Chairman of Sumitomo Chemical Co. Hasegawa, one of the foremost manufacturing executives in Japan, his entourage expressed their admiration for Langley and its technology in letters of appreciation and comment after the conference.

"Each of the Japanese executives has made reference to NASA Langley and how its expertise could help them in their area of manufacturing," said Frances Kernodle, director for Far East Affairs for the PEDC.

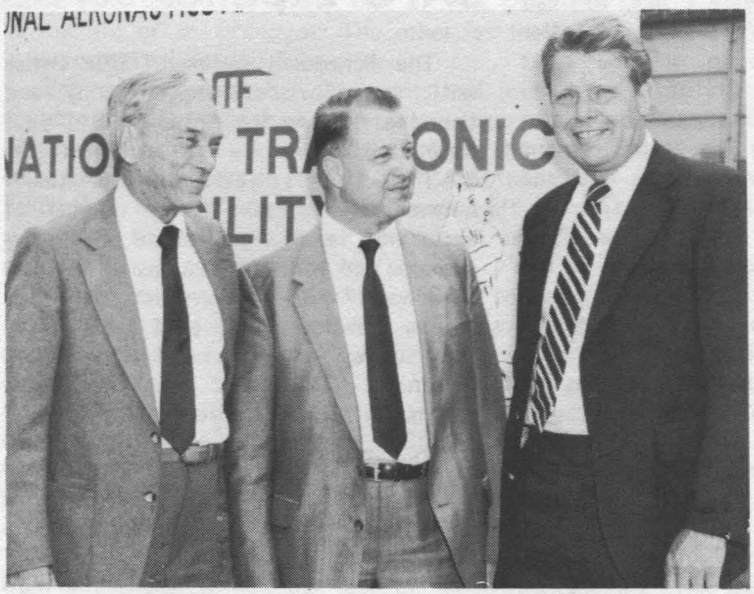
David A. Edwards, Director of PEDC, remarked, "Clearly the tour of NASA Langley was the high point of the Japanese delegation's visit."



**Dr. Donald P. Hearth pauses for a picture with the Japanese delegation during their Langley tour. Two members of the delegation took particular interest in the steel drive shaft in the National Transonic Facility during the tour. They are executives in the Japanese company that manufactured the shaft for NTF.**

While Langley's international reputation is highly rated, it also has an excellent reputation at home. Langley has received more honors than any other aerospace research laboratory in the United States. The list of awards and medals bestowed on Langley and its people include four Collier Trophies, the Wright Brothers Memorial Trophy, the Goddard Trophy, the Lawrence Sperry Award, the National Medal of Science, the Presidential Medal of Merit and many others.

While some of Langley's reputation stems from its facilities, most of its excellent reputation has been arduously earned by Langley employees, past and present.



**(left to right) William D. Mace, Dr. Ir. O. H. Gerlach and Richard H. Petersen, Langley's Deputy Director, are shown in front of NTF during Gerlach's tour of the center's facility.**

# Aeronautics - Program For The Future

Renewed support for NASA's aeronautics research programs was recently expressed by Dr. George A. Keyworth II, Science Advisor to the President and Director of the Office of Science and Technology Policy.

Speaking to the Aero Club of Washington, Dr. Keyworth reported on a six-month study of aeronautical research and technology policy. He said that two basic questions prompted the study:

- Is the aeronautics industry near the end of its rapid technological progress; is it a sunset industry?
- How does the government fit into aeronautical research and technology?

According to Keyworth, the study findings "demonstrated conclusively that aeronautical research and technology remains a solid investiment. The potential for technology advances in aeroanutics shows it is clearly **not** a sunset industry -- at least not because of any technological limitations."

Keyworth further stated that "the federal government will assume responsibility in two general areas. One is support of aeronautical research and technology development. These activities, which run from basic research through validation of design procedures, are characterized by a large degree of uncertainty in outcome, but they underlie all new aircraft and systems development.

"The second area is demonstration of technologies for military applications. This is the final activity before actual system development and provides the basis for decisions in final design.

Our findings clearly showed that aeronautical research and technology is still at the science frontiers; there's clear potential for excellent new research. They also showed that this research was clearly connected to national strategic needs."

"We also recommend that NASA come up with a plan for collecting, evaluating, and disseminating all kinds of unclassified aeronautical research and technology research results."

Citing the usefulness of the old NACA Advisory Board in bringing together government and industry interests, Keyworth said, "we recommend the reinstitution of a high-level NASA-DOD-industry committee that would meet at least once a year to review all aeronautical research and technology policies. Had such a committee been operating, it's quite possible we wouldn't have needed to undertake the study we've just concluded."

The final recommendation concerns the need for modernizing existing major experimental facilities. "We believe NASA and DOD should develop a coordinated operating plan so decisions about which facility to use can be based on optimal technical and economic criteria. . .the operating agencies could then expand the computational capabilities needed to increase the productivity and usefulness of test facilities."

The policy developed by the study will be made to work, Keyworth said. "In the past, the lack of any stated policy created inefficiencies in establishing goals and in carrying them out. Now we have a clear consensus, a shared understanding of basic objectives and responsibilities."

*Personnel Profiles*

# This Lady Deserves Applause

*by Allan C. Hanrahan*

**DANA J. MORRIS** has two careers. One is an Aerospace Technologist: Fluids & Flight Mechanics, in the Subsonic Aerodynamics Branch of the Low-Speed Aerodynamics Division.

Along with her usual career duties, Dana serves as the aeronautics delegate to the Employees Sub-Committee that reports to the center's EEO Committee regarding employees' wishes and views in that area. She is also a member of the Langley Computer Users Committee, a membership for which she is well qualified since her career at the center began 12 years ago as an AST: Data Analysis, working in trajectory analysis of space missions. Other career involvement includes membership in the center's Speakers Bureau; Dana spoke recently (her topic: "NASA at Work") to the kindergarten class at R. O. Nelson Elementary School in Newport News, rather an appropos audience since Dana's second career is children. Aside from her center career, "Almost everything I do revolves around children," Dana reflected during one of our conversations.

She is the mother of 8-year-old Katie, whose class at school is fortunate to have such a caring person as Dana for their room mother this year. Dana is also the outgoing Chairman of the Children's Committee of the Langley Activities Association. One of her most gratifying accomplishments in that office was the acquisition of new playground equipment for the grounds near Building 1222.

Although she decided not to run for office again, Dana enjoyed very much her time on the LAA Board, but before she leaves office December 31 she hopes to see many center employees and their children enjoy the Christmas party planned for Sunday afternoon, December 12, at the Activities Center.

Earlier that day, there's a chance the Morrises will be in Grace United Methodist Church, where they are members and where Dana taught a kindergarten-age Sunday school class for three years. Speaking of teaching, she taught for a semester at Kecoughtan High School, in 1970, just before she came to the center.

As for Dana's own education, she graduated from high school in Dothan Ala., where she was born and reared. She earned a bachelor of arts degree in mathematics and French from Huntingdon College (Alabama), and a master of science degree in mathematics from Auburn University. After coming to Langley she completed a number of graduate engineering courses at both Old Dominion and George Washington University.

By way of relaxation, "I like to (snow) ski," stated Dana, "and I sail." She and Katie often go out on their 12-foot sloop when the weather is nice. While it obviously doesn't matter at this time of year, the boar is without a mast at present; Dana plans to acquire another up in Alexandria soon and then, "I'll be back out there (on the water) next spring," she declares.

"I run," Dana informs us, "but aside from intercenter meets I only run for my health. I'm too competitive to run in other races; I'd spend too much time on it," she added, alluding to the fact she would be trying always to improve her time.

Dana doesn't spend all her time out-of-doors. She is a member of a gourmet group, one of the affiliated interests of the American Association of University Women, of which she is a member.

She even has a few sedentary interests; for examply: "I like to read and I like to sew," she stated, after which she went on to describe what sounded like a lovely Christmas dress she was making for her daughter. She is also interested in crafts to some extent because she made some of the gifts she will be giving this Christmas.

As we said early in this piece, Dana chose not to offer for reelection to the LAA, but she tried to smooth the way for the next Children's Committee Chairman by scheduling what she hopes are a number of interesting activities for the children of NASA and contractor employees. Beginning with the Christmas party, memtioned earlier, they are listed as follows:

December 12, 1982 -- Christmas Party. Entertainment, with visit from Santa. (Admission: $.50 for adults, $1.00 for children).

January 16, 1983 -- Movie: "Bambi."

February 13, 1983 -- Movie: "Cinderella."

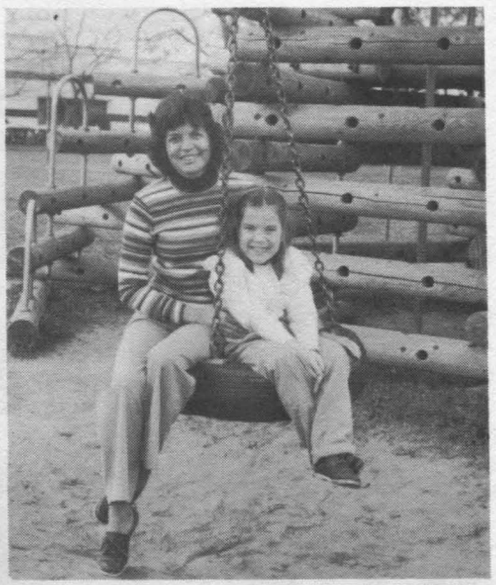
March 13, 1983 -- Movie: "Melody Time."

March 27, 1983 -- Easter Egg Hunt. Entertainment and egg hunt for all ages.

April 17, 1983 -- Movie: "Swiss Family Robinson."

All events begin at 3 p.m. and, except for the Christmas show, the admission in $.75 per person.

Dana hopes you all enjoy the programs.



*— photo by Bob Nye*

**Dana Morris and her daughter, Katie, are shown on the playground at the Activities Center.**

# SATO Expands Service

The Scheduled Airlines Traffic Office will now process reservations and ticketing requests for Amtrak. So if your travel plans include rail, contact the SATO for schedule and tariff information. Amtrak has a number of excursion, family, group and tour fares available to all destinations. The new "Tidewater" began operation Nov. 1, leaving Newport News at 4 p.m. Friday and Sunday for Richmond, Washington, Baltimore, Philadelphia and New York and has had excellent response.

The SATO is your exclusive travel service. When you are thinking of travel, whether air or rail, call ext. 2134 for the latest in fare and schedule information. The SATO will process your reservation and ticketing. The office is conveniently located in Bldg. 1192, Room 122 and is open from 9 a.m. to 4:30 p.m. daily.

# Career Development Center: A Valuable Asset

To ventilate, according to Webster, is to express and discuss one's grievances freely and openly. There is an office at Langley where employees can do that, confidentially, with professional counselors--the Career Development Center.

The CDC encourages employees to engage in the ventilating process to alleviate stress. "Blowing off steam and discussing a problem to relieve tension are very important to clients who feel they cannot talk to their peers," said Joe Mathis, a former aerospace technologist who is studying to be a professional counselor.

Besides ventilating, employees are motivated to use the CDC because of a desire for personal growth, a desire for professional growth, a desire for upward movement or other personal concerns.

The CDC has only been open for one year, but recent survey results show that the center already is a valuable asset to Langley.

"A majority of the employees feels that the CDC has significantly benefited them," said Dr. Samuel E. Massenberg, Coordinator of the CDC. "They have realistically looked at themselves and their careers, and they are quite comfortable and happy with an opportunity to get one-on-one counseling; they also benefited by the Interest Measurement Instruments used--Strong Campbell, basically, and the Holland Self-Directed Search."

These findings are not Massenberg's opinion, but are the results of two assessments which were made, each based on a six-month period. The surveys were conducted from samples of clients, cross sections of employees who participated in the Employee Career Development Program, which involves a self-assessment process in the CDC's Career Resource Library.

The Career Resource Library is a self-managed component of the CDC designed to assist individuals in the self-assessment and management of their own careers.

Massenberg said results were "very revealing and quite fascinating." Most of the employees have taken action in some fashion "to understand themselves better than before" which Massenberg says is definitely one of two roles the CDC plays in the life of an employee. The other is "looking at work life in an organized fashion," he added.

Employees agreed that the results and interpretations of the assessments were informative and gave them some insight as to where changes could be made, and if the need arises, the employees would return to the CDC for additional assistance. Employees also agreed that the center staff members provided them with the necessary time, information and sincere guidance, and were very responsive to their needs.

"Since the two assessments were completed, we have obtained some new materials that can enhance the person's self awareness and self knowledge, and we can now do more for employees," said Caryle Neal, a professional counselor. "For instance, we not only can help reveal the employee's interest patterns, but also where their attitudes and abilities lie, and what sort of personal characteristics are dominant in them. It's a much more complete picture of a person that we can make available," she added.

Massenberg said that if the CDC had any one complaint from employees, it was the fact the counselors cannot offer a solution to all problems. "We did help employees understand themselves and their work environment better," Massenberg explained. "They now know what it takes to negotiate a job change; they are also able to realize that if there is a additional educational requirement, they have to take the initiative to get that extra education so they will have all the equipment needed for that job change."

*—photo by Bob Nye*

**Joe Mathis, Caryl Neal and Sam Massenberg, of the Career Development Center, look over material available to employees who wish to participate in the Employee Career Development Program.**

Neal said employees see a value in the CDC process, whether they are new employees or employees who have been with Langley for a long time. "Some want to map out their careers, some are maybe feeling some dissatisfaction or are simply interested in trying something new or exploring options. There are people here, for example, who are getting closer to retirement. Often people view this as a time when they begin another career," Neal explained.

Regardless of what age clients might be or where they are in their work history, they have found a lot of value in sitting down and looking at their work life in an organized fashion. There's a variety of situations where this kind of approach is beneficial to a person," Neal added.

Employees are concerned about job security and they are bringing these concerns into the CDC. Neal said there are many stress factors that impact someone's life that would cause job insecurity and job uncertainty. These are aired in the ventilating sessions.

The CDC is growing and plans to expand even further. An intern graduate student will be added to the staff in January to help with the center's workload. The center is funded through 1983 and should be able to meet the needs of employees with minimum delay. "Our assessments are giving us direction as to what new facilities we should provide, what we need in the way of counselors, and the skill mix we need to provide the necessary counseling," Massenberg explained.

The CDC is organizing workshops to teach new employees how to understand themselves and their career motivations and then to relate that to organizations in the government. The workshops will focus on instruments such as career interests, work values and personalities. These instrument will be interpreted and analyzed for the employees during workshops. The center also will provide supervisory career development orientation so supervisors will better understand the needs of subordinates in this area.

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Space Administration
NASA-451

U.S.MAIL

27-01 LANGLEY EMPLOYEE (LRC ADDRESS)
ROBERTSON, JAMES B.,
MAIL STOP 494 BLDG 1298

# Happenings

**HAPPY HOUR.** A special Happy Hour will be held today from 4 to 7 p.m. with music provided by the "Virginia Reel." This will be the last Happy Hour for 1982.

**THE AMERICAN SOCIETY FOR METALS** Hampton Roads Chapter will meet December 13 at the Hampton Elks Lodge, 95 Tide Mill Lane. The social will begin at 5 p.m. and dinner will be at 6:30 p.m. Dwight G. McSmith, Operations Support Divison, will speak on "Tube Joining By Explosive Swaging" at the 7:30 p.m. meeting. Contact Bill Ossa for reservations at 827-2262.

**READING TRIP.** There are still bus seats available for the shopping trip to Reading, Pa., Outlet Center, sponsored by the NAGS. Everyone is welcome. The cost is $35 per seat. The bus will leave the night of December 10 (from Langley hangar parking lot), arrive in Reading in time for a full day of shopping, leave Reading at 5 p.m., and arrive at hangar around 11 p.m. Price includes sandwich on return trip. For additional information, please call Betty Joyner, ext. 3285 or 826-4684. Reservations must be made by December 6.

**CHILDREN'S CHRISTMAS SHOW** will be held December 12 at 2 p.m. in the Activities Center. The entertainment will include a puppet show, "Hansel & Gretel," a visit from Santa and a gift. Price will be $1/child and $.50/adult.

## Prefix to Change

The first three digits of Langley's telephone numbers will change to 865 midnight, Friday, December 17. The number for Langley telephone operators will be 865-2000. The extension and FTS numbers will remain the same.

All employees are encouraged to notify associates fo the number change. To assist in the notification, time and attendance clerks have a supply of franked postcards with the new number.

Questions concerning this change should be directed to the Administrative Services Branch, ext. 3511.

## Runners Club Holds Last 1982 Event

The last 1982 Langley Runners Club event will be the Interdirectorate 5K Race, using cross-country rules. The race will be held at 4:45 p.m., Dec. 7.

At least five runners are required for a team entry, and seven members are counted when determining position. NASA personnel should form teams by directorate, while contractor personnel should form teams by company.

Team managers should contact Dick Layman, ext. 3511, if they intend to enter a team in the race.

The reigning Interdirectorate 5K champions, the Space Directorate team, bettered three other teams to win last year's competition.

Individual runners are also welcome to come and try a "PR", a good training run or a fun run.

After the race, there will be a Runners Club social and business meeting in the Langley Room, Activities Center, at 5:45 p.m. The social and meeting are open to the public.

Ribbons and medals from the October 1981 and the April 1982 Intercenter Competitions will be available for winners to pick up at the Activities Center.

## swap and shop

FOR SALE

**Vehicles**

1972 Torino wagon, 302 CI. GC., likes gas but good for carpool or hauling. $375, call Youngblood at 877-1224.

1967 MGBGT, white with black interior, good condition, excellent mechanical condition, steel wheels with good tires, $3000. Call 253-2000, ext. 365 before 5 p.m., 220-1235 after 5 p.m.

**Articles**

Stereo Receiver, Scott 380, 40 Watts/Channel, EC, $75. Call Youngblood at 877-1224.

Monolux telescope and tripod, achromatic coated lens, navy power 15 x 30 x 45 x 60 mm. $30. Call David Adamson at 247-5426.

## cafeteria menu

WEEK OF DEC. 6 — 10

**MONDAY:** Beef Barley Soup; Braised Short Ribs; Western Omelette; Veal Parmesan. Snack Bar: Turkey Club Sandwich; Knockwurst; Taco.

**TUESDAY:** Ham & Lima Bean Soup; Chicken Chow Mein; Fried Oyster Platter; Quiche Alpine. Snack Bar: Rib-B-Q; Chicken NASA.

**WEDNESDAY:** Fresh Vegetable Soup; Stuffed Chicken Breast; Chopped Steak; Beef Stroganoff. Snack Bar: Hot Beef; Ham & Cheese Club.

**THURSDAY:** Corn Chowder; Braised Chicken Livers; Braised Beef & Vegetables; Eggplant Parmesan. Snack Bar: Hot Italian Sausage; B.L.T.; French Bread Pizza.

**FRIDAY:** Bull Island Clam Chowder; Fish Dinner; Beef, Macaroni & Cheese; Roast Pork & Dressing. Snack Bar: Oyster Sandwich; Polish Sausage.

WEEK OF DEC. 13 — 17

**MONDAY:** Minestrone Soup; Spachetti & Meat Balls; Beef Enchiladas; Macaroni, Franks & Cheese. Snack Bar: Chicken NASA; Hot Roast Beef; Grilled Cheese.

**TUESDAY:** Fresh Vegetable Soup; Stuffed Flounder Platter; Chicken Pie; Swiss Steak. Snack Bar: Rib-B-Q; Ham & Cheese Club; French Bread Pizza.

**WEDNESDAY:** Potato Soup; Fried Chicken Dinner; Meat Loaf; Grilled Pork Steak. Snack Bar: Knockwurst; Hot Beef Sandwich; Taco.

**THURSDAY:** Cream of Broccoli Soup; Braised Chicken Livers; Stuffed Pepper; Chuckwagon Steak. Snack Bar: Polish Sausage; Turkey Club.

**FRIDAY:** Bull Island Clam Chowder; Fish Dinner; Polish Sausage & Sauerkraut; Cornish Hens. Snack Bar: Rib-B-Q; Chicken NASA.

## Recent Retiree

**C. Willis Cross Jr.,** Management Support Division, retired November 26.

To see the Earth as it truly is, small and blue and beautiful in that eternal silence where it floats, is to see ourselves as riders on the Earth together, brothers on that bright loveliness in the eternal cold – brothers who know now that they are truly brothers.

ARCHIBALD MACLEISH

# Best Wishes to You and Yours

*As we approach the holiday season, let us reflect on the past and contemplate on the future. Langley continues to enjoy favorable support and the outlook continues good. It is a joy for me to be associated with so many fine, capable people. We live in turbulent times, but the future will be what we make of it. Best wishes to you and your families during the Christmas Season and Happy New Year.*

Donald P. Hearth
Director

# Management Operations Special Assistant Named

Frederick L. Moore has been selected as Special Assistant for Productivity Improvement of Management Systems, Office of the Director for Management Operations. He was formerly Head, Institutional Programs Branch, Programs and Resources Division.

In this recently created position, Moore serves as the center's focal point for the design and implementation of automated management systems.

Moore began his NASA career in June 1966 as an aerospace technologist in the Full-Scale Wind Tunnel. From 1970 to 1976 he was assigned to the Army and worked in the Flight Dynamics and Control Division and the Rotor Systems Research Aircraft Project Office. From 1976 to 1981 he was Head, Project Planning and Control Office in the Project Managment Systems Division. He has specialized in stability and control analysis, pilot-in-the loop simulation, project planning and cost estimating of aerospace and aircraft systems.

A native of East Liverpool, Ohio, Moore attended West Liberty State College. He received bachelor and master of science degrees in aerospace engineering from West Virginia University in 1966 and from Virginia Polytechnic Institute in 1969, respectively.

The author or co-author of 16 technical publications, Moore is a member of the International Society of Parametrics.

Moore and his wife, Rosalyn, live in Newport News. They have a daughter and a son.

## Number Changes Tonight

The first three digits of Langley's telephone number will change to 865 at midnight. The number for Langley telephone operators will be 865-2000. The extension and FTS numbers will remain the same.

*– photo by Hubert Lloyd*

**EQUAL OPPORTUNITY AWARD. Dr. James D. Lawrence (center), Chief of the Atmospheric Sciences Division, receives an Equal Opportunity Award from Richard H. Petersen (left), Langley Deputy Director, and Robert B. Lee III, Head of the Office of Equal Opportunity Programs. The award was presented "in recognition of superior achievements in hiring, motivating, and advancing minorities and women in the Center's atmospheric sciences research program."**

## Thanks for Your Help

The *Researcher* staff thanks Wes Berryman, Bob Nye, Hubert Lloyd, Bill Salyer, Fred Jones, Ronnie Booth and Don Ward for their graphic and photographic assistance this year.

## About the Cover

Wesley Berryman Photo/Graphics Branch, has designed the cover of this issue as a tribute to that outstanding American writer Archibald MacLeish, whose famous quotation occupies a prominent place on one of the displays in the Langley Visitor Center. MacLeish was a man of many talents, winning three Pulitzer Prizes (1932, 1953, 1959), as well as the Presidential Medal of Freedom (1977) and he was appointed Assistant Secretary of State in 1944. The most resounding praises of his career came from his writing of the play "J.B.," based on the ancient paradoxes of Job, which ran for ten months on Broadway in 1958-59. MacLeish died last April at the age of 89.

The *Langley Researcher,* an officia publication of the Langley Research Center National Aeronautics and Space Administration Hampton, Virginia 23665, is published every other week in the interest of its employees Address contributions to the Editor, Mail Stop 154, telephone 2934.

Editor . . . . . Jean Saunders
Staff Photographer . . . . . Bob Nye

*Headline Highlights*

# 1982 - Like Our Houston Counterparts, 'We Deliver'

**January**

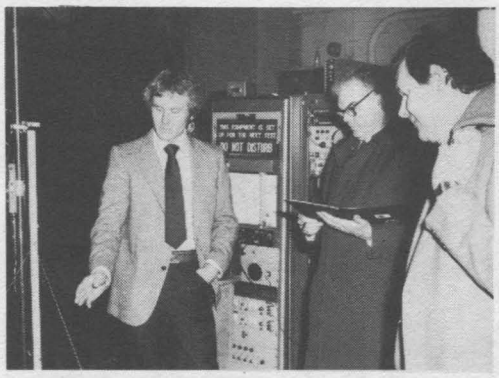
Truly, Engle Express Gratitude for Employees' Work . . . Mathews is Deputy Chief Counsel . . . NACA Reunion Planned . . . Discretionary Fund Supports Innovative Research Ideas . . . 1981, Record Breaking Attendance Year for Visitor Center . . . There It Goes — Building 1195 . . . AIAA to Hear Montoya . . . Tillery Named Staff Lecturer at Visitor Center . . . Swain Named Director for SE&O . . . Thompson Fellowship Offers Research Opportunity . . . Langley Receives First Chase Award . . . Aviation Technology Shared with Mission Pilots in Africa . . . Twenty Years of Manned Space Flight Recounted.

**February**

Hearth Addresses Major Langley Concerns . . . Black History Month Observed . . . Jackson to Speak at Colloquium . . . 'User Area' Opened in ACD . . . Licenses Double as Donor Cards . . . Career Day Scheduled at Langley . . . LFCU Reduces Auto Rates . . . Tolson Named Langley's Chief Scientist . . . Reunion Planned for November . . . Visitor Center Presents 'Aircraft--The Safety Factor' . . . Ashworth Receives NASA Award.

**March**

Jastrow Discusses Human Intelligence . . . NASA Takes Mystery Out of Mystery Cloud . . . Two NASA Centers Lose Directors . . . Langley to Host Student Symposium . . . Langley to Televise Shuttle Activities . . . Consultants Needed for Student Project . . . Condor, Albatross Inventor to Speak at AIAA Dinner . . . Langley Holds NEBA Membership Drive . . . Tank Wears Beige . . . Visitor Center Features Flight Simulation . . . Third Space Shuttle Launch is Letter Perfect . . . LFCU Recognized by NEBA . . . Petersen Chairs NASA EOC . . . GWU May Offer Better Program . . . Langley to Honor Secretaries . . . Student Shuttle Competition Held at Langley . . . NASA Names Crews for Shuttle . . . What's New in the Learning Center . . . March is Red Cross Month . . . Garner Gets Award.

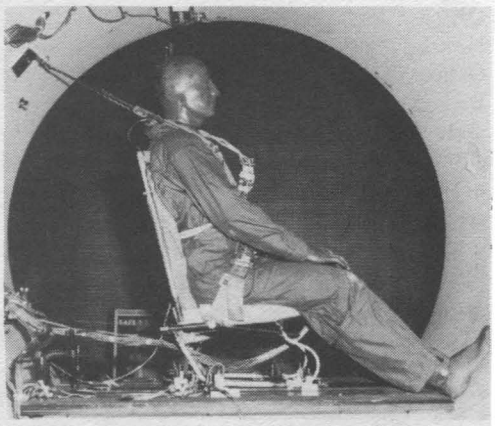


**April**

Third Mission Proves Shuttle's Versatility . . . Garfield to Speak at Langley Colloquium . . . From Concept to Reality — XV—15 . . . Extended Viking Mission Termed Successful . . . LFCU Loans Reduced . . . Wilson Receives Commander's Award . . . Pioneer 10 Completes 10 Years in Space . . . Intercenter Meet Planned . . . Moss Wins Floyd L. Thompson Fellowship . . . Heyman Named a Top Young Federal Employee . . . Langley Honors Inventors at Luncheon . . . LFCU Elects Officers . . . Langley to Host Governor's School for Gifted . . . Langley Researchers Play Principal Roles in UARS . . . New Directors Appointed at Johnson and Goddard . . . Hearth to be on TV.

**May**

Langley Conducts Bond Drive This Month . . . Human-Powered Transportation Featured . . . Langley Offering Student Work Program . . . Howard Students Tour Center . . . President of AIAA to Speak at Local Meeting . . . Engle Assigned to NASA Headquarters . . . Langley Supports Small Business Week . . . Variable-Density Wind Tunnel Designed 60 Years Ago . . . Refuse-Fired Steam Generating Facility: A Continuing Success Story . . . Secretaries and Bosses Enjoy Luncheon . . . NASA Plans to Lighten SRBs . . . Bubble Memory Exhibit Featured . . . LFCU Master Card has 'No Fee' . . . Cole's Energy Idea Saves Langley Money . . . Why U.S. Savings Bonds? . . . Langley Supports Bloodmobile . . . Harris Co-Chairs AIAA Session . . . FWP Sponsors Program . . . NASA/JAARS Modified Airplane Seat Effective in Preventing Injury . . . Aerospace Materials Work for Handicapped . . . Space Artwork Displayed . . . Aeronautical Historical Society Meets June 5.

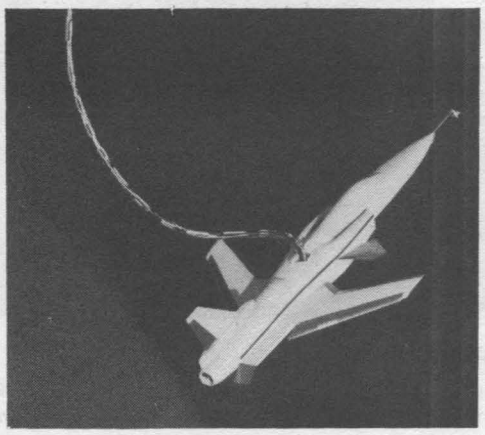


**June**

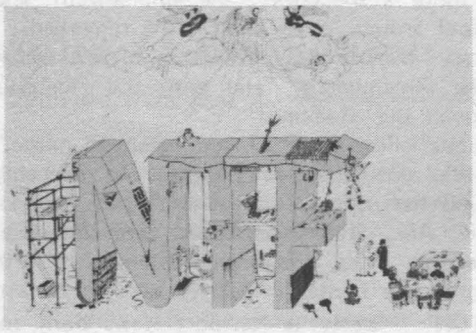
Copeland Named Assistant Chief of Fab Division . . . Darden Receives Outstanding Alumnus Award . . . Gift Shop has Unusual Aerospace Gifts . . . Tracy Discusses 'Learfan 2100' . . . AIAA Announces New Officers . . . Visitor Center Celebrates Soaring's Golden Anniversary . . . Langley Women Supervisors to be Presented . . . Strictland Vies for Miss Virginia . . . Radical Wing Design Undergoing Tests . . . Breckenridge to Participate in SES Candidate Program . . . Propulsion Conference Set Next Week . . . Hearth Receives Doctorate Sunday . . . LAA Announces 1982 Carnival Plans . . . FWP Sponsors Program . . . Activities Visitor Centers STS-4 Schedule . . . Al in a Day's Work . . . 'Slippery' Wing Smooth Way for Efficiency, Fuel Saving . . . Runners' Club Holds Ribbon Day . . Winglets Add to Spray Research.

**July**

Mission Clean and Basically Routine . . Air Force Police Patrol Center . . Summer Faculty Fellowships Program Begins . . . Visitor Center Features Summer Children's Program . . . Savings



Bonds Campaign Ends . . . Freas's Artwork Displayed . . . Langley Gains Award Winner . . . Shuttle Declared Ready for Business . . . Knemeyer Fills SES Slot . . . Where There's Smoke, There are Scientists . . . Page Appointed KSC Deputy Director . . . Spitzer Presents 'A Martian Odyssey' . . . FWP Sponsors Program . . . Staff Donates 341 Pints of Blood . . . New Evidence May Force Rethinking Evolution Theories . . . Insley Named Visitor Center Lecturer . . . AEROVAN Open House Set for Employees . . . LAA Travel Special . . . Blanchard Receives Ames Award . . . Titlebaum Speaks at Colloquium . . . Langley Hosts Graduate Student Workshop . . . SHARP Ceremony Set . . . NASA People, Programs and Planes Featured at Fly-In . . . Insulation Gives NTF Tunnel a New Look . . . LAA Announces Carnival Plans . . . A Look at Tomorrow's Aircraft Today.



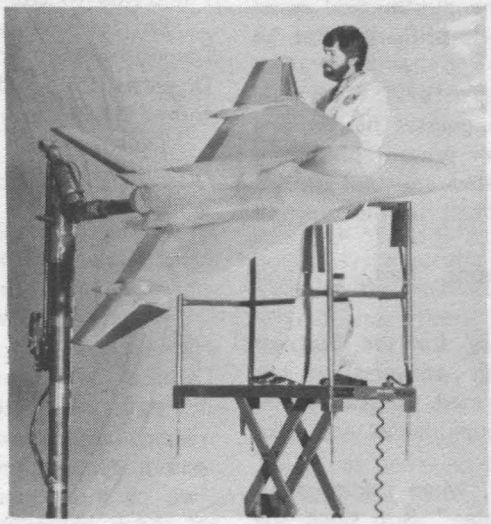
**August**

Lansing Selected Assistant Chief of ANRD . . . Nominations Open for Fellowships . . . Kraft Leaves Post at Johnson Center . . . LAA Sponsors Variety of Events . . . Multi-Purpose Activities Center Proposed . . . Paintings Displayed . . . Langley CFC Goal Set at $190,000 . . . Status Report on Furlough, Aero Budget, Hiring . . . LFCU Offers Help in Case of Furlough . . . 'Diet, Behavior and Self-Image' is Topic . . . Cylindrical Puzzle Completed . . . CoF Deadline Near . . . Wanted: EEO Counselors . . . Aviation Reunion.

**September**

Moore, FED Chief, Retires From Langley . . . A Time to Help Others . . . Staff Gives 361 Pints of Blood . . . Langley Recognizes Hispanic Heritage . . . Hearth Named to Governor's Task Force . . . NASA Studies Volcanic Cloud for its Effect on Weather . . . Allen Heads JPL . . . Carnival Monarch

Enjoyed Her Reign . . . Visitor Center Salutes 65th Anniversary of Langley AFB . . . Langley Employees Honored with Service Awards . . . NASA Tests Advanced Fighter . . . Good Luck Charlie! . . . McDonald Named NASA Chief Scientist . . . In Swamps and From Space, Scientists Look at 'Clean' Country Air . . . President Reagan Endorses CFC Drive . . . Liddle and Electrons Place First in LAA Run.

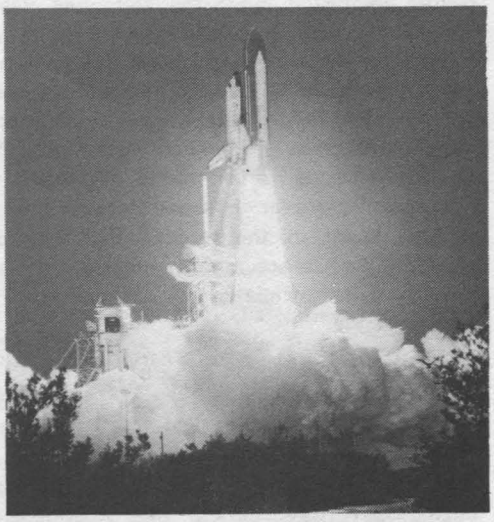


**October**

Langley Apprentices Graduate Today . . . Shuttle Service Altered . . . NASA Honors Employees at Awards Ceremony . . . German, U.S. Scientists Named as Specialists . . . Langley Expertise Adds to Air Pollution Control Meeting . . . National Employ the Handicapped Week . . . Langley Staff Members Receive Advanced Degrees . . . Quann Named Goddard Deputy Director . . . NASA Visitor Center Features Aerospace Careers . . . Waynick is Assistant Chief, BDSD . . . Anderson Accepts Fayetteville State Appointment . . . Contributions Near $177,000 . . . Trower to Speak at Colloquium . . . Langley to Join Shuttle Video Network . . . Visitor Center Salutes NACA . . . Intercenter Meet Needs You . . . LAA Reorganized, Center-wide Election Slated.

**November**

Ball to Discuss Extraterrestrial Intelligence . . . Langley Shares Spotlight at Demonstration . . . Langley to Host Evaluation Workshop . . . Materials Seminar Set . . . Langley to Cover Fifth Shuttle Mission . . . AFB Library Open to NASA Employees . . . CFC Exceeds Goal . . . NACA: 'Those were the days, my friends' . . . Wyle Wins Golf Cup . . . Comet Halley Watch Network Formed . . . Space Shuttle Columbia Works Perfectly . . . Large Space Antenna Technology to be Reviewed . . . Atmospheric Research Earns Award for Levine . . . NASA: Esprit de Corps Still Strong . . . Candidates for LAA Executive Board.



**December**

Engen Addresses Aircraft Accident Research . . . CFC: Success Again . . . NASA's New Age in Space . . . Langley Newspaper is 40 Years Old . . . Retreat Reviews NTA Chapters' Activities . . . Langley's International Reputation Soars . . . Aeronautics: Program for the Future . . . Career Development Center: A Valuable Asset.

*Personnel Profiles*

# Spirit of the Season

*by Allan C. Hanrahan*

Events often have a will of their own and come about quite apart from any plans one may conceive, and so it is with what you read here. It was first planned to have you read of these ladies and gentlemen at an earlier time, not a week before Christmas Eve, but it is good that you read of them now because they reflect some of what this season is about, the spirit of giving.

On Saturday, October 23, the Hampton Roads Chapter of the American Red Cross and the Langley Activities Association (LAA) co-sponsored a day-long class in cardiopulmonary resuscitation (CPR) at the Activities Center, which resulted in the largest number of people certified in CPR at one time on the Peninsula – 636. While a number of Langley people assisted in various ways, directly or indirectly, these five were pure volunteers; they gave what Ben Franklin stated "is the stuff life is made of"--time. All of these fine people quietly and modestly gave all or a goodly part of that long Saturday to help make the day what Red Cross leaders termed "a tremendous success."

Left to right in the accompanying photograph are:

**EARL M. WOOD** – In the Contracts Branch of the Acquisition Division, Earl performs the duties of Contract Specialist. But this Virginia gentleman is also an instructor in CPR (since 1977), and was somewhat instrumental in getting the local chapter of the Red Cross to undertake the program. Earl has been a first aid instructor since he was a senior at what is now Virginia Commonwealth University. That was in 1948 and he graduated that year with a bachelor of science degree in psychology; the following year he earned his master of science degree in the same field from Columbia University. Later, he did doctoral work at the University of Virginia "to learn the business part of psychology," as he put it. Earl spent many years in private business—in personnel, primarily—but he has been happily ensconced here since 1974.

Earl spends one night a week, since 1977, with the Phoebus Volunteer Rescue Squad where he guesses he "is one of the oldest in the squad." But age doesn't prevent him from spending two more nights a week teaching first aid, and until a year ago he officiated in football and softball in the Norfolk Navy League.

Earl and his wife Mary have two sons, Earl, Jr. and Tommy, and two daughters, Mary and Lori.

**EDNA G. DAVIDSON** – This Secretary for the Business Data Systems Division revealed during our conversation her cheerful, ebullient personality. Edna performed clerical duties during CPR day, as did the other two young ladies and, like them, shrugged off giving up a Saturday.

"I enjoy my work," she smiled. Later, when asked about hobbies, she laughed, "My job is my hobby." But since she can't take her job home with her she stays busy at home doing other things, she admitted. She enjoys seeing other places, and reading, and she likes to play bridge, do needlework and handcrafts, as well as grow plants and occasionally just while away the hours watching television. And obviously she enjoys spending time with her three children, Alice, Jim, and Phil. Phil works in the Work Control Section

of the Operations Support Division.

Edna and her husband Walter had been married 34 yea when he died in 1973. This Alabama native has been a employee since November, 1962, first coming to the area i 1962. She didn't like the area at first but "I just love now," she said. "I think it's a great place to be."

**SHIRLEY L. DAVIS** – Although a Transportation Assistar in the Passenger Transportation Branch of the Financi Management Division, Shirley confesses: "Personally, I haven done much (traveling) recently. I do love to travel—love t go," she stated, and spoke of her trips last year to Disne World at Christmas and before that to New York City in earl December, taking in such Broadway plays as "Woman of th Year" and "Sugar Babies." And she reminisced about a 30-da tour of Europe she took a number of years ago.

"I would like to do that again," she added.

Shirley has plenty to keep her busy at home in Hampto however.

"I like crafts," she stated, and added later: "For th Christmas holidays I'm decorating everything," continuing th she was hosting covered-dish dinners for the Nation Association of Government Secretaries (NAGS) and a churc group. She has been active in church (Wythe Presbyterian) bu I'm trying to cut back a bit."

Shirley is also active in the York County Hom Demonstration Group and is a member of the Peninsu Organists Club ("I'm more a spectator," she emphasized), ar enjoys the piano: "I fool around on it a bit," she remarked.

"Now, in my 'horsey' days I was a member of the Jam River Hunt Club," she remembered, "and with the Peninsu Sports Car Club I enjoyed the 'Rallying.'"

Shirley also tells us: "I love to read and listen to music which are pastimes this energetic lady engages in probab when resting up from all the others.

A native of Mobile, Ala., Shirley graduated from Hampto High School and attended Flora McDonald College in Nor Carolina before coming to the Center in 1961.

**BETTY A. BURTON** – Betty is Newport News born a reared, and a graduate of Ferguson High School. After hi school came marriage, motherhood, and housewifery, along wi two or three jobs. Betty went back to school-secretarial scho at the Buckroe Skills Center-before entering on duty in Octob of 1979. Betty is a Clerk-Typist in the Commercial Accounti and Payment Branch. She enjoys traveling and has taken a f trips during the past two years. There was the trip to Flori in April 1981, and the trip to Boston in October of that sa year, and last February she journeyed to New York City whe "the people are interesting," she noticed.

Continued on page

# Happenings

**NEW YEAR'S EVE DANCE** tickets are now on sale at Activities Center Office for $20/couple. Price includes setups, favors, and pastry and coffee afterwards. Music will be provided by "Bob Marshall and the Crystals."

**BABY'S FIRST CHRISTMAS.** John Cornelius Ohlhorst was born Nov. 20. The proud dad of the 8 lbs. 5 oz. boy is Craig Ohlhorst, Materials Division.

**HONEY BUNCH.** The NASA Langley Apicultural Club will meet Dec. 20, at 7:00 p.m. in Room 180, Building 1209. This will be the club's Christmas party. Members will bring delicious treats made from honeys.

**PHOTOGRAPHY EXHIBITION**--The Chrysler Museum will exhibit more than 35 new acquisitions to the permanent photography collection in the Sol B. Frank Photography Gallery from Dec. 21, 1982, through Jan. 16, 1983. The images illustrate a 100-year history of approaches to photography: the "pictorialist" work popular at the turn of the century; a photo-essay from the '60's; abstract photography; and work by one of the most publicized proponents of "modernism," William Wegman.

**CALLIGRAPHY CLASS:** An introductory Calligraphy Course will begin at Thomas Nelson Community College Monday, January 17. The course runs for eight weeks. Call the Office of Continuing Education at 825-2936 to enroll. Wesley Berryman is the instructor.

**HEART SAVER** (CPR) is being scheduled for January 21, 1983, and Basic Cardiac Life Support (BCLS) is being scheduled for January 27 and 28, 1983. CPR is a prerequisite for BCLS. If you desire to be enrolled in either class, submit your name through your division training coordinator to the Training and Educational Services Branch, Mail Stop 309.

**TIDEWATER DINNER THEATER** production running now through January 2 is the Pulitzer Prize comedy "You Can't Take It With You". Tickets are on sale at the Activities Center Office for $13.75 (weekdays) and $14.75 (weekends).

**BUSCH GARDENS** season passes are on sale at the Activities Center for $39 which includes 3 free coupons for upcoming concerts if purchased by January 31.

## LAA Executive Board

The first center-wide election for LAA Executive Board members has been completed.

The following persons will serve two-year terms for their respective offices, beginning Jan. 1, 1983, and ending Dec. 31, 1984.

William E. Sanders, President; Robert L. Huffman Jr., Secretary; George C. Palko, Chairman, Buildings, Grounds and Safety Committee; Ernest L. Greene, Chairman, Activities Committee; and Frances E. Sabo, Chairman, Children's Committee.

*– photo by Bob Nye*

**Dr. Hans Mark, NASA Deputy Administrator, is shown above with Dr. Sidney C. Dixon, Chief, Loads and Aeroelasticity Division, during Mark's Dec. 7-8 Langley visit. Dixon appears to be "graphically" describing the function of the 12½ degree Film Cooled Cone in the 8-Foot High-Temperature Tunnel. The research results from this model are used to study configurations for shape and cooling for re-entry vehicles. The research program is a cooperative effort between the Defense Nuclear Agency and NASA Langley.**

## Season Extended

The open season for health benefits has been extended until December 23 for both **employees and retirees.** It was originally scheduled to run from November 22 through December 10. The Open Season provides an opportunity to change present health benefits coverage or to select a new benefits program from among the 13 plans which are available in this area.

## Spirit of the Season

Continued from page 6.

"I like to draw," Betty tells us, and she also enjoys watching such sports as soccer, basketball, spring soccer, and baseball, particularly when her twelve-year-old son Kevin is playing one of those four sports.

"I love watching Kevin play baseball," she said. "He's a real good baseball player."

Betty is also the Room Mother for Kevin's class at school.

And one thing I just love to do," she added later, "is 'Jazzercise;' One reason I almost forgot is that I haven't done it lately, since I hurt my foot."

Betty was nearly recovered from a broken foot when we talked with her, and by now should be in shape to "Jazzercise" to such tunes as "Jingle Bell Rock."

**KENNETH H. DREYER** – Ken has been an Audio-Visual Specialist with Klate-Holt since 1975, shortly after he retired from the Army, after serving 20 years, much of that time being with the Signal Corps in Telecommunications.

Ken very ably set up or operated the movie projectors, sound systems, etc. used during the CPR day. But giving of his time at the Activities Center for the LAA is nothing new for Ken–it has been noticed and appreciated for some time. However, if you may notice one thing else; he has lost about 30 pounds in the weeks since the photograph was taken.

Ken wouldn't admit to many hobbies or interests other than woodworking and spending time with his wife Michelle, a native of Verdun, France, and their four sons Phillipe, Douglas, Patrick, and Eric.

This Ohio native, who graduated from high school in Steubenville, has done his share of traveling in the past: various locations in the contiguous U. S.; four years in France, and four years in Hawaii, "which was my favorite," he remarked. He also served two tours of duty in Viet Nam: 1966-67 and 1970-71.

To these five–and to you, the reader: wishes for a happy holiday season and a very pleasant 1983.

National Aeronautics and
Space Administration

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# Crash Was

The bright afternoon sunshine outlined the vivid yellow and black Piper Navaho against the bare December trees. The Impact Dynamic Research Facility, a red and white hulking, steel structure, 250 feet high, loomed over the small plane sitting on the concrete below.

Men in colored hard hats busily checked and rechecked the cameras and data gathering equipment onboard the plane.

The Dec. 8 crash dynamics test used a structurally unmodified plane to test subfloor impact on five different types of seats. Three of the seats in the plane were "load limiting" research seats, designed to protect the occupants by absorbing more impact. The other two seats used in the test were standard commercial aircraft seats.

Inside the plane, five anthropomorphic dummies, a pilot and four passengers, were strapped in their seats patiently waiting for their brief flight.

Under the direction of Dwight McSmith, Operations Supervisor, the plane was painstakingly raised to the top of the facility by cables. Throughout this operation, McSmith's light hearted banter and precise directions kept the crew on schedule and attentive during the slow process of raising the plane.

Unfortunately, a cable prematurely tied off delayed the test for half an hour.

At 2:15, with all systems ready, the crowd which had been gathered in the viewing area for over an hour pressed closer.

When the countdown reached one, the Falcon-air-to-air rocket motors mounted on the plane ignited. They would provide 17,500 pounds of thrust for 2.2 seconds. The plane would impact at about 80 miles an hour.

Milliseconds after ignition, automatic cable separators severed most of the cables holding the plane. Seconds later the plane crashed into the eight-inch-thick concrete pad below it. At ten meters before impact the last of the cables attached to the plane were explosively severed. On impact the plane was in dynamic free flight.

The plane instrumentation took data over 90 channels for six-tenths of a second during the peak of the crash, while onboard cameras continuously recorded the scene.

McSmith was pleased. Immediately after the crash, he had declared it a "good, clean impact." Everyone in the Remote Control Room shook everyone else's hands, patted each other on the back, and walked out in the late afternoon sunshine to look at the plane.

The plane had come to rest some 60 meters from the concrete apron in the crash barrier stretched across the open field next to the gantry to catch it.

Months of preparation and painstaking work by more than 25 people were over. The crash had lasted less than four seconds.

The look on McSmith's face said it was definitely worth all the work when he saw the plane had impacted less than six inches from the target X.

As he knelt and looked at the impact mark, he said softly, "A good, clean impact."

# Thanks

**Doris Yates** thanks those who planned, attended, and contributed to her retirement farewell. "The gifts, photo albums, and well wishes will always be treasured."

# swap and shop

### FOR SALE

**Articles**

Girl's wool coat, "Rainbow" camel, size 14, sacrifice at $20, like new. Call 596-9504.

Firewood, split and delivered, pick-up truck load $50. Call 838-2550.

**Animals**

Purebred Norwegian Elkhound (with papers), very friendly, good with children. Call 244-4233.

# cafeteria menu

### WEEK OF DECEMBER 20—24

**MONDAY:** Navy Bean Soup; Pot Roas W/noodles; Hot Pork Sandwich; Baked Filet o Fish. Snack Bar: Chicken NASA; Hot Roas Beef.

**TUESDAY:** Seafood Gumbo; Fried Shrimp Platter; Spaghetti & Meat Balls; Beef Liver & Onions. Snack Bar: Rib-B-Q; Ham & Chees Club.

**WEDNESDAY:** Fresh Vegetable Soup; Choppe Steak; Quiche Lorraine; Stuffed Chicken Breast Snack Bar: Brotwurst; Hot Roast Beef.

**THURSDAY:** Chicken Gumbo Soup; Chicke Livers; Chicken Fried Steak; Beans & Frank Snack Bar: Polish Sausage; Turkey Club.

**FRIDAY:**

**MERRY CHRISTMAS
AND
HAPPY NEW YEAR
TO ALL!!!**

### WEEK OF JANUARY 3—7

**MONDAY:** Old Fashioned Bean Soup; Chicke Fried Steak; Swedish Meatballs over Noodle Baked Filet of Trout. Snack Bar: B.L.T Turkey Club.

**TUESDAY:** Turkey Noodle Soup; Pork Cutle Meatloaf; Beef Kabobs. Snack Bar: Hot Italia Sausage; Chicken NASA.

**WEDNESDAY:** Vegetable Soup; Fried Chicke Dinner; Swiss Steak; Beef Liver & Onion Snack Bar: NASA Sub; Hot Ham & Cheese.

**THURSDAY:** French Onion Soup; Braise Chicken Livers; Macaroni, Franks & Chees Sweet & Sour Pork. Snack Bar: Rib-B-Q; H Roast Beef.

**FRIDAY:** Bull Island Clam Chowder; Fi Cake Dinner; Stuffed Chicken Breast; Ha Steak. Snack Bar: Chick NASA; Knockwur on Bun.

### WEEK OF JANUARY 10—14

**MONDAY:** Beef Barley Soup; Braised Sho Ribs; Western Omelette; Veal Parmesan. Sna Bar: Turkey Club; Knockwurst on Bun; Tac

**TUESDAY:** Ham & Lima Bean Soup; Chick Chow Mein; Fried Oyster Platter; Quic Alpine. Snack Bar: Rib-B-Q; Chicken NASA.

**WEDNESDAY:** Fresh Vegetable Soup; Stuff Chicken Breast; Chopped Steak; Be Stroganoff. Snack Bar: Hot Roast Beef; Ha & Cheese Club.

**THURSDAY:** Corn Chowder; Braised Chick Livers; Braised Beef & Vegetables; Eggpla Parmesan. Snack Bar: Hot Italian Sausa B.L.T.; French Bread Pizza.

**FRIDAY:** Bull Island Clam Chowder; Fi Dinner; Beef, Macaroni & Tomatoes; Roa Pork & Dressing. Snack Bar: Oyster Sandwic Polish Sausage.

### FOUND

Three filters (7" x 15") outside of Buildi 1213. For more information call extensi 3621.

### WANTED

CB, under dash mount. Call R. Ly 595-0864.