National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

SPECIAL AWARDS ISSUE

January 7, 1983

Staff Members Receive Recognition for Contributions

Certificate of Recognition

A **Certificate of Recognition** is presented for the 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.

A Space Act award has been presented to **Terry L. St. Clair** for his invention titled "A Solvent-Resistant Thermoplastic Aromatic Poly (imidesulfone) and Process for Preparing Same."

Terry L. St. Clair

Special Achievement Awards

A **Special Achievement Award** is granted for performance exceeding job requirements. The monetary award may be either for sustained superior performance or for a one-time special act or service in the public interest, connected with, or related to official employment.

Awards have been presented to the following employees:

William H. Mayes, for "planning, organizing and conducting a measurement program of interior noise in a Twin Otter airplane;"

Tammy L. Spellman for "excellence and dedication in the performance of secretarial services for the Computer Systems Branch;"

Edmond H. Senn for "outstanding technical direction of the development and installation at LaRC of an Integrated Verification and Testing System (IVTS) for HAL/S programs;"

Edward A. Hudgins, for "outstanding service in providing continuous facility support to the LaRC Computer Complex;"

Arthur L. Gooden, for "outstanding performance in the development of a POP-11 run time library in support of the Advanced Transport Operating Systems upgrade;"

Janet J. Nagele, for "outstanding service in managing and coordinating access control to the limited access areas of the LaRC Central Computer Complex;"

William H. Lane, for "technical excellence in the development and integration of enhancements to the ACD Central Data Recording Systems;"

Nadine E. McHatton, for "outstanding administrative and secretarial support for the research programs conducted by the Flight Dynamics Branch;"

Long P. Yip, for "outstanding contribution and personal dedication to the development of a data base in the area of low-speed aerodynamics and stability and control of advanced aircraft designs;"

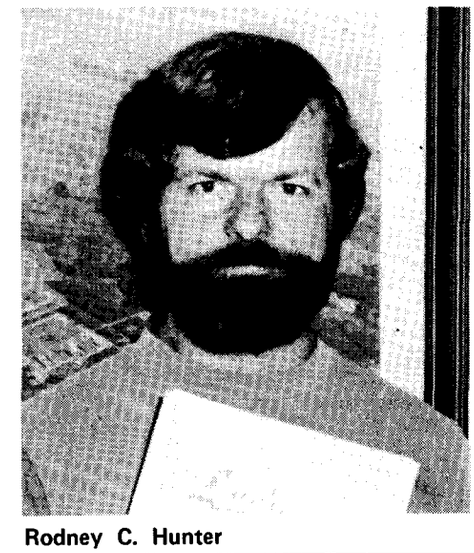
John W. Paulson, Jr., for "exceptional initiative, dedication, and achievement in defining and conducting important research on the low-speed performance and control aspects of high performance STOL aircraft;"

Suggestion Awards

The Langley Suggestion System was established to increase productivity, efficiency, economy and other improvements in center operations. Employees are recognized and rewarded, either individually or collectively for idea-type contributions which are adopted.

Suggestion Awards have been presented to **Walter Illg**, for "labeling library books" and **Rodney C. Hunter**, for "bearing inspection of the main drive brake in Building 648."

An **Honorary Suggestion Award** has been presented to **Clarence C. Poe Jr.**, for "shielded enclosure for making radiographs of specimens in the 400 Kip testing machine."



Rodney C. Hunter

Catherine B. Worth, for "outstanding performance of her duties as secretary in the Theoretical Aerodynamics Branch, including timely completion of an unusually heavy report typing load and creation of an improved filing system;"

Dr. Chen-Huei Liu, for "inspired leadership and outstanding achievement in subsonic computational fluid dynamics;"

Bruce D. Fisher, for tireless efforts in making real-time lightning location data available at Langley Research Center during storm hazards mission operations;"

R. Earl Dunham, Jr., for "leadership in developing the heavy rain effects test program in the Langley 4- by 7-Meter Tunnel leading to the acquisition of data on the effects of heavy rain on the aerodynamic performance of wings;"

Michael A. Basnett and **Ralph G. Dooley**, for "outstanding performance in implementation of the Joint NASA/Boeing Wing Coating Experiment;"

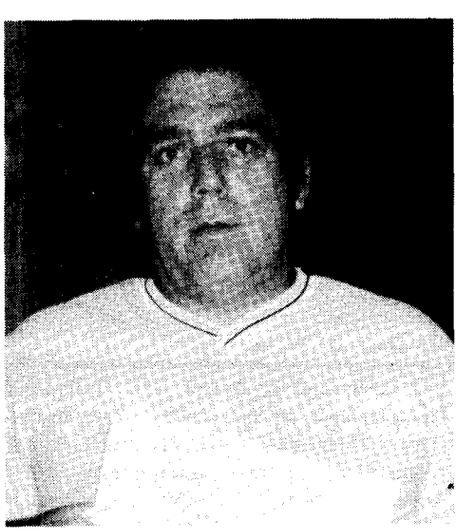
Dwight E. Elliott, for "outstanding performance and contributions to the Storm Hazards Program, the Aerial Applications Program and the establishment of the Aircraft Ni-Cad Battery Shop;"

Wilfred D. Hesketh for "sustained superior performance in the technical management of, and technical contributions to, the effective transition to LaRC and continuing development of UARS-HALEO; and the flight performance of the Shuttle-MAPS sensors;"

Dr. Norman J. Johnston for "establishing and implementing a comprehensive program to improve resin matrix composites through enhanced fundamental understanding;"

Arlene R. Mitchell, for "efficiency in establishing an effective office procedure and filing system for the Physical and Optical Electronics Branch;"

Carl S. Larsen "in recognition of a timely solution to cable fouling problems associated with the operation of an acoustical mapping device during its installation in the Anechoic Facility;"



Carl S. Larsen

Norman J. Johnston

Zachary T. Applin, for "outstanding initiative, dedication, and achievement in defining the 4- by 7-Meter Tunnel flow characteristics in the tunnel circuit and evaluating improvement alternatives that will provide a significant improvement in tunnel efficiency and flow quality;"

Cynthia C. Croom, for "project leadership excellence in conducting the agricultural aircraft aerial applications flight research;"

William L. Sellers III, for "inspired achievement in evaluation of the 4- by 7-Meter Tunnel flow quality and potential-flow improvement modifications;"

G. Thomas Holbrook, for "outstanding improvement of the Vortex Research Facility laser velocimeter flexibility and measurement accuracy;"

Bruce J. Holmes, for "exceptional initiative, dedication, and research excellence leading to a new appreciation of the operational feasibility of natural laminar flow aerodynamics;"

Frederick J. Rosensteel, for "consistent exceptional dedication, innovation, and performance in the SILTS program and other infrared radiometric sensing applications;"

Julia F. Bray, for "technical contributions and dedication in conceiving, developing, and executing comprehensive test programs to verify proper performance of the LaRC graphics output subsystem;"

Kathy R. Ames, for "exceptional contributions to the analysis, testing, and evaluation of the Boeing developed integrated verification and testing system;"

Albert J. Cacioppo, for "the innovative design and development of special systems to support the applications of microprocessors to LaRC projects;"

Peggy B. Rollins, for "outstanding performance in coordinating activities required to provide effective utilization of the LaRC Computer Complex resources;"

Julie B. Fowler, for "outstanding service as secretary of the Computer Science and Applications Branch;"

Joseph W. Young, for "technical excellence in the development of enhanced capabilities to the Research Data Processing Subsystem;"

Nancy L. Taylor, "in recognition of her outstanding achievements in the design and development of a computer plot-graphics system which has significantly improved the preparation of plotted figures for presentation in NASA research reports;"

Robert L. Spruill, for "outstanding performance in the operation and maintenance of the Simulation Facilities Video Systems;"

Karen E. Spriggs, for "outstanding performance in the development of a Cyber resident P-code interpreter in support of the HAL/S language and the Advanced Transport Operating Systems upgrade;"

Tammy L. Spellman, for "excellence and dedication in the performance of secretarial services for the Computer Systems Branch;"

Edmond H. Senn, for "outstanding technical direction of the development and installation at LaRC of an Integrated Verification and Testing System (IVTS) for HAL/S programs;"

Joseph D. Nolan, for "technical excellence in the development of a multicomputer communication capability to support the Mission Oriented Terminal Area System (MOTAS);"

Donna M. Thibodeau for "exceptional dedication in support of the Construction Branch;"

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Langley Researcher

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Editor . . . . . Jean Saunders
Staff Photographers . . . . . Ronnie Booth, Bob Nye, Hubert Lloyd, Fred Jones, Bill Salyer, Don Ward and Richard Shaw.

William P. Henderson, for "outstanding contributions to, and coordination of, the Center's research efforts related to military technology;"

Jo Ann H. Woodcock, for "sustained superior performance in performing secretarial duties for the Materials Processing and Applications Branch;"

Laurence J. Bement, for "outstanding performance in the field of explosive technology applications;"

Dave E. Williams and **Charles S. Gilliland** for "conceptual design for the ERBE contamination covers to meet critical project schedule constraints;"

Joseph D. Pride for "outstanding contributions to the development of the LFC airfoil model system and wind tunnel system modification;"

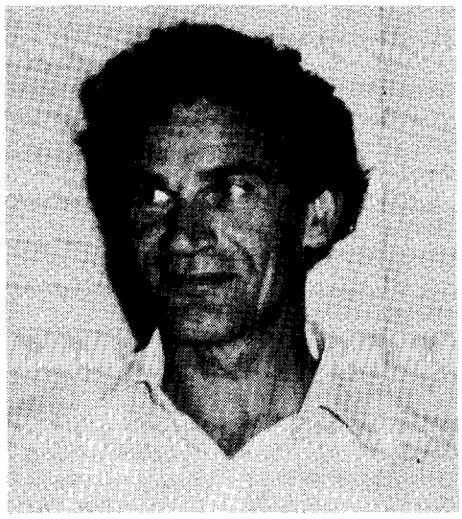
J. Richard Rawls for "significant contributions to the Laminar Flow Control Program through his development of hot film gage installation procedures;"

William J. Debnam, Jr., for "exceptional technical achievements and creativity in specialized furnace and ampoule design to further materials research in space;"

Bobby M. Earnest, for "outstanding contributions resulting in Langley's highly successful research data reduction services;"

Shirley R. Brown, for "outstanding performance in support of the fiscal management of CMB's maintenance responsibilities;"

William C. Walton, Jr. and **Raymond G. Kvaternik** in "recognition of having written a report selected to be the Loads and Aeroelasticity Division's nomination for the H. J. E. Reid Award for the outstanding scientific or engineering paper written by a LaRC employee or group of employees;"



Wolf Elber

Dr. Wolf Elber for "research that rapidly enhance the understanding of the effects of low-velocity impact on composite laminates;"

Randolph B. Heard for "ingenuity in overhauling the Taylor liquid spring shock absorbers on the 8' HTST model elevator which avoided a six month tunnel down time caused by the manufacturer's claim that they were unrepairable;"

David C. Rosser, Jr. for "implementing a practical approach to providing tunnel model data output using microfiche without the need for paper which resulted in considerable savings in branch resources;"

Eugene C. Naumann for "significant contributions to the development of the NASTRAN model for the helicopter and to the conducting of the ground vibration tests of the CH-47D;"

Leon A. Williams, Jr. and **John W. Cox** for "identification and solution of the ERBE low frequency scanner and non-scanner structural vibration problem;"

Kenneth A. Seals for "innovative effort in support of the Pathfinder I design in overcoming critical design problems;"

Henry T. Thornton, Jr. for "exceptional performance in developing and presenting an excellent training course on vibration testing and measurements;"

Richard L. Kurtz for "the innovative design of a variable sonic choke for the LFC airfoil model wind tunnel test program;"

Richard W. Faison for "exceptional performance in dynamic modeling of the ERBE scanner and non-scanner structure to verify a solution to a vibration problem which avoided a potentially serious cost and schedule impact;"

William H. Richards for "exceptional performance in developing software for the NTF fan blade Data Acquisition System and for the SUMS instrument calibration system;"

G. Michael Jurscaga for "exceptional dedication and performance in the field of materials and process development;"

Purnell Hopson, Jr. for "innovative contributions in the development of holographically producing fine line gratings;"

Judy H. Cottle for "outstanding dedication and performance as secretary for the Loads and Aeroelasticity Division Office;"

Doris T. Baynes for "providing outstanding secretarial services to the Configuration Aeroelasticity Branch;"

Jo Ann H. Woodcock

William P. Henderson

Diana L. Park for "exceptional dedication in support of the Structural Design Branch;"

Fenton W. Harrison, Jr. for "development of the Intelligent Systems Research Laboratory Computer Network and his dedication to assisting and directing other researchers in establishing a solid base for future research in the lab;"

Danny R. Sprinkle for "outstanding performance in the development of a methane combustion system for producing simulated hot air;"

Johnny E. Jordan for "the timely, cost effective development of an instrumentation system to characterize simulated rain drops in conjunction with the heavy rain effects experiments in 4 x 7 M;"

Patricia Christian for "exceptional dedication in support of the Facility Systems Branch;"

Robert M. Bennett for "outstanding technical leadership in the development and application of transonic unsteady aerodynamic calculations and in the formulation of the unsteady pressure measurement program;"

Charles L. Ruhlin for "outstanding performance in conducting flutter clearance wind-tunnel studies and simultaneously preparing two reports on previous research;"

Robin K. Rubrecht for "continued high quality performance in the electrical/electronic support of the research effort of ANRD;"

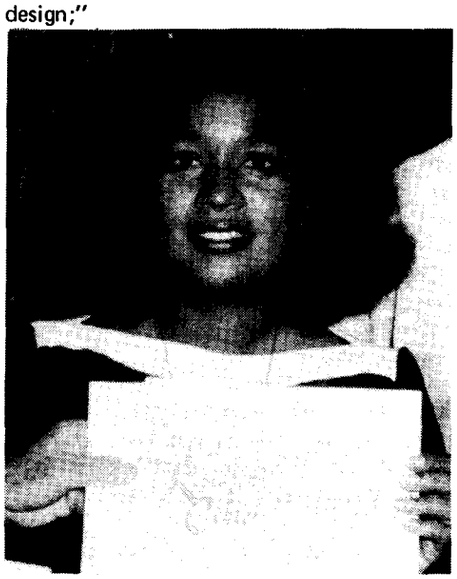
Clarence E. Caldwell for "exceptionally high quality of electrical support of research facilities located throughout the East Area;"

Leonard A. Wright in "recognition of dedication to duty through sustained superior performance;"

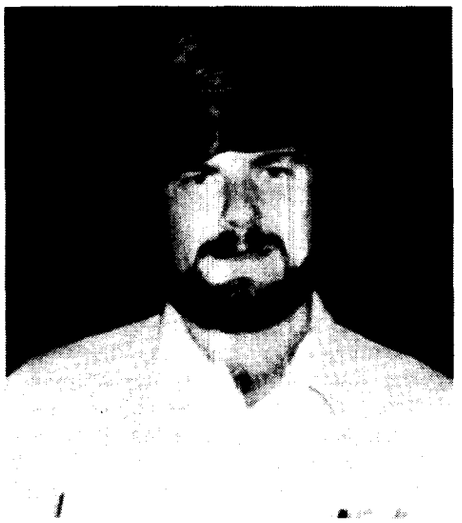
James E. Coutts for "outstanding performance associated with the FY '80 CoF Project, "Rehab and Mods of Gas Dynamics Laboratory, Phase I, Building 1247;"

Warren C. Kelliher for "intense effort in the establishment of the Engineering Support Laboratory while maintaining a high level of performance on regular duties;"

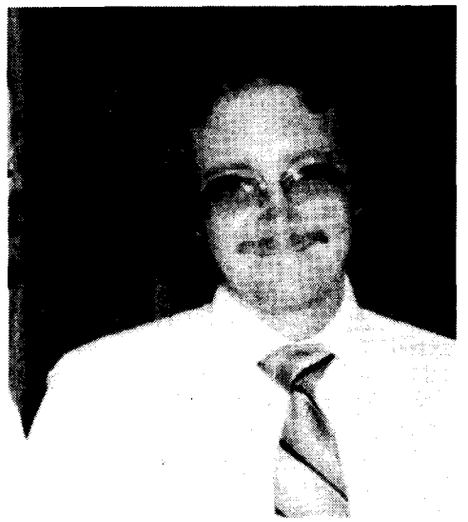
Nathaniel R. Spaulding for "outstanding leadership in developing budgetary cost estimates, preliminary engineering reports, SOW's, and procurement specifications for numerous research facilities projects, and high quality management of 8-Foot TPT flow conditioners installations and CF_4 tunnel model support system preliminary design;"



Bessie M. Sample



Wesley A. Wigginton



Alan W. Henderson

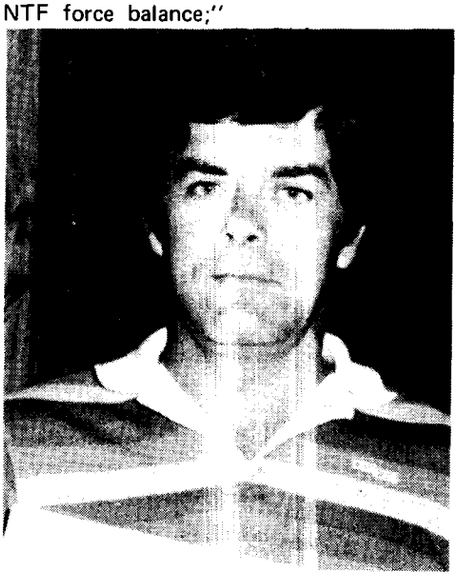
Carl A. Raiford for "exceptional dedication and performance of duties in the design of assigned work requests;"

Ronnie R. Henk for "exceptional dedication and performance of duties;"

Roger I. Buchanan for "outstanding management of Work Package 15, NTF Side Access Housings, technical leadership in developing the NTF Sidewall procurement package and evaluation of contractor's proposals, and technical development of novel flow conditioner designs for 20-Inch SWT;"

Mary J. Harris for "outstanding performance in ALDF project administration and for substantial personal and professional support to the ALDF L-Vessel Source Evaluation Panel;"

Alice T. Ferris and **Thomas C. Moore** for "development of a differential temperature compensation technique for NTF force balance;"



John H. Crosby III

Wesley A. Wigginton for "exceptional performance and inventive efforts at the 7-by 10 High Speed Tunnel;"

Bessie M. Sample for "outstanding dedication and support to the Work Control Section, Operations Support Division during 1981-82;"

Carolyn C. Thomas for "outstanding contributions to the development of research software used in processing and analyzing all aircraft and Shuttle collected FILE flight data;"

Harold R. Compton for "the design, development, and dissemination of research-quality trajectories for the Shuttle Orbiter;"

Kimberly J. Middleton for "the efficient and comprehensive clerical and administrative support in the establishment and initial operation of the HALOE Project Office;"

Victor E. Sothcott for "outstanding performance in implementing the MLS Service Test and Evaluation Program Capability in the B-737 Aircraft;"

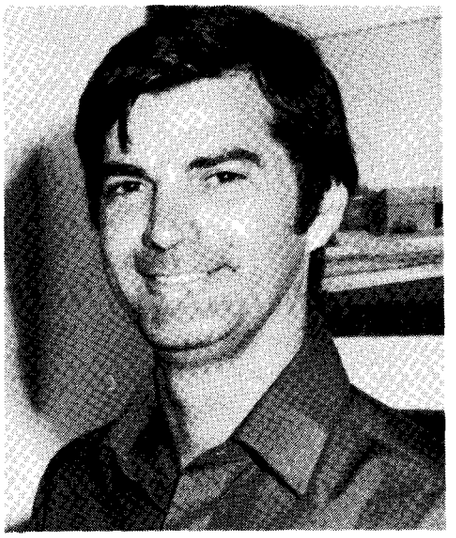
James F. Meyers for "significant contributions to the development and implementation of the laser Doppler technique and systems for Langley's wind tunnels;"

Bruce W. South for "exceptional service in performing laser spectroscopic measurements which resulted in the successful laboratory demonstration of a Raman Doppler velocimeter;"

Alan W. Henderson for "outstanding performance and contributions for technical support to the fire alarm/fire detection system at Building 1244;"

John H. Crosby III for "exceptional performance in providing excellent support to the research conducted in the Fatigue Research Laboratory;"

George H. Veneris



Edward N. Kerlin

Edward N. Kerlin for "fabrication of the T-34C Natural Laminar Flow Glove that met all performance requirements for obtaining laminar flow data;"

George H. Veneris for "exceptional service in the development and fabrication of the "Hardwall" and "Softwall" Research Inlets for OV-1B/JT150 Flight Test Program;"

Elizabeth F. Buchan for "continued performance of her duties as Division Secretary in a superior manner;"

Shirley W. Lawson for "highly innovative and productive application of her resources and equipment to accomplish secretarial tasks for the Performance Aerodynamics Branch which significantly exceed the scope of her normal duties;"

Carolyn V. Snead for "a high degree of skill and proficiency in preparing Viscous Flow Branch correspondence and research reports;"

Kam W. Hom for "outstanding technical contributions to the fighter aerodynamics research program in the Performance Aerodynamics Branch, High-Speed Aerodynamics Division;"

Peter F. Covell for "contributions on experimental investigations vital to the successful flights of the Shuttle and for investigations in support of advanced Department of Defense concepts;"

Michael J. Walsh for "outstanding contributions to turbulent drag reduction research and the training of young researchers in the Viscous Flow Branch;"

James A. Coleman for "performance of assigned duties which involved overcoming unusual difficulties and exhibiting outstanding technical leadership;"

Robert D. Turner in "recognition of exceptional and dedicated performance as manager of NTF Work Package 5.2 — Internal Electrical Systems;"

Alvin E. Schultz for "outstanding performance in overseeing operations in the 1247 Complex, coordinating the new-20 Inch Supersonic Wind Tunnel, and developing operating procedures for the new automated air supply;"

Jimmy L. Pittman for "contributions in the application of nonlinear aerodynamics to the design and analysis of supersonic wings;"

Dr. Ajay Kumar for "providing an inlet/nozzle analysis capability for high-speed missiles and aircraft which provides a substantial improvement over previously available procedures;"

J. Philip Drummond for "developing a computer program which greatly enhances the nation's ability to predict the performance of ramjet dump combustors;"

Aubrey M. Cary, Jr. for "contributions in coordinating the development of a superior 5-year plan for supersonic aerodynamics research;"

Robert W. Guy and **Scott R. Thomas** for "the innovative research which significantly increased the potential productivity and enlarged the flight simulation capability of the Scramjet Test Facility;"

Charles F. West for "excellent technical support of the Multiparameter Simulation Facility in the Fatigue Research Laboratory;"

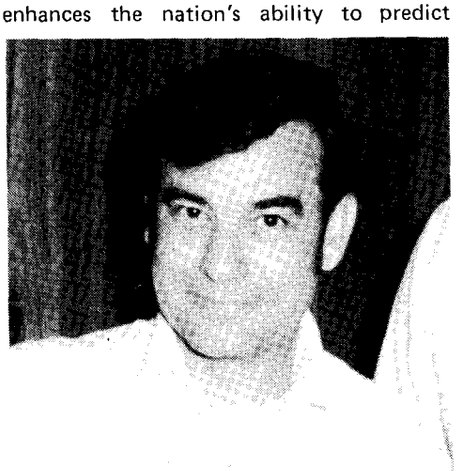
Burnie S. Williams in "recognition of outstanding leadership and technical accomplishment associated with the automated ammonia sampling instrumentation, GTE, 1982;"

Vance A. Overbay for "exceptional job competence and expertise in providing technical support to engineering personnel;"

William K. Williams for "outstanding performance and contributions in updating the LaRC fire alarm systems;"

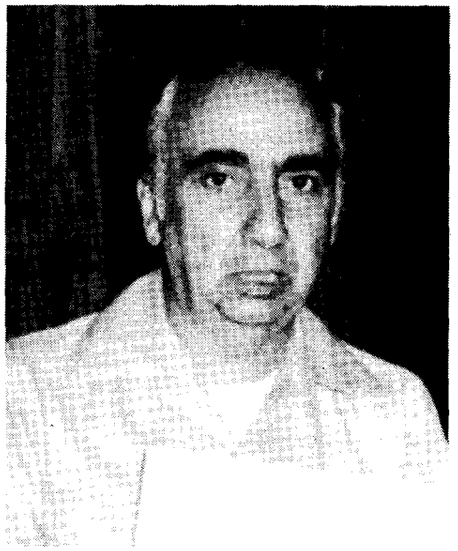
Delores A. Klebitz in "recognition of special service in coordinating the receipt and acceptance of the R&D reimbursable agreements and authority, and the preparation and extraction of resources data in addition to exceptional performance in carrying out the normal secretarial duties of the R&D Programs Branch;"

Willie E. Wright, Jr. for "outstanding performance and contributions in the installation of center wide electrical power metering equipment;"



Willie E. Wright Jr.

Robert D. Turner



James L. Chiarimida

Thomas C. Whiteman

Philip C. Kassell, Jr. for "the timely, cost effective development of an instrumentation system to characterize simulated rain drops in conjunction with the heavy rain effects experiments in 4 x 7 M;"

Thomas C. Whiteman for "exceptional service in the repair/rehabilitation, fabrication, assembly, and installation of the DAST-1 Flight Research Wing;"

Carol M. Olsen for "exceptional performance of extra secretarial responsibilities during the formation and first year of operation of a new branch;"

James L. Chiaramida for "quality workmanship and exceptional support of the Langley 30-by 60 Foot Wind Tunnel;"

Dr. Robert E. Boughner for "exceptional contributions to the understanding of thermal, dynamical, and photochemical variations of the chemistry of the upper atmosphere;"

Linwood B. Callis, Jr. for "exceptional contributions to the fundamental understanding of the interactions between chemistry, radiation, and transport in the middle atmosphere;"

Arlen F. Carter for "superior performance and diligence in development and evaluating of complex DIAL systems for atmospheric measurements;"

John E. Cooper for "contributions to the development and calibration of instruments for the Earth Radiation Budget Experiment, while preserving science objectives during recent cost and schedule trade-offs;"

William H. Fuller, Jr. for "contributions to the development of state-of-the-art lidar systems for studies of stratospheric transport, dynamics, and climate;"

Myra D. Green for "sustained superior performance in carrying out the responsibilities of secretary for the Aerosol Research Branch, Atmospheric Sciences Division;"

Richard N. Green for "contributions to the development of advanced data analysis techniques for satellite measurements of Earth radiation;"

Kenneth V. Haggard for "outstanding performance in the development of satellite data estimation techniques, and for the implementation of Earth Radiation Budget Experiment Output Products;"

Lamont R. Poole for "contributions to the development of mathematical techniques for the analysis of remote sounding data;"

Dr. Henry G. Reichle for "sustained superior performance as Group Leader and Principal Investigator in conducting the MAPS aircraft and satellite experiments;"

Dr. Ellis E. Remsberg for "outstanding contributions to the development and application of analytical tools to improve the understanding of atmospheric processes;"

Robert P. Rhinehart for "outstanding performance in providing a Satellite Data Tape Facility in support of the Center's Atmsopheric Sciences Division;"

Dr. G. Louis Smith for "contribution to understanding the time-space variability of Earth radiation and its relation to climate dynamics;"

Dr. Mary Ann H. Smith for "sustained superior performance in the conduct of atmospheric research using high resolution balloon and laboratory spectroscopy;"

Angela B. Seay for "significant contributions in support of the Center's Final FY '84 CoF Budget submittal;"

Althea O. Brown for "outstanding performance in contributing to the efficient operation of the Vehicle Analysis Branch;"

Richard E. Turner for "development of a transport model for the study of stratospheric transport and chemistry processes;"

Dr. Charles H. Whitlock for "outstanding contributions in the analyses of spectral signatures from a wide variety of constituents for remote sensing applications."

Carol M. Olsen

Charles F. West

Tech Brief Awards

The quarterly "NASA Tech Briefs" journal, distributed nationwide, stimulates technology transfer by disseminating information on new developments stemming from aerospace research.

Cash awards and certificates for recent contributions to the Tech Briefs journal were presented to the following employees by Richard H. Petersen, Langley Deputy Director:

Robert N. Desmarais and **Robert M. Bennett**, "Flutter Analysis System, FAST 1.0;"

Willard E. Foss, Jr., "Detailed Analysis of the Mission Radius and Maneuverability Characteristics of Fighter Aircraft;"

Melvin H. Lucy, "Tapered Joint Connection Means;"

Julius E. Harris and **Doris K. Blanchard**, "VGBLP -- Program for Solving Laminar, Transitional, or Turbulent Compressible Boundary-Layer Equations for Two-Dimensional and Axisymmetric Flow;"

Robert N. Desmarais and Robert M. Bennett

Melvin H. Lucy

Stephen J. Katzberg, Herbert R. Kowitz, Carroll W. Rowland, Thomas A. Shull and **Stephen L. Ruggles**, "Measurement of Excess Noise in Semiconductor Diode Lasers;"

Paul M. Hergenrother, "Polysulfones Terminated With Trimethylsilylethynyl, Ethynyl, and Phenylethynyl Groups;"

Dick M. Royster and **W. Albert Shearin, Jr.**, "Potting of Panel Ends for Elevated Temperature Compression Testing;"

Allan H. Taylor, L. Robert Jackson and **Jarrett K. Huffman**, "Vortex Lift Augmentation by Suction;"

Joseph S. Heyman, "Acoustic Tooth Cleaner" and "Improved Impact Tolerant Composite;"

Bert C. Deis, "A Lightweight Economical Device for Drop Foot;"

Huey D. Carden and **John R. McGehee**, "FATOLA--Flexible Aircraft Takeoff and Landing Analysis Program;"

Harry W. Carlson and **Robert J. Mack**, "LTSTAR--Supersonic Wing Nonlinear Aerodynamics Program;"

Charles E. Byvik, "Limiting Efficiency for Conversion of Solar Radiation by a Threshold Device;"

Edward W. Covington, III; E. Thomas Hall, Jr.; Maywood L. Wilson; Leland E. Bryant; James E. Justice; Walter J. Dale; and **Edward C. Taylor**, "LaRC-160 Polyimide Resin/Graphite Fiber Composite Material Process;"

Laurence J. Bement, "Explosive Joining for Nuclear Reactor Repair;"

Robert L. Fox; Alan W. Frizzell; Bruce D. Little; Donald J. Progar; Robert H. Coultrip; Richard H. Couch;

Paul M. Hergenrother; Dick M. Royster; W. Albert Shearin, Jr.; Richard H. Petersen; Jarrett K. Huffman; L. Robert Jackson; and Allan H. Taylor.

Huey D. Carden, John R. McGehee, Bert C. Deis (retired), Richard H. Petersen, Harry W. Carlson (retired) and Charles E. Byvik.

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Bland A. Stein; John D. Buckley; Terry L. St. Clair and **John R. Gleason**, "Hot Melt Attachment System;"

Roger K. Crouch and **William J. Debnam, Jr.**, "Vacuum Ampoule for High-Temperature Measurements of Corrosive Materials;"

Gary B. Bayless, "Line Hook With Loop Expander;"

Randall C. Davis; Thomas T. Bales; Dick M. Royster and **L. Robert Jackson**, "Curved-Cap Beaded-Web Corrugation;"

W. Jefferson Stroud; Melvin S. Anderson; Barbara J. Durling and **Moses J. Long**, "Bolt Load Detector."

Richard H. Couch; Joseph S. Heyman; Donald J. Progar; Terry L. St. Clair; Roger K. Crouch; William J. Debnam, Jr.; Robert H. Coultrip; Bruce D. Little; Alan W. Frizzell; Robert L. Fox; and John R. Gleason (Army).

Willard E. Foss

Gary B. Bayless (Army); Thomas T. Bales; Melvin S. Anderson; Dick M. Royster; William H. Greene; Barbara J. Durling; W. Jefferson Stroud; L. Robert Jackson; and Moses J. Long.

Edward W. Covington, III; E. Thomas Hall, Jr.; Maywood L. Wilson; Laurence J. Bement; Richard H. Petersen; Leland E. Bryant; James E. Justice; and Walter J. Dale.

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Langley Researcher

Volume 22 Issue 1 January 14, 1983

Allario, Massenberg Fill Management Positions

Two Langley managers have been selected to fill vacancies at the center.

Dr. Samual E. Massenberg, the former Coordinator of the Career Development Center, is Head, Office of Research Grants and University Affairs. He replaces Dr. Alvin Anderson, who resigned in October 1982 to become Vice Chancellor for Institutional Development at Fayetteville State University in Fayetteville N. C.

Dr. Frank Allario, formerly Assistant Chief, Flight Electronics Division, has been named Chief of that organization. He replaces William M. Moore, who retired last September.

In his new position, Massenberg is responsible for the planning, interpretation and operation of research grants between Langley and over 100 universities. His office is the focal point for all university personnel contact with the center.

Massenberg joined the Langley staff as an employee development specialist in April 1980, after serving as Dean of Men at Hampton Institute for 11 years. From July 1981 to December 1982, he was Coordinator of Langley's CDC. He has specialized in management, career counseling, personnel counseling, psychology, and as an aircraft pilot and teacher. He served in the U.S. Air Force from November 1949 to October 1969.

Dr. Frank Allario

A native of Detroit, Mich., Massenberg graduated from Miller High School, where he was presented the American Legion Award for the most outstanding senior. He received a bachelor of science degree in management from Ohio State University in 1957, a master of science degree in counseling and guidance from North Carolina A & T State University in 1967, and a doctorate in higher education administration from Virginia Polytechnic Institute in 1979.

Massenberg is a member of the American Personnel and Guidance Association, the Air Force Association and the Advisory Board of Norfolk State University School of Social Work.

Allario is responsible for the division's research in solid-state electronics and the development of advanced avionics systems for civil aircraft and new techniques for remote measurements of the environment from spacecraft.

Continued on page 8.

Regarding Quality Circles

During the past several years, I have read several articles about Quality Circles. The concept appears to be a practical way to improve productivity, and has potential application here at Langley. I am very pleased that we are initiating a program of Quality Circles. (See the article on page 6.) The senior managers at Langley are supporting the program and are monitoring its progress.

To be successful, a Quality Circles program must have the full support of all the people involved. Senior management will insure full support for the program at all management levels, but you, the Langley employee, will determine the results of the program. I believe you will make it a success, and the result will be a more productive center.

Langley is taking the lead in applying the Quality Circles concept to NASA research and operational activities. Other NASA centers will be following our progress. A successful program here should lead to similar programs throughout the agency and similar increases in productivity. The result will be a stronger NASA; a real advantage in these times of "lean" government budgets.

R. H. Petersen
Deputy Director

Acid Rain to be Discussed at Langley Colloquium

Only several years ago the terms "acid precipitation" and "acid rain" were bits of esoteric jargon used almost exclusively by ecologists and atmospheric chemists. Recently, these terms have become worrisome household words in many countries around the world. While they have inspired sensational and sometimes exaggerated headlines about "death from the sky," they also have prompted a more deliberate and careful examination of the role of human acti[illegible] the biogeochemistry and

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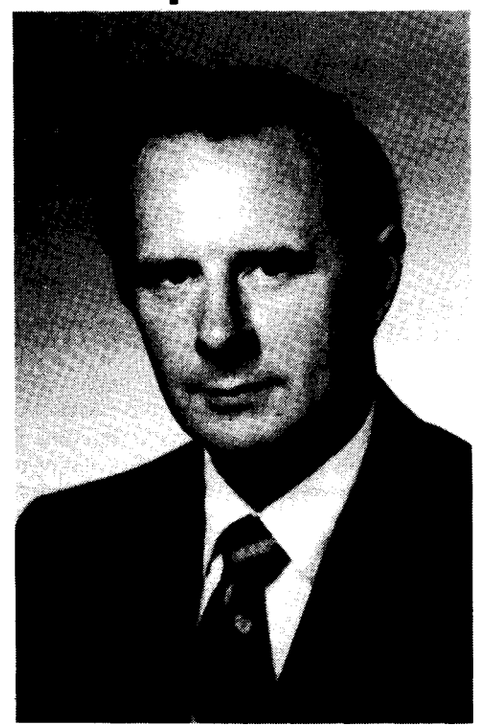
The major sources of detrimental substances are man-made emissions (and transformation products) from combustion, smelting, incineration, decomposition, and transportation processes. Distances of transport range from 0 to 1000 km or more. The time frame for acid deposition and accumulation of toxic metals leading to important biological and water-quality changes are typically many weeks, months, or several years.

Thus, analyses of regional-scale source and receptor relationships based on seasonal and yearly average emission and deposition measurements are more relevant biologically than analyses of specific source-receptor relationships for individual meteorological events.

In 1971 Cowling began a decade-long collaboration with Dr. Svante Oden, the Swedish soil scientist at Uppsala University who first called the world's attention to the acid rain problem in 1967-68. Since 1975 Cowling has provided leadership for the National Atmospheric Desposition Program (NADP) -- a voluntary association of 168 scientists, who operate the principal acid-deposition monitoring network in the United States. In 1978, together with four other NADP scientists, he provided the scientific foundation for a Presidential Initiative on Acid Rain. In 1980, this initiative culminated in the present National Acid Precipitation Assessment Program -- a decade-long, multiagency federal program of research on acid rain and its effects.



Dr. Ellis B. Cowling

Cowling serves as Chairman of the National Atmospheric Deposition Program. A significant part of his educational, research and administrative efforts have been aimed at the development of a more adequate understanding of acid precipitation and its effects on plants, animals, surface waters, and materials.

Cowling received a doctorate in plant pathology and biochemistry from the University of Wisconsin and the Filosofie Doktor degree in physiological botany from the University of Uppsala in Sweden. He recently authored a critical review titled "Acid Precipitation in Historical Perspective" in **Environmental Science and Technology** (vol. 16, no. 2, pp. 110A-123A, 1982).

Sandy Named to Museums Council

Mary Sandy of the Langley Visitor Center has been named to the Virginia Association of Museums Council. While continuing her work as Deputy Director at the center, she will serve as the Council's Director for Nature Museums, Science Museums and Planetariums, of which there are 44 in the State of Virginia.

A former educator with Hampton City Schools, Sandy began working for the Visitor Center in 1979 as its Public Relations Specialist and was promoted to Deputy Director in 1981. The Visitor Center, which is one of the state's most attended museums, is managed for NASA by the Bionetics Corporation of Hampton.

Sandy is actively involved in promoting public awareness of museum opportunities and in expanding area tourism. She is on the Board of Directors of the Peninsula Museums Forum and is Chairman of the Attractions Committee of the Virginia Peninsula Tourism Council. She is also an active member of the Public Relations Committee of the Peninsula Chamber of Commerce and the Attractions/Travel Promotion Committee of the Williamsburg Chamber of Commerce.

The Virginia Association of Museums is an organization dedicated to promoting public interest and participation in Virginia's museums. It also promotes the study, research, interpretation, preservation, restoration and dissemination of cultural, historic and scientific knowledge.

Sandy holds a M.S.A. in Public Administration from George Washington University and a B. A. in English and Spanish from Radford College.

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 January 24

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, January 24; the morning session will begin at 8:30 and include presentation by the Office of Equal Opportunity Programs and Management Operations.

AERONAUTICS

Recent Computational and Experimental Activities from Aerial Applications Program

Pilot Comments on Flight Characteristics of the AD-1 Research Aircraft

Results of F-14 ARI Flight Tests

ELECTRONICS

Real Time Trajectory Optimization Studies Using Singular Perturbation Techniques

Space Applications of Magnetic Suspension

STRUCTURES

Experimental Aerodynamic Heating of Simulated Shuttle Tiles

Highlights of Research Accomplishments Under the Thompson Fellowship

The afternoon session will begin at 1:30 p.m. and will include the following:

SYSTEMS ENGINEERING & OPERATIONS

SE&O Summary

NTF Update

Application of PATRAN G — A New Finite Element Generator Program

PROJECTS

Overview

Preliminary Prop Fan Airplane Sizing and Performance

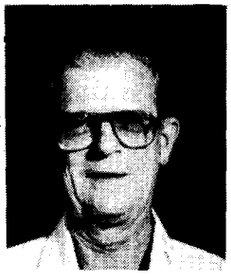
SPACE

Determination of Long-Range Ozone Transport in the Troposphere Using DIAL Data

Shuttle for the 21st Century -- An Overview of Advanced Launch Vehicle Planning

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



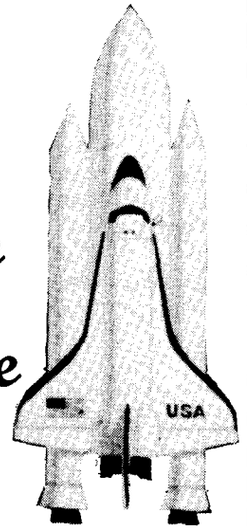
Earl M. Wood, a contract specialist in the Acquisition Division, died unexpectedly at home January 6. He was 61.

Wood began his NASA career in 1974 and worked on major NASA projects, such as the Space Shuttle and the Aircraft Energy Efficiency Project. Carl Knollmann, Assistant Head of the Contracts Branch, said Wood's contract work helped to further the center's mission in general aviation, materials and large space structures.

In addition to his NASA work, Wood was a first aid and CPR instructor for the American Red Cross. "We also recognize his caring for and service to the local community, through his participation in the Phoebus Rescue Squad, American Red Cross and Contact Peninsula," Knollmann said. "Earl was an inspiration to his fellow workers; we shall miss him deeply."

Wood served in the U.S. Army from August 1942 to November 1943. He received a bachelor of science degree from Virginia Commonwealth University in 1948 and a master of science degree from Columbia University in 1949.

Space Shuttle Update



With the terminal countdown test successfully completed earlier this week, workers at KSC are looking forward to a replay of Challenger's flight readiness firing, now scheduled for late January. After the firing, an analysis will be conducted to determine the source of hydrogen gas discovered in an engine compartment.

Small amounts of hydrogen had been discovered in the engine compartment before previous missions with orbiter Columbia, but those amounts were even smaller than the four-tenths of one percent detected after Challenger's flight readiness firing in December. It is not presently known if the source is from a leak from pipes inside the engine compartment or is somehow being drawn in from outside. According to a KSC spokesman, enough hydrogen present could be an explosion and flame hazard -- if oxygen (present in our atmosphere) were somehow drawn in, as well.

After the analysis of the hydrogen leak is complete, a firm launch date will be set for STS-6. Launch is expected to be late February.

Retirement Party

Lloyd E. Smith, Operations Support Division, will be honored with a retirement luncheon Friday, February 18, at 11:30 a.m. in the Activities Center. The buffet will cost $6 per person, which includes a gift contribution. For reservations, send check to Ray Scholz, 166, or Nelson Seabolt, 347, no later than January 28. Due to the length of the luncheon and program, a period of annual leave will be required.

Behind the Scenes:
Property Management Branch

A look at those people who provide support for Langley's projects and research programs. This is the first of a three-part series on the work of the Property Management Branch in the Management Support Division. Photos by Bob Nye and Hubert Lloyd.

The Property Management Branch handles the formidable task of keeping track of all of Langley's inventoriable property, screening purchase requests, analyzing stock records and identifying and cataloging supply items with recurring demands. The PMB staff also provides advice on contract property

(left to right) Charles O. Yokum, Assistant Head, Property Management Branch, and Ronald R. Krodel, Head of the Property Management Branch, are pictured above.

management to Langley personnel and various contractors; and the staff screens government excess property lists to see if they fulfill any of Langley's needs.

In addition to these tasks, PMB is also responsible for the management of a six line item budget of $800,000 in institutional support funds. And PMB operates a supply system consisting of 7,800 line items valued at $1.9 million.

According to Ronald R. Krodel, Head of the Property Management Branch, completing this long list of tasks would be impossible without the aid of an excellent staff and computerization.

"As a branch, we have been fortunate in our staff. We have personnel who are interested in their work," praised Krodel. "The people in PMB are what makes our systems workable and enjoyable."

"Automated Data Processing applications have revolutionized daily work for PMB personnel," said Krodel. "PMB has changed from total manual systems to approximately 80 percent mechanization. Computerization enables PMB personnel to provide better data sooner to the Langley employee needing information about supplies or equipment."

Computer use is necessary for PMB to handle their heavy workload efficiently. On an average day at the center, the receiving area in PMB unloads more than 35 truckloads of supplies and materials, which must be received, put in PMB systems and delivered or issued throughout the center.

"Practically nothing moves on or off the center unless it comes through the Property Management Branch," said Krodel.

The Property Management Branch is divided into three sections. The responsibilities of the Equipment Management Section and the General Supply and Warehousing Section will be described in the *Researcher* in the coming weeks. The third section of the PMB is the Stock Management Section.

Stock Management

The Stock Management Section of the Property Management Branch is headed by Shirley D. Evans, who is responsible for managing approximately 8,000 diversified line items of stocked

Shirley D. Evans is Head of the Stock Management Section.

Shirley A. West is the secretary for the Property Management Branch.

supplies and materials, and for assuring that the section supplies the center with the items needed to meet program schedules.

The section consists of three major areas: Supply Management, Cataloging and Fedstrip/Milstrip.

Supply Management

Five inventory managers, each responsible for a group of commodities, are assigned to this area. Each manager maintains required stockage objectives to meet the center's needs, coordinates requirements for delivery of urgently required or delinquent stock replenishment orders, purchases a variety of stock items from commercial sources according to standard procurement guidelines, and researches and analyzes existing stock for purging and upgrading to the state-of-the-art material.

"The center's supply system impacts all organizational levels," explained Evans, "and actions taken by the supply managers affect the center's research effort through the quality, reliability and effectiveness of commodities stocked. Evans said the research activities, such as LDEF, NTF, Shuttle support, and the use of liquid nitrogen in many of the facilities, require planning, coordination and, in some cases, expeditious handling in procuring a variety of commodities to meet the research program schedules.

"We are making every effort to supply the user with the materials

needed to perform the job, whether it is an office-type item, such as computer paper or a research-type item, such as metal to fabricate models," she added.

Cataloging

The Cataloging area is responsible for the identification, classification, numbering and publication of stocked supplies and materials falling within approximately 590 Federal Supply Classes.

Extensive research by the Cataloger results in incorporating explicit specifications into new item descriptions,

Mozetta A. Edwards processes all walk-through purchase requests, reviews all PRs, making sure they have approval signatures and determining if the items are available from GSA or DOD, codes each request with an object class, and handles Fed/Mil orders. If orders are not received or if there are shortages, she follows up for credit, which, she said, amounts to a substantial sum yearly.

as well as preparing item descriptions for a full range of commodity areas within the Federal Supply System.

A complete update to the Stores Stock Catalog is currently being published incorporating more pictures and new features, such as a Copying Machine Supply Section, listing all supplies used on copying machines.

The cataloger can identify items as to whether they are available through the Federal Supply System. If the items are available, the Cataloger can furnish the necessary information, such as price and source, where the user can procure at a cost savings. If needed items are not available from the catalog, a purchase request should be initiated by the user.

Fedstrip/Milstrip

Fedstrip/Milstrip refers to the federal supply sources, General Services Administration (FED) and Defense Logistics Agency (MIL).

This area is responsible for the annual acquisition of approximately 16,000 line items of stock and non-stock supplies and program-related aircraft parts from DLA depots (construction, electronics, general, industrial and personnel) as well as GSA, the Army, Navy and Air Force.

All purchase requests are processed and screened for availability of supply items from Langley stock or from federal sources and object classes are assigned. If orders cannot be filled by GSA and DOD, the PR is forwarded to Acquisition Division to be procured by an assigned buyer. The Fed/Mil managers also process receipt discrepancies, follow-up on outstanding orders, and control the distribution of GSA catalogs.

The Stock Management Section is supported by an automated supply system to enable the supply managers to perform analyses of inventory usage trends and forecast requirements.

To provide better interface and communications with center users concerning supply-related problems and

Mary J. Corbitt is the supply cataloger who keeps the stock catalog updated. She is the focal point between managers and the federal catalog system and the Defense Logistics Supply Center, and she coordinates with GSA in the numbering system for cataloging.

changes, supply support meetings have been conducted with members of each Directorate. A Supply and Equipment Newsletter is published to advise users of new requirements due to changes and/or new regulations, as well as notices required on new or existing stock supplies.

The Stock Management Section not only performs a wide variety of duties, but is continually reviewing the supply system requirements to enhance its quality and timeliness in meeting users demands.

Inventory managers, (left to right) Anna J. "Polly" Bailey, Evelyn D. Wallace, Margaret N. Mills, Roberta Knight and Joyce A. Cammon, are responsible for buying and maintaining commodities needed to meet the research program schedules. Joseph W. Sewell, (middle) a Klate Holt employee, assists the inventory managers, making certain that all input transactions are reviewed for completeness and legibility and assuring that total line items and quantities agree with daily computer reports and orders to the supply managers.

A New Management Technique . . .
. . . the Quality Circle

A relatively new management technique, called the Quality Circle, is being tried in this country to improve productivity for organizations and to enhance the work life of employees.

A Quality Circle is a team of from five to 10 workers and supervisors who do similar work and who volunteer to meet regularly to identify, analyze and solve problems of quality and production that affect them. Recommendations from a Quality Circle are periodically presented to management for consideration in solving problems.

Quality Circles allow communication and decision making to occur from the bottom up through a network of workers instead of from the top down through a hierarchy.

The Quality Circle concept works in other countries, most notably Japan, and it is already being used by several large U.S. companies, such as Lockheed and Minneapolis Honeywell, both of which have been using Quality Circles since 1974. Honeywell has more than 350 Circles throughout the company.

Langley now has a pilot Quality Circle program, consisting of six circles: three in the Fabrication Division, two in the Operations Support Division and one in the Research Information and Applications Division. More Circles are planned for the near future.

Circular History

The history of Quality Circles is itself circular. The idea began in the late 1940's among management consultants and behavioral scientists in the U.S. Its basic tenet was to improve quality control by making employees more aware of how they could control quality. It developed into a more integrated theory of "building-in" quality control during production, rather than "adding-on" controls at the end of production. To succeed, the concept required more responsibility and participation by each worker.

The theories never made much headway with American industry, however, because American companies had always made large profits operating as hierarchies, with most decisions and communication flowing from top to bottom.

Another country, however, eager to reassert itself in the economic world, was open to suggestions. Japanese industry was particularly interested in quality control and in adapting the new theories to the Japanese culture and work ethic. The Japanese are generally collaboritive, group-oriented and less individualistic than most Americans. The typical Japanese company is an extension of a worker's family. It features lifetime employment, consensual decision making, collective responsibility, slow evaluation and promotion, implicit informal control, non-specific career paths and concerns about the whole person.

The Japanese developed the quality control concept, made it a part of most of their industry, and gave it the name of Quality Circles. As many as six million Japanese workers participate in the Circles. The concept has now returned to America -- and is being tested at Langley.

Langley Program

A Langley Steering Committee, composed of representatives from upper and middle management and union members, has been established to provide leadership, develop guidelines, and support the Quality Circle program.

A Facilitator coordinates the total program, reporting to the Steering Committee. Clarence Cole of the Fabrication Division is Langley's Facilitator, responsible for promoting Circles throughout Langley, training and support of Circle leaders, and records. The Facilitator helps the Circles remove any impediments to their operation and deliverations.

Each Circle has a Leader who is a volunteer selected by management. The Leader is usually a first-line supervisor, but acts as chairperson of Circle meetings, not as a supervisor. The Leader must be positive in attitude and amenable to suggestions. Recommendations are total Circle decisions, not individual ones.

Circle membership is for two to three years and is voluntary. If there are more than 10 volunteers for a Circle, names are drawn at random for membership. A waiting list is then compiled in the order in which names are drawn. Later volunteers will be added at the end of a waiting list.

Members can drop out of and return to a Circle at any time. An employee who wants to return to a Circle, however, must wait for an opening. A Circle member who wants to move to another Circle must go to the bottom of that group's waiting list.

Once formed and operating, a Circle becomes part of the Langley organization that it represents; membership may change, but the Circle will continue.

Participatory Management

Because Quality Circles are a form of participatory management, every Circle member is encouraged to actively participate in all deliberations. Members help each other develop new skills and knowledge, and all decisions are made by consensus.

Circles meet during regular work hours for an allotted time without interruption in adequate meeting rooms and with necessary equipment. After initial training of members by the Facilitator and the Leader, meetings are usually held for one hour each week.

Training for Takeoff

Initial training of Circle members takes about eight hours and is done during the first several meetings. Each Circle establishes a code of conduct, picks a name for itself and begins to identify problems. Anyone, including management, may suggest possible problems to Circle members, but the members actually select problems to be studied.

Circles do not consider such subjects as wages and salaries, employee benefits, Langley policies, interpersonal differences,

Continued on page 7.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

"BAMBI" will be shown January 16 at 3 p.m. in the Activities Center. The movie, shown as part of the LAA Walt Disney Film Festival, costs 75 cents per person.

TIDEWATER DINNER THEATER is featuring "Cotton Club Cabaret" through February 20. Discount tickets, $14.75 weekend and $13.75 weekday, are on sale at the Activities Office.

BUSCH GARDENS season passes are on sale for $39 each at the Activities Office through January 31 or until passes are sold out. The cost includes three coupons for upcoming events.

PATRIOT PASSES. One-year admission tickets to all Colonial Williamsburg exhibition buildings, craft shops, bus service and Carter's Grove Plantation are available at the Activities Office for $20.50/adults and $10.50/children.

MOVIE THEATER TICKETS for Newmarket South are on sale for $2.35 each at the Activities Office.

CONSUMER SAVER COUPON BOOKS, good for various restaurants and activities through December 31, can be purchased at the Activities Office for $10.50 each.

FEDERAL ALMANACS can be ordered at the LAA Office until February 1. The cost, $2.75, must be paid when order is placed.

NASA EMPLOYEES are entitled to half price $3 tickets to see the William and Mary vs. James Madison basketball game January 29 at 1 p.m. Employees must present a NASA badge when purchasing tickets at the William and Mary Hall ticket office.

COUPLES COMMUNICATION RETREAT, sponsored by the Peninsula Y.W.C.A., provides an opportunity to discover new ways of communication effectiveness for participating couples. Carl L. Cooper, a liscensed professional counselor, will lead the retreat on Feb. 25–26 at the Ramada Inn, J. Clyde Morris Boulevard. A $60 fee pays for each couple's workshop, lodging and meals. Pre-registration is necessary since the retreat is limited to 15 couples. For more information, call Virginia Reynolds, 245-6026.

SKI NASA '83. Come and enjoy a day of trouble-free skiing in the mountains of Virginia for one low price. The trip cost is $37, $7 less with own equipment and lift ticket. Make checks payable to Richard Bennett, MS 397, or 11 Bosch Lane, Newport News, Va. Your check reserves your trip. The trips are open to all NASA employees, contractors and their friends. For more information, call 599-5585. The schedule for 1983 follows:

Jan 20	Massanutten
Jan 27	Wintergreen
Feb 3	Bryce Mt.
Feb 10	Homestead
Feb 17	Massanutten
Feb 24	Wintergreen
Mar 3	Bryce Mt.
Mar 10	Massanutten

"MACBETH." One of the "grandest" of the grand operas, Verdi's "MACBETH," will open at 8 p.m., Jan. 21, at the Virginia Opera Association's Center Theater in Norfolk. Additional evening performances will be Jan. 26 and 28; Sunday matinees, performed at 2:30 p.m., will be Jan. 23 and 30. Ticket prices range from $10.50 to $23. For reservations call the VOA box office at 623-1223.

SPACE SHUTTLE ART EXHIBITION documenting the development of the Space Shuttle project went on view Dec. 1 at the Smithsonian's National Air and Space Museum.

The exhibition, entitled "The Artist and the Space Shuttle: Selections from the NASA Art Program," features approximately 100 works of art, including drawings, water colors, gouaches, acrylics and oils, that were inspired by various aspects of the Shuttle project. Works include scenes from pre-flight preparations for the first Space Shuttle flight in 1977 to the landing of the Fourth Shuttle Flight on July 4, 1982.

SKI HEAVENLY VALLEY, Lake Tahoe, on Feb. 28 through March 6 for $655/quad. The fee includes roundtrip airfare, six nights at the Lake Tahoe Inn, six day lift ticket and gratuities. An optional MAP plan is available at approximately $22 a day. For more information, call Norman Willey, ext. 3987.

The Quality Circle

Continued from page 6.

grievances and other subjects that are part of collective bargaining agreements. One objective of Quality Circles, however, is the improvement of labor-management relations.

"Brainstorming" for ideas is an important part of the Circle process, and everyone is encouraged to participate. All ideas are considered, no matter how unusual, and creativity is encouraged.

Other problem-solving methods used by Circles are gathering data, cause-and-effect analysis (identifying the different parts of a problem) and decision analysis (choosing between two or more alternatives). Verification and solution to a problem will follow.

The Circle then makes its presentation to management, selects its next problem and gives management a follow-up review on previous problems.

Management Responsibility

Management has the responsibility to encourage the presentation of recommendations and usually responds within two weeks. Reasons are given if the response is negative. Approved recommendations are implemented as quickly as is practical, verifying the cost effectiveness of the recommendations.

Among benefits expected from the Quality Circle program are greater development of employee abilities, improved productivity, higher morale and increased job satisfaction.

Recognition

Significant contributions of Circles and their members will be recogniaed with special certificates now being developed. No special monetary awards will be established, but the Awards Office will be notified of problems that are solved.

More details on Quality Circles are available from Clarence Cole, Langley Facilitator, Mail Stop 222B, ext. 3701.

Thanks

Herbert L. Greene writes, "Many thanks to everyone who participated in my going away party. The many expressions of good will and friendship will not be forgotten. Jean and I are now in Atlanta learning how to be crackers (Georgia peanuts). Come see us. Many thanks for everything."

National Aeronautics and
Space Administration

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FOR RENT

Riverdale (on water): Brick rancher, 3 BR, 1½ baths, LR w/fp, DR, eat-in kit., den, garage, patio, large corner lot with fruit trees and garden plot, CA, gas heat, dish washer; washer, dryer, ref. and some furnishings available; lease and deposit required, $495/month. Call 868-6453.

WANTED

Scientist needs quarters: Visiting faculty needs accommodations for nine months, beginning January 15. Contact Joe Heyman, ext. 3418.

FOUND

A navy blue Virginia Tech wind breaker was left on the coat rack in front of the GWU offices, Building 1220, Room 127. Call 3124 to claim the jacket.

cafeteria menu

WEEK OF JANUARY 17 — 21

Monday: Chicken & Rice Soup; Spaghetti & Meat Sauce; Crab Cake; Sliced Pork BBQ. Snack Bar: Chicken NASA; Ham & Cheese Club.

Tuesday: Cream of Broccoli Soup; Baked Lasagna; Chopped Steak; Quiche Lorraine. Snack Bar: Rib BBQ; Hot Beef Sandwich; French Bread Pizza.

Wednesday: Fresh Vegetable Soup; Meat Loaf; Monte Cristo Sandwich; Chicken Chow Nein. Snack Bar: Polish Sausage; Turkey Club; Taco.

Thursday: Chicken Gumbo Soup; Braised Chicken Livers; Beef Enchiladas; Polish Sausage & Sauerkraut. Snack Bar: Knockwurst; B.L.T.

Friday: Bull Island Clam Chowder; Fish Dinner; Baked Stuffed Cornish Hen; Cheese Omelette. Snack Bar: Chicken NASA; Oyster Sandwich.

WEEK OF 24 — 28

Monday: Ham & Lima Bean Soup; Salmon Cake & Slaw; Polynesian Spare Ribs; Salisbury Steak. Snack Bar: Hot Smoked Sausage; Turkey Club.

Tuesday: Corn Chowder; Two Quail W/Mashed Potatoes. Snack Bar: Hot Italian Sausage; Chickwagon.

Wednesday: Turkey Noodle Soup; Roast Turkey Dinner; Veal Parmesan; Pepper Steak. Snack Bar: Ham & Cheese Club: French Bread Pizza; Hot Toast Beef.

Thursday: Fresh Vegetable Soup; Braised Chicken Livers; Franks & Baked Beans; Teriyaki Chicken. Snack Bar: NASA Sub; Rib BBQ; Taco.

Friday: Bull Island Clam Chowder; Clam Nuggets; Chicken Egg Foo Yung; Ham & Swiss Quiche. Snack Bar: Polish Sausage; Hot Turkey Sandwich.

Allario, Massenberg

Continued from page 1.

He began his NASA career in November 1967 as an aerospace technologist. He has also served as Head, Laser Physics and Applications Section, and as Group Leader and Principle Investigator of the Laser Heterodyne Spectrometer Experiment for Spacelab.

Prior to joining NASA, Allario was a research fellow and teaching assistant at the Polytechnic Institute of New York and a research physicist in White Oaks and Silver Spring, Md.

A native of New York, Allario graduated cum laude with a bachelor of science degree in physics from Manhatten College in 1962. He earned a master of science degree in 1965 and a doctorate in 1967 in physics from Polytechnic Institute of New York.

The author or co-author of over 30 technical papers, Allario was selected by the Stanford University as a Sloan Fellow for the 1977-78 academic year. He is a member of the American Institute of Aeronautics and Astronautics and the Optical Society of America.

Home Computer Fair at Visitor Center

The age of the personal computer has dawned. If you'd like to learn more about home computers and their varied uses, come to the Home Computer Fair, sponsored by the NASA Langley Visitor Center on January 15 and 16. From noon to 4:30 each day, a variety of computers and programs will be demonstrated by area residents and dealers. The Apple, VIC-20, TRS-80, Timex-Sinclair 1000 and IBM personal computer systems will be featured with programs ranging from educational and financial to entertainment.

CompuServe, a national computer information network accessible through telephone lines, has donated eight hours of free user time for the Center's Home Computer Fair. CompuServe provides a wide range of services, including up-to-the-minute news, stock market reports, electronic mail, entertainment, banking and consumer buying services.

ODU Needs You

The Department of Electrical Engineering at Old Dominion University anticipates having several part-time adjunct faculty positions available for Semester II, 1982-83. Duties consist of teaching one graduate or undergraduate electrical engineering course. Course areas include electromagnetics, digital systems, communication, control, linear system theory and electronics.

A doctorate degree or a master's degree with extensive work experience is required. Rank and salary ($1,000 or more per course) depend on qualifications and are negotiable. Interested persons should contact Dr. Roland R. Mielke, Chairman; Department of Electrical Engineering; Old Dominion University; Norfolk, VA 23508.

OFFICE RELOCATED

The TWX and FAX Office has moved to Building 1151, Room 123 (use rear entrance to building). The contact is Kitty Brand, ext. 2167.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 2

January 28, 1983

Thompson Fellowship Offers Research Opportunity

Uninterrupted, concentrated research performed at an institution famed for its expertise is every researcher's dream.

Dr. Stephen K. Park, Analysis and Computation Division, and Dr. Melvin S. Anderson, Structures and Dynamics Division, had that dream fulfilled when they received Floyd L. Thompson Fellowships for 1981–82.

Park spent his fellowship tenure at the Optical Sciences Center of the University of Arizona. There, he focused his research on mathematical and numerical techniques for remote sensing and digital image processing applications. Anderson studied at the University of Wales' Institute of Science and Technology and the University of Birmingham, England. His research involved developing practical, efficient and accurate structural analysis for the very large structures proposed for future space application by taking advantage of their likely geometry, construction methods and other factors that will result from being in the vacuum and weightlessness of space.

The fellowship sponsored their research so their individual research capabilities would be enhanced and so Langley might be infused with new ideas from other centers of excellence in specific research fields. "Langley is characterized by our dedication to relevant, innovative research," Robert Tolson, Langley's Chief Scientist said. "The fellowship is one mechanism to enhance individual creativity, which is, after all, the foundation of a research center."

The opportunity for 12 months of research activity at distinguished educational or research institutions is again open to non-supervisory researchers who have demonstrated continued growth in research capacility and have been at the center more than seven years.

Recipients receive full salary and benefits, travel per diem, and such additional funding as appropriate to permit the purchase of research equipment or computer usage at the institution visited.

Applications are now being accepted for the fellowship program for 1983–84. Criteria for evaluation of applications include the research record of the individual, the distinction of the proposed institution and its staff, the merits of the program of research to be conducted, and the anticipated long-range value to the division and center. Completed applications must be turned in by March 4. The recipient or recipients will be announced around April 6.

Since its inception, seven other Langley researchers have received Thompson Fellowships, including Calvin T. Swift, who studied at the National Oceanic and Atmospheric Administration; Martin M. Mikulas, Jr., California Institute of Technology; John B. Anders, Jr., University of Southern California; Marion C. Bailey, University of Mississippi; Roger K. Crouch, Massachusetts Institute of Technology; Dr. Donald H. Phillips, Harvard University; and Dr. James N. Moss, who is studying at the University of Sydney, Sydney, Australia.

Applications and more information can be obtained from the Training and Educational Services Branch, ext. 2611, Mail Stop 309, Building 1195C, Room 251.

Petersen Receives Presidental Rank

Richard H. Petersen, Langley Deputy Director, has been honored with the Presidential Rank of Meritorious Executive. He received his award in special ceremonies at the State Department in Washington, D.C., January 19.

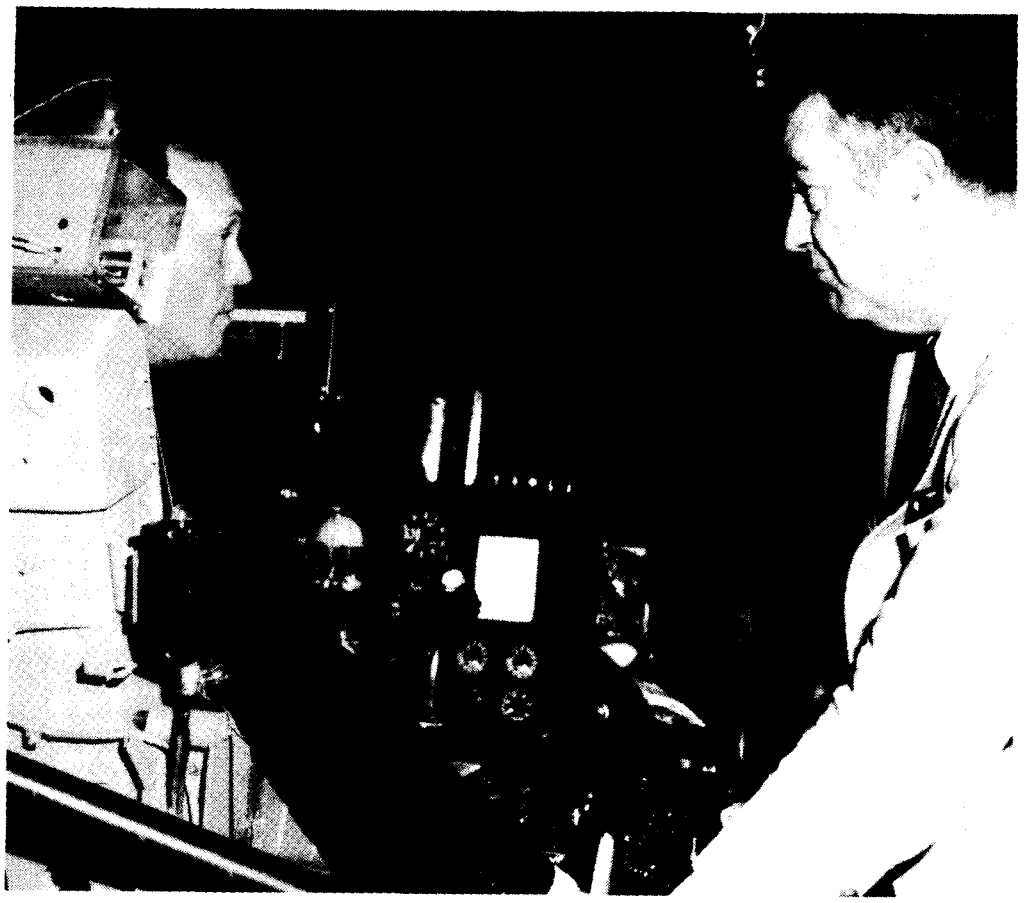
The Ranks, authorized in the Civil Service Reform Act of 1978, are awarded by the President to career federal employees in the Senior Executive Service whose performance has been exceptional for several years.

Petersen was honored for his leadership in aeronautical research for nearly 25 years, specifically "as a leader in theoretical and experimental aerodynamics; as a contributor to the understanding of hypersonic aerodynamics and computer analysis of aircraft performance; and as Deputy Director of the Langley Research Center, the oldest and largest research center in the Agency."

A total of 16 NASA executives received Presidential Rank, including former Langley manager, Angelo

Guastaferro, Deputy Director of the Ames Research Center.

The Presidential Rank of Meritorious Executive includes a cash award of $10,000.



—photo by Fred Jones

From left, Billy R. Ashworth, Analysis and Computation Division, explains the function of the Differential Manuvering Simulator to Rep. Herbert H. Bateman during Bateman's Dec. 22 tour of Langley. Bateman appeared to be listening intently to Ashworth's explanation -- perhaps he then suspected his January appointment to the House Science and Technology Committee. He was also recently appointed to the House Merchant Marine and Fisheries Committee. While the work of both committees is important to Virginia residents, the work of the Science and Technology Committee is especially significant to NASA -- it authorizes NASA's annual budget.

Langley Hosts Workshop on Wind Tunnel Wall-Interference

Representatives from several foreign aeronautical research centers, major domestic aircraft manufacturers, and wind tunnel testing and consulting firms gathered at Langley January 25 and 26 to review wind tunnel wall-interference problems and methods to correct these problems.

Other workshop participants were representatives from Ohio State University, the University of Tennessee Space Institute and the British Southampton University. Government agencies represented by workshop participants were the Air Force, the Navy, NASA Ames, NASA Lewis and NASA Langley.

The approximate 100 workshop attendees participated in discussions and heard overviews concerning the theoretical and experimental techniques used to evaluate wall-interference present in conventional and "partially adaptive" wind tunnel data.

Since most aerodynamic research is conducted in conventional wind tunnels, the workshop emphasized modern interference estimation and correction techniques for wind tunnel data.

The foreign countries represented at the workshop were France, Germany, Canada, The Netherlands, The United Kingdom, Sweden, India and Egypt.

Thanks

The family of **George W. Lucy** deeply appreciate the kind expression of caring by the NASA employees who donated blood at the October Bloodmobile. A special "thanks" to each of you.

Space Wins Cross-Country Meet

The Space Directorate won the Langley Interdirectorate Cross-Country Championship, for the second consecutive year, on a beautiful evening that saw the record book rewritten.

The Space team led by Richard Turner scored 51 points. The Electronics team was second with 79 points followed by CSC with 103, Structures 120, Management Operations 125, Kentron 135, and SDC 180. Aeronautics' four runners were one person short of fielding a team. Turner, running in his first NASA race, surprised the veteran runners by placing second with a time of 17:42 for the 5000 meter course. The other members of the winning Space team were Don Humes, Gale Harvey, Richard Powell, Bill Woods, Ed Sullivan, and Mary Ann Smith.

The 53 runners crossing the finish line set a new record for participation in the fifth running of this annual event. The seven teams that competed set a record for team participation. Individual records were set in both the men's and women's categories. Karen Sage (Kentron) repeated as the women's winner breaking the record she established last year by 10 seconds with a time of 21:08. Chris Slominski (CSC) led the men with a record-breaking time of 17:18 which erased the old record of 17:24 set by Don Humes in 1978.

The continued increases in participation by contractor employees, both as individuals and as part of company teams, have made this event much more exciting and enjoyable. Also, this year almost 25 percent of the field were women; a fact that by itself probably indicates an even larger crowd for next year's race.

Choice Bit

The groundhog is like most other prophets; it makes its prediction and then disappears.

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.

In Memoriam

John L. McCarty, Head of the Impact Dynamics Branch in the Structures Directorate, died at home Monday, January 24. He was 54 years old.

McCarty managed the Aircraft Landing Dynamics Facility and was responsible for Langley's crash dynamics research. His research accomplishments include developing simulators to model aircraft ground performance, anti-skid brake behavior, tire traction and behavior, and air cushion landing systems for land and water. He was a major advocate of increasing the capabilities of the Landing Loads Track, which are now underway.

McCarty recently helped develop the Shuttle Orbiter's landing gear, and he served on a NASA committee that reviewed certification of the landing gear and all mechanisms before the first Shuttle flight. His research helped improve the safety of aerospace vehicle ground operations.

He was active in volunteer support to the Big Brother program, the Virginia School for the Deaf and Blind, and as a Boy Scout leader. He lived in Poquoson.

McCarty worked at Langley from August 1951 until his death, with a two-year break for active duty with the U.S. Air Force. He received a B.S. degree from Virginia Tech in 1949 and an M.S. degree from Georgia Tech in 1952.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83-4 — Computer Clerk/Computer Assistant; GS-0335-4 or 5; Office of Director for Management Operations; Financial Management Division; Commercial Accounting and Payments Branch; Closes February 4.

83-5 — Engineering Technician; GS-0802-8, 9, or 10; Office of Director for Electronics; Instrument Research Division; Physical and Optical Electronics Branch; Closes February 4.

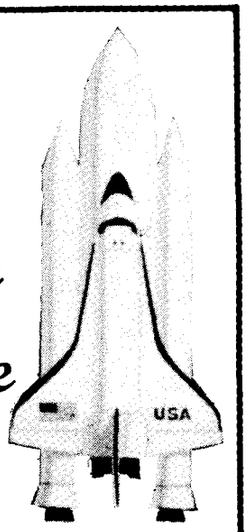
83-6 — Engineering Technician; GS-0802-8, 9, or 10; Office of Director for Electronics; Instrument Research Division; Physical and Optical Electronics Branch; Closes February 4.

83-7 — Engineering Technician; GS-0802-8, 9, or 10; Instrument Research Division; General Research Instrumentation Branch; Materials Characterization Instrumentation Section; Closes February 4.

— photo by Bob Nye

Administrators from Hampton City Schools changed their daily routine Wednesday, December 1, by visiting Langley Research Center. Among the activities planned for them were tours of Langley's research facilities and a meeting with Director Don Hearth. Dr. William Bainbridge (second from left), Superintendent of Schools since last July, said he was very enthusiastic about the research going on at Langley and sees many opportunities for interaction between Langley and Hampton schools. With Dr. Paul Coe (left) in the VSTOL Tunnel are Bainbridge; Joe Mathis, Langley Career Development Center; Dr. Chalres A. Eggleston, Staff Development Specialist; Cameron M. Harris, Curriculum Systems Specialist; Doris M. Ennis, Director, Guidance and Testing; Dr. Joanne Fama, Director of Instruction; Dr. Donald R. Musselman, Assistant Superintendent; Pat Clark, Head, Training Branch; and Dr. Sam Massenberg, Head, Office of Research Grants and University Affairs.

Space Shuttle Update



Work continues at the Kennedy Space Center to locate the source of a potentially dangerous hydrogen leak in Challenger's aft compartment. The Orbiter's second readiness firing, conducted earlier this week, confirmed that the source is somewhere inside the roughly 15-foot square, jam-packed compartment. The leak, already determined to be about the same volume as during the first test firing last month, is a possible flame hazard during ascent if outside air were to somehow leak into the compartment.

At press time, KSC spokesman Rocky Raab said several days of analysis of the exact source of the leak will be followed by an examination of the options for curing the problem. The bottom line: a February launch is not now achieveable and, at present, there is no way to even set a tentative launch date. Part of the difficulty in assessing data taken from the aft compartment during the test firing is that in all likelihood, according to Raab, the leak is a high pressure leak and, if it comes from a pinhole, it could be "jetting" across the compartment like a garden hose. So, for instance, a sensor immediately next to the leak may not read as much hydrogen as a sensor across the compartment if the jet sprayed directly on the more distant sensor.

The aft compartment is packed tightly with Orbiter's support equipment, to include all the engine piping, all the fuel and oxygen supply piping, auxiliary power units, cooling and hydraulic systems and more.

Behind the Scenes:
General Supply and Warehousing Section

A look at those people who provide support for Langley's projects and research programs. This is the second part of a three-part series on the functions of Property Management Branch, Management Support Division. Photos by: Bob Nye and Hubert Lloyd.

Arthur M. "Buddy" Grist is the Head of the General Supply and Warehousing Section.

The General Supply and Warehousing Section, Property Management Branch, handles four major support operations for Langley. This Section manages and coordinates the center's Receiving, Storage, Stores Stock Issue and Property Utilization and Disposal. Arthur M. "Buddy" Grist, Head of the General Supply and Warehousing Section, oversees a staff of five NASA employees and 28 contractor employees.

According to Grist, "The PMB team is the most dedicated group that I have worked with during my tenure with NASA."

Supplying NASA employees with what they need, when they need it, is one of this section's major responsibilities. Normally, personnel will process requests for materials to the user, within eight hours or less. However, holiday impacts do occur each year and delays of 24 to 36 hours during the following week have been experienced. Supplies are delivered daily throughout the center by scheduled delivery services provided by the Transportation Unit.

"Since we are a dedicated service organization, anyone advising us of a problem with supply and equipment can expect guidance and support wherever our management responsibilities coincide," Grist said.

Understanding the responsibilities of the General Supply and Warehousing Section can be best accomplished by examining each area separately.

Receiving Unit

Approximately 3,000 line items are received and processed by the receiving area each month. In this area, all inbound shipments to NASA are checked to verify item quantity and item compliance to purchase order specifications. Unless there is a document delay, this process is completed within 16 hours or less. Items cited as critical for facility operations or research programs are identified for special handling and are normally processed immediately upon receipt in order to reduce operational impacts.

Storage

The storage operation in the General Supply and Warehousing Section provides protective storage for materials and equipment critical to NASA's facilities and research support. Test fixtures for future use, models, hazardous materials and special lubricants are a few examples of materials controlled in this area. The storage areas are systematically arranged to speed retrieval time. All stored items are controlled and documented.

Dawn D. Tatterson is one of the terminal operators for the Property Disposal System. She works closely with the Property Disposal Specialist, inputing the Property Disposition Requests and extracting data and documents from the Excess Property Disposal Program.

Loretta W. Watkins, Property Disposal Specialist, compiles a detailed monthly screening list of Langley's excess property which is designated to other federal agencies. During the 1982 fiscal year, Watkins processed 4,233 items valued at $11.5 million through the property disposal system.

Stores Stock Issue

Commonly known as "The Stockroom," this area works with the Stock Management Section to maintain materials required to support daily center operations. Currently, there are approximately 8,000 line items of general stock and 2,200 line items of program stock. Stores Stock Issue also provides issue and delivery coordination for all stock requirement required by NASA personnel and contractors involved with research, maintenance and facility operations.

The Stores Stock Issue area assists stock managers in their efforts to assure adequate supplies are maintained.

Stanley P. Shields, a Supply Clerk, aids the *Property Disposal Specialist in the control of* excess property and assists with the processing of inbound materials certification.

Ruby S. Sherwood is the center's Property Utilization Specialist. By screening excess property lists for items needed in Langley research programs, Sherwood successfully acquired equipment valued in excess of $4 million in the 1982 fiscal year. The expenditures for this type of equipment *normally involve only packing, crating and* shipping costs.

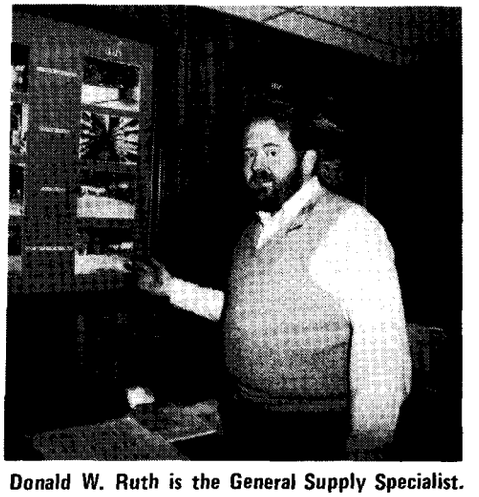
Property Utilization and Disposal

Property utilization involves searching excess property lists, catalogs and telegrams from other NASA centers and government agencies to locate desired items needed by NASA researchers and technicians. When desired items are located, the Utilization Specialist provides the researcher/technician with available data on the located item. If acquisition is approved, the Utilization Specialist prepares appropriate documents and coordinates the transfer, shipping and delivery.

NASA's excess property is also processed for possible utilization and disposal by the Property Disposal Specialist.

Items declared excess to user's needs are reported monthly on screening lists, prepared and distributed to center personnel, other NASA centers, and various government agencies.

During the next 30 days, items identified for reutilization at Langley are withdrawn and placed into use by the new custodians/researchers.



***Donald W. Ruth is the General Supply Specialist.* Ruth is responsible for all certification of inbound materials, control of precious metals and control of hazardous materials currently held in storage. He also serves as Facility Coordinator.**

Upon expiration of the screening time-limit, items not identified for further use are transferred to the Defense Property Disposal Office, Cheatham Annex, Williamsburg for further exposure to other federal organizations.

The General Supply and Warehousing Section's 11 warehouses, which encompass 94,000 square *feet, are used to store a variety of materials.* Building 1169, lower right corner of picture, houses all other Property Management Branch personnel. Warehouses pictured are (1) Central Storage; (2) Metal Issue; Stock Materials; (3) Delicate Equipment Storage; (4) Offices; Incoming, Outgoing; (5) Excess Property; (6) Furniture Storage; (7) Furniture Storage; (8) Paper and Liquid Stock; (9) General Stock; (10) Hazardous Materials; and (11) General Storage - overflow.

Training Holds First Satellite Teleconference

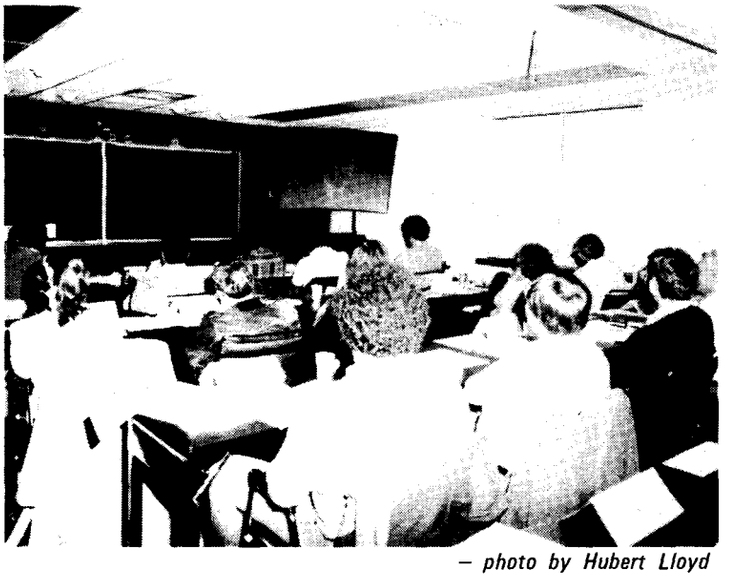
Langley participated in a nationwide teleconference on Dec. 7, 1982, via its new satellite communication system. The five hour teleconference, "Robotics: The Past is Prologue (Research and Business Opportunities," was a success, drawing 40 participants for the robotics research overview and explanation of current and future applications of robotics. The teleconference was produced by the Institute of Electrical and Electronics Engineers.

"Robotics," co-sponsored by the Training and Educational Services Branch and George Washington University, was Training's first satellite teleconference.

The teleconference instructors, experts in the robotics field, addressed a live seminar group in a South Carolina Educational Television studio in Columbia, S.C. Their national classroom via satellite was comprised of approximately 2,700 students.

Telephone hook-ups gave the teleconference participants the same freedom to interact with their instructors that live seminar participants enjoyed.

Beth Coe, Site Coordinator for the teleconference, said, "The robotics teleconference served two purposes. It provided state-of-the-art information about robotics, as well as, giving us an opportunity to try satellite teleconferencing here at Langley. We look forward to using this method of educational technology again in the future."



– photo by Hubert Lloyd

Students are participating in a robotics seminar at Langley via satellite communications. In addition to students, the new educational technology attracted 25 observers.

Langley Donors Help Red Cross

Two hundred fifty-four Langley employees, retirees and contractors donated blood at the January 5 visit of the American Red Cross Bloodmobile.

Achieving gallon status were:

15 gallons – Jim Fay.

8 gallons – Alton Barnes and Herbert Seybold.

7 gallons – Nelson Seabolt and John H. Crosley III.

5 gallons – Tony L. Parrott and Sharon K. Crockett.

4 gallons – Donald Simmons and Wilbur Fitchett.

3 gallons – Tommy Augustson.

2 gallons – Richard Ott and James P. Bailey.

1 gallon – Sherri D. Lee, Keith Belvin and Neal Frink.

Donating bolld for the first time were Steve Jarrell, Jeffrey A. Jones, Bill Baugh, Theresa Elliot, Emily Todd, Garnett Horner, Nicholas Kepics, Waldo Patton and Lynne Orr.

Virginia Jones and Annette L. Forrest were NASA Coordinators for the Bloodmobile. Sootty McArthur was the Red Cross Coordinator and Octavis Judge and Edna Baker were typists. Coffee and doughnuts were furnished by the Langley Federal Credit Union.

The next opportunity to donate blood at Langley will be March 16.

thinking out loud

"The big moment of truth arrives when one realizes that the lack of a little extra effort keeps many a man from moving ahead."

E. F. Gerard

"Some say opportunity knocks only once. That is not true. Opportunity knocks all the time, but you have to be ready for it. If the chance comes, you must have the equipment to take advantage of it."

Louis L'Amour

Harvey Wins $20

Lynne Harvey, George Washington University, won the December drawing of $20, given by the Langley Exchange Council to registered car pool participants.

For car pool matching, change in car pool membership or car pool registration, call Kathi Porter, ext. 3511.

'Using Fuel More Efficiently' New Display

Using fuel more efficiently has been a major concern of NASA researchers for the past decade. A new permanent exhibit at the Visitor Center shows the many methods they have developed to make current and future aircraft more fuel efficient.

One section of the large display is devoted to new composite materials that are lighter, stronger and more durable than traditional metals. Samples of these materials and their uses are illustrated. Composite materials can mean a 20 percent reduction in fuel use. Another section of the exhibit shows how researchers are working to reduce drag on aircraft in order to save fuel. Some of the methods considered are improved wing shapes, special surface coatings and winglets. Engine performance is a third major area of concern. Advances made in aircraft engine technology, including improved components and the use of higher temperatures and pressures, could mean a reduction of 20 percent in fuel usage. Weight reduction is also important. In addition to the use of composite materials to reduce weight, advanced computer-directed flight controls are being tested.

Thanks

Dalma C. Johnson wishes to thank those who planned, attended, and contributed to his retirement party. "The photo album, gifts, well wishes and most of all the friends at NACA/NASA will always be cherished," he said.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

TIDEWATER DINNER THEATER is featuring "Cotton Club Cabaret" through February 20. Discount tickets, $14.75 weekend and $13.75 weekday, are on sale at the Activities Office.

BUSCH GARDENS season passes are on sale for $39 each at the Activities Office through January 31 or until passes are sold out. The cost includes three coupons for upcoming events.

PATRIOT PASSES. One-year admission tickets to all Colonial Williamsburg exhibition buildings, craft shops, bus service and Carter's Grove Plantation are available at the Activities Office for $20.50/adults and $10.50/children.

"MACBETH." One of the "grandest" of the grand operas, Verdi's "MACBETH," will open at 8 p.m., Jan. 21, at the Virginia Opera Association's Center Theater in Norfolk. Additional evening performances will be Jan. 26 and 28; Sunday matinees, performed at 2:30 p.m., will be Jan. 23 and 30. Ticket prices range from $10.50 to $23. For reservations call the VOA box office at 623-1223.

SPACE SHUTTLE ART EXHIBITION documenting the development of the Space Shuttle project went on view Dec. 1 at the Smithsonian's National Air and Space Museum.

The exhibition, entitled "The Artist and the Space Shuttle: Selections from the NASA Art Program," features approximately 100 works of art, including drawings, water colors, gouaches, acrylics and oils, that were inspired by various aspects of the Shuttle project. Works include scenes from pre-flight preparations for the first Space Shuttle flight in 1977 to the landing of the Fourth Shuttle Flight on July 4, 1982.

MOVIE THEATER TICKETS for Newmarket South are on sale for $2.35 each at the Activities Office.

CONSUMER SAVER COUPON BOOKS, good for various restaurants and activities through December 31, can be purchased at the Activities Office for $10.50 each.

FEDERAL ALMANACS can be ordered at the LAA Office until February 1. The cost, $2.75, must be paid when order is placed.

DISCOVERY, a human relations group for single people meets the second and fourth Friday of each month at the Unitarian Fellowship of the Peninsula, 415 Young's Mill Lane, Newport News at 7:30 p.m. Group discussions are preceded and followed by a social time. The topic for discussion tonight is: "How am I discovering what stereotypes in human relationships affect my life -- family, female, male, single, couple, minorities? How do I feel when I am stereotyped?" All singles are welcome. Bring cheese, crackers, or beverage to share. Charge for attendance is $1. For more information call 877-5791.

SKI NASA '83. Come and enjoy a day of trouble-free skiing in the mountains of Virginia for one low price. The trip cost is $37, $7 less with own equipment and lift ticket. Make checks payable to Richard Bennett, Mail Stop 397, or 11 Bosch Lane, Newport News, Va. Your check reserves your trip. The trips are open to all NASA employees, contractors and their friends. For more information, call 599-5585. Upcoming trips include:

Feb. 3 . . . . . Bryce Mt.
Feb. 10 . . . . . Homestead

NASA EMPLOYEES are entitled to half price $3 tickets to see the William and Mary vs. James Madison basketball game tomorrow at 1 p.m. Employees must present a NASA badge when purchasing tickets at the William and Mary Hall ticket office.

COUPLES COMMUNICATION RETREAT, sponsored by the Peninsula Y.W.C.A., provides an opportunity to discover new ways of communication effectiveness for participating couples. Carl L. Cooper, a liscensed professional counselor, will lead the retreat on Feb. 25–26 at the Ramada Inn, J. Clyde Morris Boulevard. A $60 fee pays for each couple's workshop, lodging and meals. Pre-registration is necessary since the retreat is limited to 15 couples. For more information, call Virginia Reynolds, 245-6026.

SKI HEAVENLY VALLEY, Lake Tahoe, on Feb. 28 through March 6 for $655/quad. The fee includes roundtrip airfare, six nights at the Lake Tahoe Inn, six day lift ticket and gratuities. An optional MAP plan is available at approximately $22 a day. For more information, call Norman Willey, ext. 3987.

WORLD WAR I AND II RELICS SOUGHT, The Syms-Eaton Museum is seeking to enlarge its collection of World Wars I and II objects which are specifically related to Hampton and the environs of Elizabeth City County. Historic items including photographs, documents, diaries, and letters of service personnel and home-town units' activities here and overseas are wanted. Similar items from Hampton or County-based units are sought. In addition, other artifacts directly related to Hampton and Elizabeth City County and its communities of the time are needed to better interpret Hampton's participation in these wars. Those who wish to donate such items should call Kingston Winget, Curator of the Syms-Eaton Museum, at 723-1776, 723-1779, or 727-6248.

BALLET "The Sleeping Beauty" will be presented by the Newport News Ballet Company at 2:30 p.m., Feb. 6, in the Warwick High School Auditorium. Children of all ages will enjoy the performance, which is sponsored by the Newport News Branch AAUW for the benefit of the Educational Foundation. All tickets are $2 and will be available at the door.

SEMINARS FOR SEPARATED/ DIVORCED MEN AND WOMEN, co-sponsored by the Peninsula YWCA and Christpher Newport College, will be held at 7 p.m. every Friday night from Jan. 28 to Mar. 25 at Christopher Newport College, Newport Hall, Room 115. The nine seminars are designed to help individuals cope with dissolving relationships. A $10 fee covers the cost of all nine seminars. Refreshments and baby-sitting services are offered. To register for the seminars, call Virginia Reynolds at 245-6026.

ASM. The American Society for Metals will meet February 14 at the Hampton Elks Lodge. A social hour will begin at 6:30 p.m., followed by dinner and the program. The guest speaker will be Carl Moody, who will discuss "Personal Computers." Call Bill Ossa, ext. 2262, for reservations.

SHUTTLE PASSES. Witness the spectacular launch of the Space Shuttle as Challenger makes her maiden voyage, planned for mid March. Car passes are available for families to view the launch from the Kennedy Space Center. To receive passes, call Ann Suit, ext. 3341.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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FOR SALE

Articles

Sofa: Traditional-style with moss green tweed upholstery, extra fabric included, $100; double bed box springs and mattress, $75; slotted Mag Rims, size 14x7, $40; Kraco CB radio, GC, microphone wire needs repairing, $50; Royce power CB microphone, desk model, $30. Call 898- 5113, after 5:30 p.m.

Vehicles

1972 Chevrolet Impala, $400. Call Oehman, 723-7323.

FOUND

Black and gray glove found in parking lot at Building 1268A. Call Natalie Johnson, ext. 3026, to identify.

WANTED

One additional person to carpool from Norfolk to West Area on 7:30 shift. Group meets in Bayview area of Norfolk. Call Hudgins, ext. 3072.

LOST

Book: "Can Seo" — a BBC Publication. Call C. H. Wilson, ext. 4571.

Retirement Party

Dwight G. McSmith, Operations Support Division will be honored with a retirement dinner Saturday, February 19, at 6 p.m. in the Activities Center. Steam-boat round meal will be $10 per person/$18 per couple, which includes a gift contribution. For reservations, send check to Huey Carden or James Richardson, Mail Stop 495, no later than February 11.

Farewell Party

Sue R. Orr, Transonic Aerodynamics Division and **Harry D. Orr, III**, Atmospheric Sciences Division, who are leaving NASA to start a vineyard and winery in Tennessee, will be honored with a "Grow Grapes" party at the Activities Center on Feb. 16 from 4:30 to 7 p.m. The $5.50 price per person includes heavy snacks and gift contribution. There will be a cash bar. For reservations please send check to Jean Foster, Mail Stop 339; Pat Reagon, Mail Stop 359; or Barbara Gormsen, Mail Stop 401A, by Feb. 7.

cafeteria menu

WEEK OF JANUARY 31 — FEBRUARY 4

MONDAY: Seafood Gumbo; Meatloaf; Chicken Pot Pie; Trout Almondine. Snack Bar: Chicken NASA; Ham & Cheese Club.

TUESDAY: Minestrone Soup; Chicken Parmigian; Beef Short Ribs; Knockwurst & Sauerkraut. Snack Bar: Rib-B-Q; Hot Beef; Pizza.

WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; Baked Filet of Flounder; Braised Beef & Vegetables. Snack Bar: Polish Sausage; Turkey Club; Taco.

THURSDAY: Navy Bean Soup; Braised Chicken Livers; Beef Pot Pie; Monte Cristo Sandwich. Snack Bar: Knockwurst; B.L.T.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Macaroni, Franks & Cheese; Pot Roast. Snack Bar: Chicken NASA; Oyster Sandwich.

WEEK OF FEBRUARY 7 — 11

MONDAY: Vegetable Beef Soup; Crab Foo Yung; Chuckwagon Steak; Quiche Lorraine. Snack Bar: Hot Smoked Sausage Sandwich; Turkey Club.

TUESDAY: Chicken Noodle Soup; Baked Lasagna; Beef Liver & Onions; Chicken Croquettes. Snack Bar: Hot Italian Sausage; Chuckwagon.

WEDNESDAY: Fresh Vegetable Soup; Veal Parmesan; Chicken & Dumplings; Salmon Loaf. Snack Bar: Ham & Cheese Club; Hot Beef; French Bread Pizza.

THURSDAY: Seafood Gumbo; Braised Chicken Livers; Beef, Maraconi & Tomatoes; Fried Oyster Platter. Snack Bar: NASA Sub; Rib-B-Q; Taco.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chopped Steak; Chicken Tetrazzini. Snack Bar: Polish Sausage; Hot Turkey Sandwich.

— photo by Hubert Lloyd

For years, the Alchemist have been trying to win a championship. In 1982, they finally did it. Loosing four games during the regular season, the Alchemist went on to win the NASA Basketball Association tournament. Contributing to the championship were (Front Row): Phil "Rebound" Robinson, Ricky "Clutch" Clark, John "The Bullet" Barrick; (Back Row): Dean "The Dream" Springfield, Scott "Killer" Kjelgaard, Steve "Jolting" Johnson, Terry "Sinker" St.Clair and Brian "Jumper" Jensen.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 3 February 11, 1983

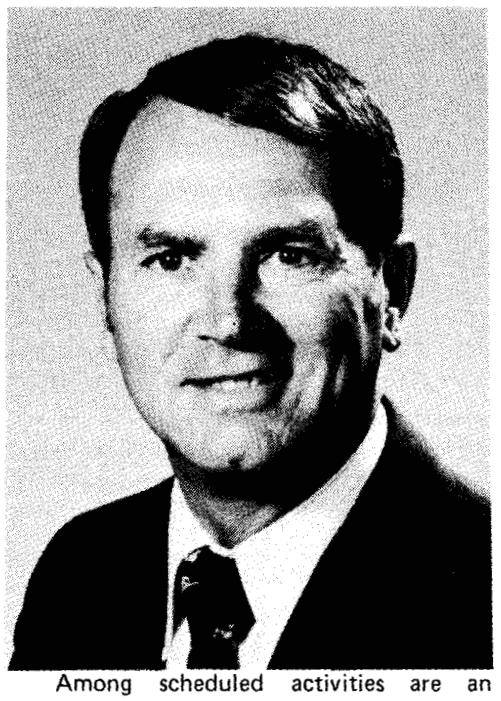
Peninsula Engineer of the Year

Harris to be Honored During Engineers Week

Roy V. Harris, Jr., Chief of the High-Speed Aerodynamics Division, has been named Engineer of the Year by the Peninsula National Engineers Week Committee.

Harris' award will be presented at a dinner dance February 26 which will highlight the Peninsula's observance of National Engineers Week. Harris, who joined the Langley staff in 1958 as a research engineer in high-speed aerodynamics, was nominated by the local chapter of the American Institute of Aeronautics and Astronautics.

National Engineers Week, February 20-26, has, since 1951, been traditionally observed during the week of Washington's birthday to celebrate the first president's civil engineering background. This year's theme, "Engineers: Turning Ideas into Reality," will focus on familiarizing the public with the work of engineers. Steve Yaros, local chairman of the event, commented recently that activities in the Peninsula area "will be proof of what a creative career in engineering can be." The annual celebration is sponsored by the [illegible] Society of Professional



Among scheduled activities are an Engineers Week Seminar, sponsored by AIAA, Wednesday, February 23, at the Activities Center at 7 p.m. The theme of the seminar is "General Aviation," and the target audience is the general community with special emphasis for middle and high school students and college students with mathematics and physics backgrounds.

A series of lectures and film presentations will be made at Hampton, Newport News, Poquoson, York County and Peninsula Catholic High Schools. Topics to be presented by engineer role models include computer design, engineering careers, and engineering educational requirements. There will also be a Career Day for local high school students at the Langley Research Center. (See related story on page 3.)

Engineers Week will conclude with the dinner dance beginning at 6 p.m., February 26, at the Langley Air Force Base NCO Club. The guest speaker for the evening is former Langley manager, Dr. Walter B. Olstad, who is Associate Administrator for Management at NASA Headquarters.

Harris' award will not be his first. Past commendations have included the AIAA Lawrence Sperry Award and the NASA Special Achievement Award for Exceptional Service in 1968 for his [illegible] which led to "a significant [illegible] for the

– photos by Bill Salyer

Langley Director Don Hearth presented 40-year service awards to these Langley employees January 28. Receiving awards during the special ceremony are Dwight G. McSmith, Operations Support Division; George E. Theil, Flight Electronics Division; Earl F. Stahl, Operations Support Division; and Evelyn D. Wallace, Management Support Division. McSmith, who retired January 31, is the youngest person to have worked at Langley for 40 years. He came to work in October 1942 at the age of 16.

Harris Honored

Continued from page 1.

Fellow. In 1980 he was elected by the entire AIAA membership to serve as a Technical Director for the institute and member of its Board of Directors and Technical Activities Committee.

Harris has served as Chief of the High-Speed Aerodynamics Division since October 1974. In this capacity, he plans, directs and coordinates the center's research programs in turbulent drag reduction, supersonic and hypersonic aerodynamics, hypersonic propulsion [illegible] computational [illegible]

Officer assigned to NASA. He was appointed Head of the Advanced Configurations Branch in 1973, where he served until appointed to his present position.

Harris and his wife, Mary Sue, have two daughters.

Offices Move

It Really Does Work!

The National Transonic Facility passed its first cold test with flying colors! Monday after a 12 hour cooling period, tunnel temperature was successfully lowered to -250° F.

According to Moses J. Long, NTF Project Manager, "We feel that the first cooling test of the tunnel [illegible] outstanding [illegible]

Langley Colloquium

Baals Discusses Winds of Change

A chronicle of the Langley Research Center wind tunnels will be presented by Donald D. Baals, a Distinguished Research Associate, at a Langley colloquium Monday, February 14.

Baals' lecture, "The Winds of Change," will be held in the Activities Center at 2 p.m. A question and answer session will follow the lecture and the speaker will be available at 3 p.m. for an informal discussion in the Langley Room.

In his presentation, Baals will trace wind-tunnel development from the first wind tunnel of Frank Wenham in England in 1871 through the pioneering wind tunnels of the Wright Brothers, Eiffel, Prandtl and the NPL on to the genesis of NACA Wind Tunnel No. 1 in 1919.

Baals said the succeeding two decades of NACA wind-tunnel development represent an era of unparalleled advance and discovery. From Wind Tunnel No. 1, a facility one decade behind its time, NACA, within three years, boldly introduced the Variable Density Tunnel. This revolutionary facility, according to Baals, literally leap-frogged the technical capabilities of the rest of the world and established the fledgling NACA in the forefront of aeronautical research never more to be headed. In quick sequence followed the huge Propeller Research and Full-Scale tunnels, early transonic induction-powered facilities, the Spin and Free-Flight tunnels, the unique Low-Turbulence Tunnel and the 19-Foot Pressure Tunnel.

The period from 1919 to 1939 covers a fascinating era from the stick and fabric aircraft of World War I through the developmental period of the DC-3, B-17 and the fighters of World War II. Yet during the dynamic period of the early 1930s, Baals said the Langley staff numbered only about 250 — a remarkable commentary on the effectiveness of these aeronautical pioneers and their early wind tunnels.

Baals' 35-year career with Langley included research on high-speed air inlets and ram-jet propulsion in the 8-Foot High-Speed Tunnel, work on the design of the 4-Foot Supersonic Tunnel, Assistant Chief of the Full-Scale Research Division, and project engineer for the Transonic Research Tunnel which evolved into the National Transonic Facility. He was also associated with the Unitary Plan facilities and variable-sweep aircraft.

The author or co-author of over 50 technical reports, he is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is the author of "Wind Tunnels of NASA" and has received many awards for his research on and contributions to wind tunnel development, such as the NASA Medal for Exceptional Service and the NASA Public Service Award. He is past president of the Engineers Club of the Virginia Peninsula and the Torch Club of Hampton Roads. He is a member of the Institute of Aeronautical Sciences and the AIAA Technical Committee on Aircraft Design.

He received a bachelor of science degree in aeronautical engineering in 1938 and a master of science degree in engineering in 1939, both from Purdue University.

Career Day Scheduled at Langley

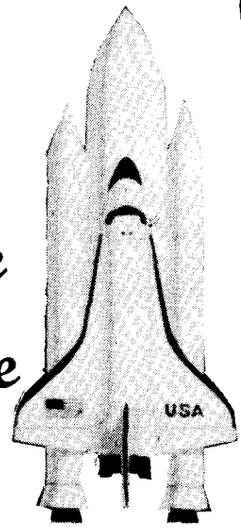
Peninsula high school seniors will visit NASA's Langley Research Center February 24 to take part in the ninth annual "Career Day," held in association with National Engineers Week.

Approximately 300 seniors who are interested in engineering will take part in the 9 a.m. to 12 p.m. program, designed to expose students to different engineering fields.

The program will be opened by Steve Yaros, chairman of the Virginia Peninsula Engineers Week Committee and an engineer at Langley. Yaros will introduce the guest speaker, Gary D. Shulenburg, Director of Engineering, Newport News Shipbuilding and Dry Dock Company, who will speak on "Opportunities and Challenges of an Engineering Career."

Following Shulenburg's talk, there will be a panel discussion, "Life as a Co-op," by engineering cooperative education students from NASA and the Newport News Shipbuilding and Dry Dock Company, a Space Shuttle film, and individual meetings with representatives from 18 Peninsula engineering societies and Langley engineers.

Space Shuttle Update



While checkout of the Space Shuttle Challenger's new engine continues, preparations are underway to reinstall the payload for STS-6.

The satellite, TDRSS-A, and its orbital transfer vehicle, IUS, are expected to be moved from the "white room" in the pad complex to the orbiter cargo bay early the week of Feb. 14, barring some unforeseen engine problem. TDRSS is short for Tracking and Data Relay Satellite System, and IUS is Inertial Upper Stage. IUS will boost the tracking satellite, the first of three scheduled for launch.

A decision is expected around the end of this week to commit to a firm launch date. March 7 has been mentioned, but "early March" was still the official word at press time. Launch plans were moved up a week or more after a third flight readiness firing was deemed unnecessary.

Challenger's number one engine was removed last week after a hairline crack was discovered in its main combustion chamber, following a second engine test firing to locate a troublesome hydrogen leak.

Earlier this week, technicians at KSC were busy removing the high pressure turbo oxidizer pump from the failed engine and installing it on the replacement engine transported from NSTL, in Mississippi. After that, putting the new engine into place and mechanically attaching it to Challenger was expected to take only about eight hours, but a continuing series of inspections are planned up to the beginning of countdown preparations which are loosely scheduled to begin in late February.

Behind the Scenes:

Equipment Management Section

A look at those people who provide support for Langley's projects and research programs. This is the last of a three-part series on the work of the Property Management Branch in the Management Support Division. Photos by William Salyer.

You probably don't know about the past life of your typewriter or your oscilloscope. Chances are you don't know who the Property Custodian is for Langley's $1 million Long Duration Exposure Facility (LDEF), scheduled to ride STS-11.

The Equipment Management Section in the Property Management Branch can tell you everything that has ever happened to your typewriter and oscilloscope since they were received on center, and who is responsible for LDEF. The staff in this section keeps "cradle to grave" records on the 31,000 items in Langley's personal property inventory.

"The eleven people on my staff are all very conscientious employees who work together as a team. They are very knowledgeable about their jobs and the policies that govern them--that makes my job easier."

Jeffrey A. Parker

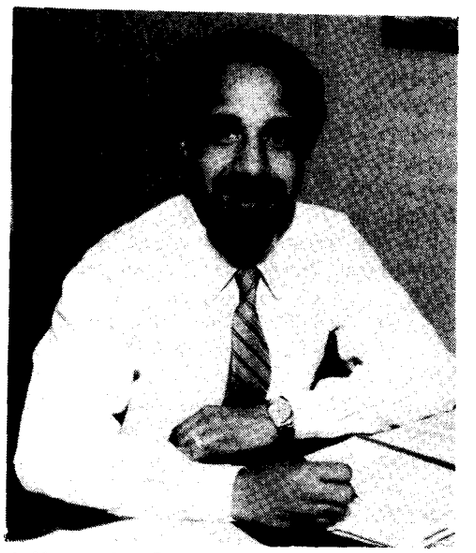
The center's diversified inventory, valued at approximately $184 million, includes items ranging from $50 calculators to computers worth hundreds of thousands of dollars.

According to Jeffrey Parker, Head of the Equipment Management Section, "The Equipment Management Section maintains detailed control and accountability records for all equipment at Langley. Our job is not only to know where the equipment is and who is using it, but also to implement and enforce NASA's equipment policies."

Through their automated record system (called "PACER") the staff in the section accumulates all data affecting controlled equipment and keeps up-to-date descriptive information on each item. This provides a clear concept of the status of every item from acquisition to disposal.

With spiraling costs of equipment and the reduction of funding, the key to the continuance of NASA's mission is the effective management of its equipment resources. Reemphasis of NASA's equipment program by upper management has spotlighted this section's contribution to helping Langley fulfill its mission.

To best serve the needs of the center, the section is divided into two areas: One area is completely staffed by NASA employees, while the staff in the other area is comprised of contractors.



Jeffrey A. Parker is the Head of the Equipment Management Section.

Supply Technicians in the section are (from left to right) Harry M. Webb Jr., Margaret T. Hall, Ira B. Tate, Nellie E. Freeman, James S. Coon and Brenda A. Williams.

Equipment Management

The seven Supply Technicians who work in the equipment management area are responsible for managing specific classes of equipment. These technicians determine what items qualify for inventory control, develop appropriate designations and descriptive information for each item, and establish property records in the computer system. Property records are kept updated in such matters as, location changes and property modification.

The technicians also coordinate custodial accountability for items with the Instrument Control Office.

In addition to managing specific classes of equipment, each technician performs a variety of specialized activities. James S. Coon coordinates all PACER input and output, schedules computer runs, and reconciles equipment acquisition costs with financial management data. Mary B. Gauthier operates Langley's office machine pool and is the Technical Monitor on all office machine service contracts.

Industrial Property Office

— *photo by Bob Nye*

Dollie M. McCown and Anna J. Lockard are the Industrial Property Specialists for the Property Management Branch.

The Industrial Property Office in the Property Management Branch serves as the focal point for all Langley's contract property management matters. Ann J. Lockard and Dollie M. McCown manage and coordinate contracts for government property furnished to contractors and for the property that contractors purchase at Langley's expense.

When large amounts of government property are provided to a contractor, the Acquisition Division often requests that Lockard and McCown participate in pre-award and post-award orientation sessions with contractor personnel. When appropriate, they also make recommendations to source evaluation boards and performance evaluation boards about property management.

Through communication with DOD Property Administrators, the IPO keeps fully informed about contractor performance.

The IPO is responsible for monitoring 16 facilities where the amount of government furnished property exceeds $100,000. They issue modifications to existing facility contracts and negotiate new contracts as required. Vought Corporation in Dallas, Kentron in Hampton, Wyle Laboratories also in Hampton, and Modern Machine in Newport News, are just a few of the contractors who hold facility contracts with Langley.

Along with the facility contracts, the office maintains contract property files for all transactions and correspondence associated with the service contracts and the research and development contracts. Langley has approximately 400 active contracts and 412 grants. The office also handles close-out responsibilities for government property.

In addition to their other responsibilities, Lockard and McCown approve and process all shipping documents to determine if the property will be on loan, or returned to a vendor for repairs, or furnished under a contract or grant. They also prepare documents for transfer of property accountability.

It is also the IPO's responsibility to assure that returned property is properly documented so the contractor or grantee is relieved of responsibility for the property, and so Langley's records are updated.

Lockard and McCown work to make contract property management a viable and effective area at Langley.

Margaret T. Hall coordinates all property custodian activity including transfers of equipment between organizations. Ira B. Tate investigates equipment found on the center, performs equipment utilization reviews, and determines tagging criteria for all systems.

Harry M. Webb Jr. is the section's computer operator. He is responsible for developing and documenting all computer programs. Brenda A. Williams maintains control of incoming documents, codes and approves all purchase requests and processes property disposition requests for the section.

Nellie E. Freeman supports all the Supply Technicians' work and is currently reorganizing the Property Custodian and Office Machine Repair files.

Equipment Inventory/ Visibility

Would you like to conduct an inventory so comprehensive that it takes three years to accomplish? When you have finished, how would you like to start all over again?

That is exactly what the Equipment Management Section's inventory team does. Steve Angelo, Joyce Harrell, Waverly Collins, Winnie Fennell and Earl Quinn are Klate-Holt employees who conduct a three-year cyclic inventory of Langley's controlled equipment and initiate adjustments of Langley's records. This group also operates the Equipment Visibility System Data Center which provides information about the agency's more expensive equipment items.

The staff in this area also screens all equipment acquisitions exceeding $1,000 against equipment available at other NASA centers.

In addition to their other responsibilities, they obtain inventory certificates from borrowers of government property, and they conduct annual sensitive items reviews.

Klate-Holt employees on staff in the equipment inventory area are (front row) Winnie Fennell and Joyce Harrell, second row, Steve Angelo, Earl Quinn, Supervisor, and Waverly Collins.

National Scout Week, February 6 - 12

The Spirit of Scouting:

Living the Oath and Doing a Good Turn Daily

(Editor's note: Excerpts from "The Story of a Good Turn" were taken from "The Official Boy Scout Handbook.")

"On a foggy day in 1909, a British Boy Scout guided an American businessman, William D. Boyce, to his destination and refused a tip for his Good Turn. The boy told the American about himself and his brother Scouts. Boyce, impressed with the boy's spirit, later visited the British Scout office, where he met Baden-Powell, the famous British general who had founded the Scouting movement. Boyce was so excited about what he had learned that he decided to bring Scouting home with him.

"And so, on February 8, 1910, in Washington, D.C., Boyce and a group of outstanding men founded the Boy Scouts of America. Ever since then, this day has been known as the birthday of Scouting in the United States.

"One Good Turn to one man became a Good Turn to millions of American Boys. Such is the power of a Good Turn. . . ."

Today, a Good Turn is still being done, right here at Langley, where sixteen employees are Scout leaders in their community. This week is National Scout Week, and therefore an appropriate time to recognize these volunteers who give their time as Scoutmasters, teaching boys to live the Scout Oath. These leaders are devoted to Scouting and are dedicated to helping Peninsula boys earn skill awards, merit badges and badges of rank, to achieve the highest goal, the dream of most every Scout — Eagle.

SCOUT OATH

On my honor I will do my best
To do my duty to God and my country and to obey the Scout Law;
To help other people at all times;
To keep myself physically strong, mentally awake, and morally straight.

Whether they're new Tiger Cubs, Cub Scouts, Boy Scouts or Explorers, Scouts are pledging to honor God, country, other people and themselves. Throughout the ranks, Scouts learn to abide by the Oath and other Scout rules, while takling many difficult projects and the leaders are there to help make the road to Eagle a little easier.

David Duxbury, who is Cubmaster and Assistant Scoutmaster for about 60 boys in Troop 159, said that at the Cub Scout level, the boys work to develop their skills and to be good citizens. "The first several years of Cub Scouts are full of family-oriented activities. Parents actually work with the boys in various skills, such as building models of cars, boats and rockets," Duxbury explained. "We give them a flavor of competition through racing contests. This helps the boys build confidence in themselves. We help them focus on family, citizenship and self--individuals working with peers, family, adult leaders and the pack family."

Moving up to Webelos, the boys are exposed to some camping and other Boy Scout activities; leaders encourage them to strive toward the Scout rank.

Duxbury finds being a Cubmaster very rewarding, especially when he sees his boys earn the Arrow of Light Award, which is the highest Cub award and the only one transferrable to the Boy Scout uniform.

Carl Horne thinks the Boy Scouts Program makes better citizens out of the boys. "We stress citizenship," said the Scoutmaster of Troop 13, "and the first requirement for the Tenderfoot rank is earning the citizenship skill award. We approach it with the idea that if the boys follow the Scouting program, they will become a benefit to their community and to the nation in the future. By 'Doing a Good Turn'--by the deeds they perform--they will be doing their duty to God, country, others and to themselves." Horne said Scouting does emphasize the "good ole American way" and it keeps boys active for a good cause.

"Scouting has to be emphasized at a very young age," said Leonard Mayo, who heads Troop 151 with 31 boys. "Few boys come into the program as teenagers. The boys who went through some of Cub Scouts and Webelos, tend to go further in advancement. More of the boys that make Eagle also made Arrow of Light in Webelos." Mayo estimated that 17 boys in his troop have earned the Eagle rank, and he tries to hold on to the Eagle Scouts to make them Junior Assistant Scoutmasters. "It takes a dedicated boy to stick with Scouting, because there are so many school activities that compete with the program. But the program has improved and expanded tremendously over the past few years," said Mayo.

Continued on page 7.

Jeffrey Woodcock, of Charles Soloman's Troop 29, recites the Boy Scout Oath during the Court of Honor Ceremony Jan. 10. Woodcock, who has been a Boy Scout since July 1977, was elevated to the rank of Eagle Scout during the ceremony. Pictured with him are Life Scouts Brad Drummond and Patrick Powell, who expect to achieve the Eagle rank later this year.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

CIRCUS. The Activities Office has tickets for the Ringling Brothers, Barnum and Bailey Circus to be held March 2, 3 and 4 at Norfolk Scope. Tickets are $1.50 off selected performances.

LITERACY COUNCIL RECEPTION. Are you interested in helping others learn to read? Come to a Community Reception Saturday, Feb. 19, 1983, from 2:30 to 4:30 p.m. at Newport News Shipbuilding. Virginia's first lady, Lynda Robb, will greet the guests. Free tickets are available from the Peninsula Literacy Council, 1520 Aberdeen Road in Hampton or call 838-5300. If you can read, you can teach another person to read!

SKI NASA '83. Come and enjoy a day of trouble-free skiing in the mountains of Virginia for one low price. The trip cost is $37, $7 less with own equipment and lift ticket. Make checks payable to Richard Bennett, Mail Stop 397, or 11 Bosch Lane, Newport News, Va. Your check reserves your trip. The trips are open to all NASA employees, contractors and their friends. For more information, call 599-5585. Upcoming trips include:

Feb. 17 . . . . . Massanutten
Feb. 24 . . . . . Wintergreen

HONEY BUNCH. The NASA-Langley Apicultural Club will meet Monday, February 14, 1983, from 7 to 9 p.m. in Room 180 of Building 1209. After a brief business meeting, Frank Fulgham, Eastern Virginia Bee Inspector, will present a program on spring management, basic beekeeping and strains of bees.

CAMP NIMROD. Consider Camp Nimrod for your son or daugther 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, Feb. 20 at 2:00 p.m. for a "get acquainted" party and slide presentation. For further information, applications and camp brochures, call Ann Jobson, 596-9540.

SKI CANADA. Four complete days, March 4-7, of skiing at Canada's Mont Tremblant and three nights lodging at the "Chalet des Chutes" for $207 quad, $237 double. Trip fee includes transportation, four day lift tickets, and three breakfasts and dinners. Ski rental price is $27. For more information, contact Norman Willey, Mail Stop 386.

LANGLEY HISTORICAL SOCIETY will meet Feb. 16 from 11:30 a.m. to 12:30 p.m. in the Chesapeake Room of the Langley Air Force Base Officers' Club. The guest speaker will be Dr. Wilma Hunter, associate professor of history, Hampton Institute. In recognition of Black History Week, her subject will be "Hampton Institute's Farm at Shellbanks." Everyone is invited to attend. For further information, contact Lt. Col. Gene Alfaro, 595-9300.

Mickey G. Rowe, Assistant Chief, Analysis and Computation Division, crosses the finish line in the 1982 Marine Corps Marathan held recently in Washington, D.C. This was the second time Rowe has participated in the 26.2 mile race, finishing both times.

RUNNERS' CLUB EVENT. The Runners' Club has set Saturday, February 26, as a tentative date for its 10-mile event. Starting time, course and format will be announced in the next *Researcher*.

The Spirit of Scouting

Continued from page 6.

Horne said the leaders push the boys up until they get their First Class rank. "After that, they pretty much have to work it themselves; they have to show initiative," he said. "We can't force them to achieve, but we can guide them as they progress--and we definitely do that."

Mayo explained that developing boy leaders is of upmost importance to the Scoutmasters. "It is a big transition from Cub Scouts to Boy Scouts. In Cubs, adults were leaders; now Boy Scouts are the leaders. Adult leaders must plan a program that will develop the boys to be leaders--and that will include doing all those things in the Oath. Their duty to God is accomplished by practicing the good deeds and doing projects to become good citizens. All this ties into one--Boy Scouts--becoming Boy Leaders.

Cubmasters not quoted here are Roy Tate, John Tanner and Fred Morrell. Other Scoutmasters working at Langley include Ashby Lawson, Bill Kahlbaum, Tom Freeman and John Shoosmith.

Scouting has managed to attract older boys and girls into Explorer posts, sponsored by private business, industry and government. Many agencies have a genuine interest in the youth and see the Explorer Scouts program as training grounds for future employees.

Langley sponsors an Explorer Program for Peninsula high school students. The students with career interests in the sciences, engineering and technologies have the opportunity to learn first-hand about these careers and to reinforce or broaden their career objectives.

Explorer Advisers are Joanne Walsh, Bob Mack, Art Hayhurst and Richard Paquin.

This article recognizing Scout leaders and National Scout Week would not be complete without mentioning that many other Langley employees, both men and women, serve as Assistant Scoutmasters, committee members and council workers. They, too, are devoted to carrying on the tradition of Scouting and graciously volunteer their time to the Boy Scouts

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swap and shop

FOR SALE

Articles

Sofa: Traditional-style with moss green tweed upholstery, extra fabric included, $100; double bed box springs and mattress, $75; slotted Mag Rims, size 14x7, $40; Kraco CB radio, GC, microphone wire needs repairing, $50; Royce power CB microphone, desk model, $30. Call 898- 5113, after 5:30 p.m.

FOR RENT

Sandbridge: Cottage. Three bedrooms, AC, phone, liv. din. kit., washer, dryer, 50 yards from ocean, $450 wk., reservations limited. Call Kent 420-8391.

WANTED

One additional person to carpool from Colonial Place/Riverview area of Norfolk to West area on 8 a.m. shift. Call Dan Giesy, ext. 4591 or 625-7558 (Norfolk).

Personnel interested in forming a Bass Club at NASA-Langley, please contact Dick Hartman, 887-3395, or Brian Pierce, 595-7072 after 4:30 p.m.

The person who borrowed the library copy of the book **Introduction to Microprocessors, Hardware, Software and Programming** by Lance A. Leventhal, please contact Jose A. Oritz, ext. 3535, Mail Stop 473.

Retirement Parties

Thomas C. O'Bryan, Low-Speed Aerodynamics Division, will be honored with a retirement dinner Wednesday, March 2, at 6:30 p.m. at the Fort Monroe Officers' Club. The Beef and Burgundy dinner will cost $10 per person, which includes a gift contribution. For reservations send check to Don Riley or Nadine McHatton, Mail Stop 355, no later than Feb. 22.

Wesley Berryman, Research Information and Applications Division, will be honored with a retirement party March 2 in the Activities Center from 4:30 to 7:30 p.m. The cash bar social costs $6 per person including gift. Contributions for gift only will be accepted. Make reservation and send payment to Skip Watson, Mail Stop 426, by February 25.

cafeteria menu

WEEK OF FEB. 14 — 18

MONDAY: Cream of Celery Soup; Beef Enchiladas; Bacon & Cheese Omelette; Turkey Breast Nuggets. Snack Bar: Hot Italian Sausage; Turkey Club.

TUESDAY: Beef & Barley Soup; Spaghetti Dinner; Chicken a la King; Salisbury Steak. Snack Bar: Chicken NASA; Taco; Knockwurst.

WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; Knockwurst Reuben; Pepper Steak & Rice. Snack Bar: Ham & Cheese Club; French Bread Pizza; ¼ lb. Cheeseburger.

THURSDAY: Ham & 3-Bean Soup; Braised Chicken Livers; Seafood Quiche; Swedish Meatballs w/Noodles. Snack Bar: NASA Sub; BLT.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Grilled Ham Steak; Roast Beef au jus. Snack Bar: Polish Sausage; Rib-B-Q Sandwich.

WEEK OF FEB. 21 — 25

MONDAY: *Have a Happy Holiday!!*

TUESDAY: Old Fashioned Bean Soup; Sausage Cassoulet; Swiss Steak; Baked Filet of Trout. Snack Bar: Rib B-Q; Taco; Chuckwagon.

WEDNESDAY: Vegetable Soup; Braised Beef & Noodles; Polish Sausage & Sauerkraut; Fried Breast of Chicken. Snack Bar: Chicken NASA; ¼ lb. Cheeseburger; Polish Sausage.

THURSDAY: Chicken Noodle Soup; BBQ Beef over Rice; Braised Chicken Livers; Veal Cordon Bleu. Snack Bar: Knockwurst; Ham & Cheese Club; French Bread Pizza.

FRIDAY: Bull Island Clam Chowder; Fish Cake Dinner; Chicken Cacciatore; Meat Balls Stroganoff. Snack Bar: Oyster Sandwich; Turkey Club.

Holmes Wins

R. Kenneth Holmes, Analysis and Computation Division, won the January drawing for $20, offered to car pool participants by the Langley Exchange Council.

Lost friends of **William D. Deveikis** who recently retired from the Loads and Aeroelasticity Division, if you have an anecdote about Bill, or are interested in attending a wake for him February 28, please call 3424 or 3721.

Recent Retirees

Charles Pere, Operations Support Division, retired December 28, 1982.

David D. Kershner, Flight Control Systems Division; **M. Eloise McGehee**, Personnel Division; and **Kathryn H. Peddrew**, Transonic Aerodynamics Division, retired December 29, 1982.

The following Langley employees retired January 7, 1983.

James A. Zitzelberger, Facilities Engineering Division; **William H. Michael, Jr.**, Office of the Director; **William D. Deveikis**, Loads and Aeroelasticity Division; and **Lloyd E. Smith**, Operations Support Division.

Walter T. Pickrell, Facilities Engineering Division; **David F. Fromal**, Systems Engineering Division; **William N. Willoughby** and **Carl E. Copeland**, Fabrication Division, retired January 28.

Dwight G. McSmith, Operations Support Division; **John T. Craigs Jr.**, Acquisition Division; **Ashley B. Smith**, Facilities Engineering Division; **Robert C. Dreher**, Structures and Dynamics Division; **Wesley T. Berryman Jr.**, Research Information and Applications Division; and **Thomas C. O'Bryan**, Low-Speed Aerodynamics Division, retired January 31.

William R. Wade, Flight Electronics Division, retired February 3.

A Valentine for You

It's not so much the world outside
That makes us sigh or smile—
It's more the thoughts within our hearts
That make life seem worthwhile!
And often on a day like this,
I wonder if you guess,
How many times the thought of you
Has brought us happiness!

— Author unknown

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 4 February 25, 1983

Nguyen Receives AIAA Lawrence Sperry Award

Luat T. Nguyen, an aerospace technologist in the Low-Speed Aerodynamics Division has received the Lawrence Sperry Award for 1983.

The American Institute of Aeronautics and Astronautics annually

presents the award "for a notable contribution made by a young person to the advancement of aeronautics or astronautics."

The certificate of citation presented to Nguyen read, "for the development of control system concepts that have become widely accepted and used in current generation fighter aircraft for improving maneuverability and departure/spin resistance." Given to Nguyen at the AIAA 21st Aerospace Science Meeting in Reno, Nev., Jan. 11, the award, named in memory of a pioneer aviator and inventor who died while attempting a flight across the English Channel Dec. 13, 1923, also consists of a medal and rosette pin.

A member of the Langley staff since 1970, Nguyen leads a group of seven engineers conducting research on the high angle-of-attack flight dynamics of military and general aviation aircraft. Primary emphasis of the work is to advance understanding of high angle-of-attack phenomena and to develop aerodynamic and control-system technologies to provide desired flight characteristics in the stall/post-stall regimes.

A number of facilities and test techniques used in conducting this work include the 30- by 60-Foot Wind Tunnel, 12-Foot Low-Speed Wind Tunnel, Differential Maneuvering Simulator, General Aviation Simulator and the Radio-Control Helicopter Drop-Model Facility.

Nguyen, born in Viet Nam, came to the U.S. at the age of 9. He attended primary and secondary schools in Washington, D.C. He received a bachelor of science degree in 1969, and master of science and professional engineer degrees in 1970, all in aeronautics and astronautics, from the Massachusetts Institute of Technology. While in college,

Continued on page 2.

A LANGLEY CONFERENCE ON

SHUTTLE PERFORMANCE: LESSONS LEARNED

The initial Shuttle flights have generated a rather widespread activity to examine and analyze the data obtained. General objectives of this effort have been to certify the vehicle for operational use and to examine NASA's ability to predict the performance of a complex entry configuration.

A number of papers given at recent conferences have reported on some aspect of the Shuttle's flight performance and compared it to prediction or the pre-flight data base. As yet, however, a forum has not been specifically designated for a comprehensive review of this work.

To fulfill this need, Langley is sponsoring a conference, titled "Shuttle Performance: Lessons Learned," March 8-10 in the Activities Center.

The program includes two sessions each on launch and ascent performance, entry aerodynamics, and aerothermal environment; and single sessions on thermal protection system, guidance, navigation and control, and measurements and analysis techniques.

The conference is an opportunity for researchers from private industry, NASA and other government agencies to exchange information and ideas on the interpretation of data provided by the Orbiter Flight Test Program and to make a critical examination of the methods used to predict performance from wind-tunnel data and analytical techniques. Selected papers cover a variety of disciplines and aspects of the vehicle's performance.

Continued on page 2.

STS-6 INSIGNIA – This is the official NASA Insignia for the sixth Space Shuttle mission (STS-6). The sixth flight is represented by the hexagonal shape of the insignia and the six stars portraying the constellation Virgo. The sign of Virgo is also symbolic of the maiden flight of orbiter Challenger. Depicted above the spacecraft's open cargo bay is the combined Inertial Upper Stage and Tracking and Data Relay Satellite (TDRS).

Man Machine Anomalies, Colloquium Topic

A sizeable spectrum of evidence from many disciplines has suggested that human consciousness can influence the vehavior of physical systems or processes, according to Dr. Robert G. Jahn, Dean of the School of Engineering and Applied Science of Princeton University. This phenomena is called psychokinesis (PK).

At a Langley colloquium, Monday, March 14, Jahn will discuss "Man Machine Anomalies" at 2 p.m. in the Activities Center.

Although psychic phenomena have attracted man's attention throughout history, Jahn claims that systematic academic research has occurred only in the last 50 years. In his talk, Jahn will give an engineering perspective of the persistant paradox of psychic phenomena.

Visitor Center Offers Trip to Museum

The Langley Visitor Center is offering a one-day bus trip to the National Air and Space Museum in Washington, D.C., Friday, March 18. The trip is being sponsored to allow participants to see the Museum's "Twenty-five Years of Space Exploration" -- a special exhibition in honor of NASA's 25th anniversary.

In addition to the special anniversary exhibition and the opportunity to tour the Air and Space Museum, visitors will be able to see the museum's latest film, "Flyer." It tells the story of a former World War II Navy pilot who restores old aircraft and flies them for movie production.

The bus will leave from the Visitor Center at 7 a.m. and will return there by 9:30 p.m. The cost of the roundtrip bus transportation is $18. Meals are not included, though a dinner stop is planned.

Seating is limited and reservations are required. To make your reservation, phone the Visitor Center at 865-2855.

Nguyen Award

Continued from page 1.

he was a research assistant for the Center of Space Research at MIT. There he was responsible for the design and analysis of an automatic attitude orientation and stabilization system for a small space probe.

The author or co-author of 29 technical publications, Nguyen has received a Langley Special Achievement Award, two Langley Group Achievement Awards, and three NASA Group Achievement Awards. He was the co-recipient in 1979 of the H.J.E. Reid Award, given for the best Langley paper written that year.

Nguyen and his wife, Mimi, live in Williamsburg, Va. They have one daughter.

Shuttle Conference

Continued from page 1.

Co-chairman of the conference are James P. Arrington and Jim J. Jones. Session chairpersons from Langley include Bernard Spencer, Jr.; David A. Throckmorton; Howard W. Stone, Jr.; George M. Ware; Dr. Richard E. Snyder; E. Vincent Zoby; William L. Scallion; Harold R. Compton; and C. L. W. Edwards. Others on the conference committee are Bettie Messier and Richard W. Powell.

McIver Transfers

Duncan E. McIver, Jr. formerly Assistant Chief of the Flight Control Systems Division, has completed the Senior Executive Service Candidate Development Program and has accepted an SES position at NASA Headquarters. He is Manager of Control and Human Factors in the Office of Aeronautics and Space Technology.

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 115, telephone 3006.

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 following technical sessions are planned for Monday, February 28; the morning session will begin at 8:30 and includes a presentation by the Chief Scientist's Office.

SE&O

Overview
NTF Update
Nondestructive Evaluation

SPACE

Commonwealth Data Base Satellite Image Processing Capability
Operations Simulation in the Design of Future Space Transportation Systems

ELECTRONICS

Global Tropospheric Experiment: Instrument Intercomparison Workshop Summary
Studies of Atmospheric Ammonia (NH_3) and Nitric Acid (HNO_3)
Present and Future "DACOM" Applications in the Global Tropospheric Experiment Program

PROJECTS

Recent Configuration Studies
Long Endurance Airplane Parametric Study

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

AERONAUTICS

Status of Mach 4 Scramjet Engine Testing (U)
Inlet Research for Second-Generation Scramjet Concepts (U)

STRUCTURES

Metal Ion-Containing Epoxies
Airfoil Self Noise Generation

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

The March 28 review has been cancelled.

Landsat-4 Symposium Scheduled

The Landsat-4 Science Office will hold its "Scientific Characterization Early Results Symposium" at the Goddard Space Flight Center February 22-24. This symposium is significant in that it represents the first public release of information on Landsat-4 data (both Multispectral Scanner and Thematic Mapper) based on investigations being conducted by a select group of NASA, other Government agency, private industry and university experts.

Sessions will include presentation of early investigation results in the following program areas: radiometry, geometry and applications information.

For further scientific or technical information, please contact Dr. John L. Barker, FTS 88-344-8978 at Goddard. For information regarding registration (the symposium is open to the Landsat Community), please contact Judi Abraham, (301) 495-6071.

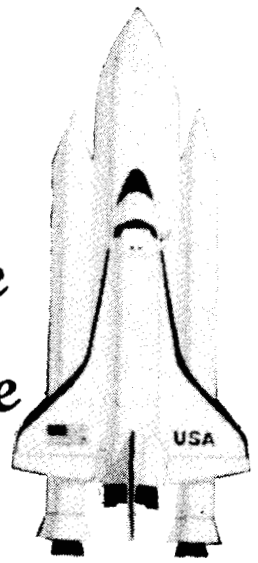
NATIONAL ENGINEERS WEEK BANQUET

Roy V. Harris, Jr., Chief of the High-Speed Aerodynamics Division, will be honored as Engineer of the Year at the Annual National Engineers Week Banquet at the Langley Air Force Base NCO Club February 26 at 6 p.m.

Dr. Walter B. Olstad, Associate Administrator for Management at the NASA Headquarters will be the keynote speaker. His topic will be "Engineers: Turning Ideas into Reality."

For further information and reservations, contact Dr. Karen Credeur, ext. 3467.

Space Shuttle Update



A new launch date, either March 19 or 20, has been set for Shuttle Orbiter Challenger's first flight. Although still not official, the new launch period fits with a tight schedule of preparation activities.

The new date was announced Feb. 22 by Lt. Gen. James A. Abrahamson, NASA Associate Administrator for Space Flight, at a news conference concerning the Orbiter main engines that have caused delays in the launch.

A spare main engine -- the second spare for Challenger -- was test fired for 500 seconds Feb. 15 at the National Space Technology Laboratories. Analysis of that firing revealed no problems with the engine. It was delivered to the Kennedy Space Center Feb. 25 for placement aboard Challenger.

Abrahamson also stated that the schedules for the seventh and eighth Shuttle flights will be compressed so that STS-9, scheduled to carry the U.S.-European Spacelab into orbit, can be launched on its original timeline this fall.

Papers Needed

The annual meeting of the Virginia Academy of Science will be held May 17-20, 1983, at George Mason University in Fairfax.

Langley papers are sought for the Aeronautical and Aerospace Sciences Section scheduled for May 19. Interested staff members are invited to submit 100-word abstracts to J. Unnam, Mail Stop 188B, or Bill Brewer, Mail Stop 226B, by March 4.

Personnel Profile

A Life of Work, Wood and Wheels -- And Other Important Things

by Allan C. Hanrahan

When you pass through the front doors of Building 1238B you are greeted by the fragrant aroma of freshly worked wood because you are entering the domain of the Fabrication Division's Composite Models Development Section where all work, minus the inevitable exceptions, begins with wood -- though the final result may be of anything but wood.

WILLIAM SKINNER JONES is an Engineering Technician in this section, as well as one of its many able craftsmen, but Skinner, as he is known, is also an easy-to-like Virginia gentleman with a penchant for bicycle racing -- the latter a sport that celebrates its one hundredth birthday this year. It was back in 1883, in Massachusetts, when a fellow named G. M. Hendrie defeated a Mr. W. G. Rowe in the first contest on record. Bicycle racing once enjoyed great popularity in this country and is beginning to do so again; in recent years it has experienced a revival. It has always been popular in Europe, and has been an official Olympic Games sport, called cycling, since 1896.

"It was in September of 1974 when I began riding a bicycle to work," reported the forty-five-old Jones, and it is a mode of transportation to and from work he still favors. The racing began in 1977, the same year he and some other cycling enthusiasts founded the James River Velo Sport Club, a Schwinn dealers-sponsored organization in which he has been very active as an officeholder, and presently serves as treasurer.

Skinner is also a member of the Peninsula Bicycling Club, "but I'm not active," he hastened to emphasize. In addition, he is a member of the United Cycling Federation and holds a license allowing him to race on road or track in the "Masters" class, age forty-five and up. The races cover between fifteen and twenty-five miles. While racing in the "Veterans" class, age thirty-five to forty-five, Skinner won three silver medals, one in 1978 and two in 1979. He was reluctant to attempt an explanation of bicycle racing. "It's very structured," he allowed, "and the races vary." He went on to mention that the lengths of the races is dependent on the age, primarily, but other criteria are used as well. The structure and rules and regulations notwithstanding, "It's really picking up quite a lot out here (at the Center)," Skinner noticed.

Skinner has been a Center member since September, 1963, when he entered on duty as a modelmaker apprentice. That was about five months after he and his wife Elaine were married, and their marriage has produced three children: Jeff, sixteen; Sherri, thirteen; and Melanie, eleven.

Skinner himself was born and reared in Culpepper, Virginia, graduated from high school there in 1956, and the following year began a stint in the Air Force.

Jones seems very much involved with his wife and children, and the entire Jones family is involved at the West Hampton Baptist Church where Skinner has served on a number of committees, as well as presently serving as deacon.

Skinner has a hobby or two for relaxation, but as he put it: "Between my family, the church, and the bicycling, I stay pretty active."

JPL Proposes Galileo Mission

The Jet Propulsion Laboratory has proposed that a second Galileo vehicle, built of spare parts and test systems from the initial Galileo vehicle, be assembled for a mission to Saturn.

NASA's Solar System Exploration Committee (SSEC) discussed the proposal at a February 8 and 9 meeting at Johnson Space Center.

The total cost of developing and launching the first Galileo spacecraft and probe, which is scheduled to be launched to Jupiter in 1986, is about $630 million. The second spacecraft and probe could be developed from available hardware and launched for additional costs of $100 million.

The proposed spacecraft would be launched in a delta vega trajectory, in which the spacecraft would make a single orbit around the Sun over a period of three years.

The trip to the planet would require a total of eight years.

New Research Program to Study Ways to Reduce Helicopter Noise

Helicopter noise will be the focus of a new research program that will study ways to reduce greatly noise and its causes in present and future helicopter designs.

The five-year National Rotorcraft Noise Reduction Program will be conducted as a joint government/industrial venture by NASA's three aeronautical research centers and the industry-sponsored American Helicopter Society (AHS). The U.S. helicopter industry will supplement the $10 million NASA program with its own helicopter-noise research efforts.

Noise has always been a significant concern with helicopters, but it was formerly considered to be an unwanted "side effect" of the unique design considerations of these aircraft.

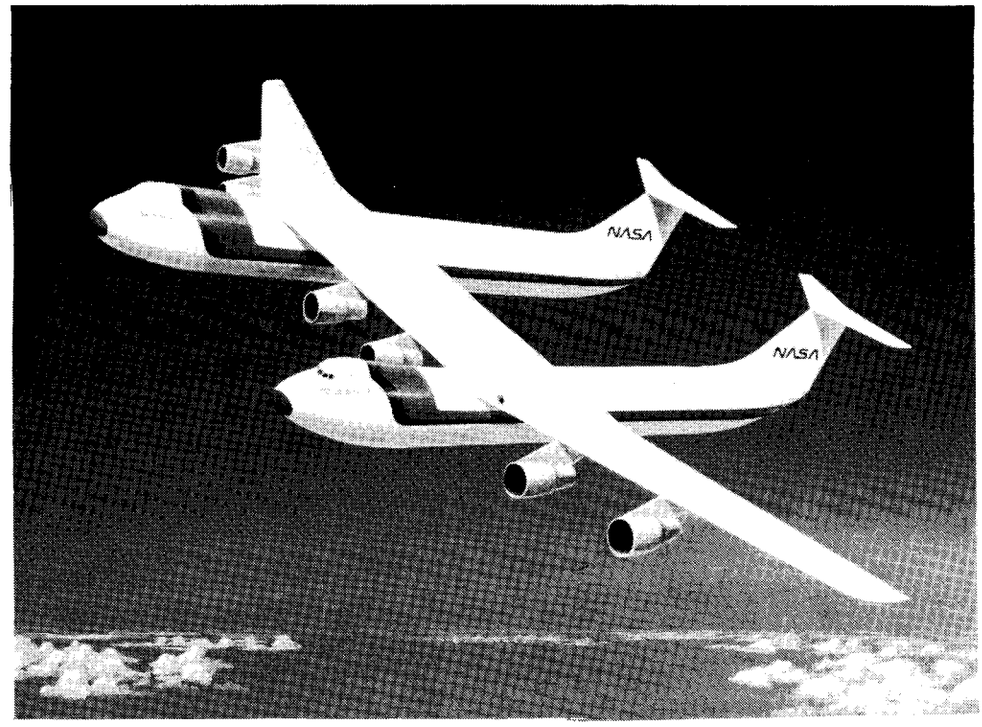
Because of concerns about the environment, the Federal Aviation Administration (FAA) is developing practical noise standards as a requirement in future civil helicopter design.

A government and industry agreement in the form of a "Declaration of Intent" to study and reduce helicopter noise has been reached through a Working Group on Rotorcraft Noise, composed of NASA, the AHS, the FAA and the Helicopter Association International. That agreement, signed on January 21, 1983, led to establishment of the new program.

Langley, Ames and Lewis Research Centers will work on different aspects of the noise abatement program, aided by the AHS and four major U.S. helicopter manufacturers: Bell Helicopter Textron, Dallas/Ft. Worth; Boeing Vertol, Philadelphia; Hughes Helicopter, Culver City, Calif,; and Sikorsky Aircraft, Stratford, Conn.

The research program will provide basic information to aid the development of helicopter noise prediction and reduction technologies and for noise certification criteria. It will also provide data to possibly supplement existing criteria for the location of heliports and for low-noise operational procedures.

Government funding for the five-year project will be provided by NASA's Office of Aeronautics and Space Technology, Washington, D.C. Additional resources will be provided by the U.S. helicopter manufacturers.



ADVANCED TRANSPORTS STUDIED. Large transport aircraft of the future may fly with two or more fuselages, according to a Lockheed-Georgia study. The aerospace firm was contracted by Langley to look into the feasibility of multi-body concepts. Langley's Dal Maddalon confirms that large multi-body transport aircraft can have lower drag levels, better fuel economy, increased flight endurance, lower operating costs, more part commonality and reduced loading time relative to a conventional airplane. The study indicated numerous research areas that have to be addressed in making such a design practical. As a result of the study, Langley is evaluating the handling characteristics of conventional, twin, three-body and span loader aircraft.

Runners Club Holds Handicap 10 Mile

The following are the starting times for the 10 Mile handicap run, scheduled on Saturday morning, Feb. 26.

Starting Time	Women	Men
10:00	Gliders & Props	
10:06	Prop*	
10:12	Prop**	
10:18	JET	Glider & Prop
10:24	JET*	Prop*
10:30	JET**	Prop**
10:36	Rocket	JET
10:42	Rocket*	JET*
10:48	Rocket**	JET**
10:54		Rocket
11:00		Rocket*

For further information, call Bill Woods, ext. 2483.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83-12 -- Supervisory Engineering Technician; GS-0802-10 or 11; Operations Support Division; Laboratories Operations Branch; Technical Support Section A; Closes March 7.

83-13 -- AST, Experimental Facilities and Equipment; GS-0801-14; Office of Director for Systems Engineering and Operations; Facilities Engineering Division; Aircraft Landing Dynamics Facility Project Office; Closes March 7.

83-14 -- Supervisory Electronics Engineer; AST, Measurement and Instrumentation Systems; GM-0855-14 or 15; Office of Director for Electronics; Flight Electronics Division; Office of the Chief; Closes March 7.

History and High Technology Merge

NASA's state-of-the-art technology recently helped recreate some of Virginia's past. When Arthur Smith, former Director of Colonial Williamsburg Foundation's Audiovisual Department, became frustrated with conventional methods of trying to identify two historic maps, he asked NASA Langley Research Center's Photo/Graphics Branch for assistance.

Smith brought the branch an original map of Williamsburg during the Revolutionary War period, tentatively dated at 1782, and a negative of a map that is the most accurate rendering of the Peninsula in the 1700s ever discovered.

The Williamsburg map's origins were unknown despite the strategic role it played in the restoration of Colonial Williamsburg. The map, a gift to the College of William and Mary in 1909, was framed and hung on a wall in the college's library. The map's donor had stated in a note enclosed with the gift only that he had bought it in Norfolk several years ago and that he dated the map as 1786. Questions about the accuracy of the map's date, its author and its purpose remained unanswered.

The Rev. W.A.R. Goodwin, Rector of the Bruton Parish Church, who in the 1920s inspired John D. Rockerfeller to restore Williamsburg, spotted the map in the college's library. It was used as the "Bible of the Restoration" but its origins remained a mystery.

Since that time the map has been circulated among a multitude of historic authorities in hopes of learning more about the map. However the search for information about the map was fruitless until recently.

NASA Langley's photographic experts took a series of photographs of the map using several different techniques. Through their efforts and technological expertise, they developed a print of the map that raised previously illegible pencil markings on the map into view. The markings, faded from age, showed the map's date and title in the lower left-hand corner of the map. Details of the map were now so distinctive that they revealed graffiti that had been scrawled on the map.

Historians now surmise that the map, dated 1782, was used for billeting purposes for French troops in the winter of 1781. Billeting maps were used to show where the troops were lodged when the army used private homes for troop's quarters. Through NASA Langley's work with the map, historians have also been able to surmise that the map was drawn by two cartographers, one French and one American.

Thomas E. Pinelli, Head of NASA Langley's Photo/Graphics Branch, commented, "Progress, or high technology, is usually accused of obliterating history. In this case, state-of-the-art technology is recreating the past, so that it may endure longer."

In 1982, a very accurate map of the Peninsula area during the 1700s was discovered in a private family chalet in France. The original pencil and ink map, now a part of the French National Archives, was photographed and the negative was forwarded to the Colonial Williamsburg Foundation. Unfortunately, the negative was poorly lighted because of the French photographers reluctance to expose the map to direct light.

However, despite the poorly lighted negative, almost illegible pencil markings on the map were revived through advanced photographic processes and the painstaking work of an illustrator in the Graphics section of the branch.

NASA Langley photographic experts first printed the negative on high-contrast Kodalith photographic paper, which provides the greatest detail.

Since part of the map was drawn in ink and other parts were penciled in, raising the detail of the penciled areas without bleeding, or distorting the inked lines, was a problem. The problem was solved by an illustrator in the branch slowly, carefully cutting the inked portions of the photographic print of the map from the penciled areas. The penciled portions of the map were then photographed by several different methods to raise the greatest detail. Once the markings were brought to the finest detail possible, the inked portions of the print of the map were mated to the now visible penciled portions. The photographic print of the entire map is now easily readable.

NASA Langley's work on the maps was not their first effort to utilize high technology to reveal the past. The Colonial Williamsburg Foundation and NASA Langley have previously collaborated on the high-speed filming of an 18th century musket firing and on an aerial photography project at the site of the nation's first psychiatric hospital in Williamsburg.

Question and Answer

Q. "Is it permissible to combine the lunch period with the excused absence for blood donation?" Can employees work four hours, donate blood, and then leave for the remainder of the day?

A. Diane S. Wieting, Personnel Division, responds to the question as follows:

"Yes. The four hours excused absence allowed for blood donation can be combined with an employee's 30-minute lunch period. For example: An employee on the 7 a.m. to 3:30 p.m. shift, who is scheduled to donate blood at 11:30 a.m., may leave work at 11:00 a.m., donate blood, and leave for the remainder of the day. If an employee's 30-minute lunch period falls either at the beginning, end or during the four-hour period, the 30-minutes is in addition to the four hours excused absence."

AEROSPACE Penpoints

by Wesley Berryman

As always, our goal must be to keep our constituency behind America's space program.

We need this support to achieve our present and long range goals.

James M. Beggs
NASA Administrator

SCATTERED SUNSHINE

A wise man goeth forth cheerily, through fair weather and through foul. He knoweth his journey must be sped, so he carrieth his sunshine with him.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

CIRCUS. The Activities Office has tickets for the Ringling Brothers, Barnum and Bailey Circus to be held March 2, 3 and 4 at Norfolk Scope. Tickets are $1.50 off selected performances.

THE NASA GOLF ASSOCIATION will meet at 6:30 p.m. Friday, March 4, in the Activities Center. A half-hour social, with refreshments, will precede the meeting. Membership is open to all NASA employees and retirees. Old and new members are welcome. For mor information, call Tom Bales, ext. 3405, or Benson Dexter, ext. 2869.

THE GUILD OF THE PENINSULA NATURE AND SCIENCE CENTER will hold its 7th annual "Going Once" auction on March 19, at the Williamsburg Conference Center/Lodge. Proceeds from the auction of items donated by area merchants benefits the Nature and Science Center for its many on-going projects. Tickets are by invitation but anyone wishing to be added to the guest list may call the Center at 595-1900. Reservation deadline is March 5.

SKI CANADA' Four complete days, March 4-7, of skiing at Canada's Mont Tremblant and three nights lodging at the "Chalet des Chutes" for $207 quad, $237 double. Trip fee includes transportation, four day lift tickets, and three breakfasts and dinners. Ski rental price is $27. For more information, contact Norman Willey, Mail Stop 386.

BARBERSHOP HARMONY SPECTACULAR. The Commodore Chorus, winner of the 1982 Virginia state-level Johnny Mann Great American Chorus Festival, presents its 26th annual concert in the Virginia Beach Pavilion Theater at 8 p.m. Friday and Saturday, February 25 and 26. Titled "Call It Nostalgia," the concert will feature the Commodore Chorus, its quartets, and one of the zaniest barbershop quartets around — the Note-Wits. Tickets are $5 each. Call Roy Albang, 596-7736, or Jim Youngblood, 877-1224, for more information.

"MELODY TIME," will be shown, as part of the Walt Disney Film Festival, Sunday, March 13, at 3 p.m. in the Activities Center. Admission is 75 cents.

SKI NASA '83. Come and enjoy a day of trouble-free skiing in the mountains of Virginia for one low price. The trip cost is $37, $7 less with own equipment and lift ticket. Make checks payable to Richard Bennett, Mail Stop 397, or 11 Bosch Lane, Newport News, Va. Your check reserves your trip. The trips are open to all NASA employees, contractors and their friends. For more information, call 599-5585. Upcoming trips include:

March 3 . . . . . Brice Mountain
March 10 . . . . . Massanutten

TIDEWATER DINNER THEATER. "The Teahouse of the August Moon" is playing at the Tidewater Dinner Theater in Norfolk through April 3. Weekday prices are $13.75; weekend prices are $14.75. Tickets are available at the Activities Office.

BUSCH GARDENS season passes are on sale for $40 at the Activities Office.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

EASTER EGG HUNT. The LAA will hold the annual children's Easter Egg Hunt Sunday, March 27, at 2 p.m. Admission is 50 cents per person. Volunteer workers are needed for the afternoon. Call Fran Sabo, ext. 3611, if interested.

AN ARTS AND CRAFTS SHOW will be held March 26 and 27 in the Activities Center. Call Betty Farmer, ext. 2062, for more information.

VIRGINIA OPERA ASSOCIATION. "The Elixir of Love," will be performed March 11, 13, 16, 18 and 20 at the VOA Center in Norfolk. Discount tickets are available for March 18 and 20 matinee performances. ($10.50 — $23 regular-priced tickets are available for $5.75 — $16.50)

SHUTTLE PASSES. Witness the spectacular launch of the Space Shuttle as Challenger makes her maiden voyage, planned for mid-March. Car passes are available for families to view the launch from the Kennedy Space Center. To receive passes, call Ann Suit, ext. 3341.

— photo by Richard Shaw

BIG 50. This was the scene in the cafeteria Feb. 11 when Robert A. Jones, Assistant Chief, High-Speed Aerodynamics Division, celebrated his 50th birthday. Not every Langley employee has the privilege or the pleasure of being entertained by an exotic dancer on their birthday. But it is quite obvious that Jones and his co-workers are thoroughly enjoying this birthday event. Happy Birthday, Bob Jones!

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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National Aeronautics and
Space Administration
Twenty-fifth Anniversary
1958-1983

Retirement Parties

D. Frank Fromal Systems Engineering Division, will be honored with a retirement luncheon at the Activities Center Thursday, March 17, at 11 a.m. The cold-cut buffet will be $6.50 per person, which includes a gift contribution. For reservations contact Clyde May or Joe Gowdey, Mail Stop 433.

Walter T. Pickrell and **Ashley B. Smith** will be honored with a retirement party at the Fort Monroe Officers' Club Wednesday, March 23. The social hour will begin at 6 p.m. and the Beef and Burgundy Buffet will open at 7 p.m. A $9.85 fee covers the cost of the meal, tip and a $2 gift contribution. Guests may bring a spouse or a friend for only $7.85 (one only). The guest list will be limited to 125 people. Send checks or $2 gift contributions to Frank Strehle, Mail Stop 448, before March 18.

Wesley Berryman, Research Information and Applications Division, will be honored with a retirement party March 2 in the Activities Center from 4:30 to 7:30 p.m. The cash bar social costs $6 per person including gift. Contributions for gift only will be accepted. Make reservation and send payment to Skip Watson, Mail Stop 426, by 4:30 today.

Advanced Graduate Study Available

According to the Government Employees Training Act (GETA) and provisions adopted by the Committee on Advanced Graduate Study, career NASA employees may take up to 2,080 hours for advanced training to support Langley research.

If you are considering full-time graduate training away from the center, or part time study with a concentration in engineering administration, your request must be approved by the Committee which is chaired by Richard H. Petersen, Deputy Director. The committee will be meeting in April to select fall 1983 participants. Therefore, if you are considering advanced training, contact George Allison in the Training Office, ext. 2611, for more information and a copy of "The Guidelines for Graduate Study."

swap and shop

LOST

A black leather wallet was lost Feb. 10 in the area of the Credit Union or Building 1168. Plenty of identification inside. Call Jacocks, ext. 3917.

FOR RENT

Vacation House between Atlantic Ocean and Currituck Sound in northern Outer Banks of North Carolina: large living room, 4 BR, 2 baths, spacious deck including screened-in area and sun deck, CA and heat, carpeted floors, DW, W/D; no pets; $480 a week in season. Call James T. Davis, 488-7668, Portsmouth.

WANTED

One additional person to car pool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Giesy, ext. 4591 or 625-7558, Norfolk.

cafeteria menu

WEEK OF FEB. 28 — MARCH 4

MONDAY: Vegetable Beef Soup; Ham & Cheese Omelette; Beef Liver & Onions; Chicken Parmigiana w/Rigatoni. Snack Bar: Hot Smoked Sausage; Chuckwagon; Taco.

TUESDAY: Seafood Gumbo; Clam Nuggets; Braised Short Ribs; Spinach & Bacon Quiche. Snack Bar: Turkey Club Sandwich; Hot Beef Sandwich.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Braised Beef Tips; Baked Filet of Fish. Snack Bar: Ham & Cheese Club; Hot Italian Sausage; French Bread Pizza.

THURSDAY: Ham & Lima Bean Soup; Baked Lasagna; Braised Chicken Livers; Chicken Fried Steak. Snack Bar: NASA Sub; Rib BQ; Taco.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Creole-Style Chicken; Beef, Macaroni & Tomatoes. Snack Bar: Polish Sausage; Crab Cutlet Sandwich.

WEEK OF MARCH 7 — 11

MONDAY: Chicken & Rice Soup; Franks & Baked Beans; Beef Stew; Quiche Lorraine. Snack Bar: Chicken NASA; Ham & Cheese Club.

TUESDAY: Vegetable Beef Soup; Chopped Steak; Salmon Cake; Spaghetti w/Hot Italian Sausage. Snack Bar: Rib BQ; Hot Beef; French Bread Pizza.

WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; Beef Burgundy; Roast Port & Dressing. Snack Bar: Polish Sausage; Turkey Club; Taco.

THURSDAY: Wisconsin Cheddar Cheese Soup; BBQ Beef Back Ribs; Meat Loaf; Braised Chicken Livers. Snack Bar: Knockwurst; BLT; ¼ lb. Cheeseburger.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Teriyaki Steak; BBQ Chicken. Snack Bar: Chicken NASA; Oyster Sandwich.

Thanks

Harry D. and **Sue R. Orr** write, "We would like to extend our deepest thanks to all our friends at NASA for our lovely party and delightful gifts and for making our years at Langley fun as well as challenging. We appreciate your support and good wishes as we embark on our new adventure."

David D. Kershner writes, "Many thanks to my friends for the party and gifts on the occasion of my retirement. I shall remember your kindness and the pleasure of your friendship."

Gladys Loar writes, "Dear Co-workers, I deeply appreciate the kind expression of caring by the NASA employees who donated blood at the January Bloodmobile for me. A special thanks to each and every one."

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 5

March 11, 1983

Systems Engineering and Operations Directorate

Davenport is New Assistant Chief of FD

Joseph B. Davenport, Jr., is the new Assistant Chief of the Fabrication Division, replacing Carl E. Copeland, who retired in January.

In this position, Davenport assists the division chief in planning, developing, directing, programming and evaluating technical services to build research test models and associated systems and equipment in support of Langley projects and programs requirements; develops and manages the division's Institutional Management System; and participates in the overall administration of contracted services, including metal, wood, composite, electronics and fabrication support contacts. He is responsible for the continuing development of processes, procedures and programs for improving fabrication methods and practices, including effective and efficient use of numerical-controlled machining systems and computer-aided fabrication equipment.

Davenport began his NASA career in November 1961 as an apprentice machinist. Since graduating from the Langley Apprentice School in 1965, he has been an experimental machinist, engineering technician, a supervisory engineering technician and a supervisory production controller. He has specialized in aeronautical research model fabrication, cryogenic model fabrication techniques and fabrication contract management.

Before joining Langley, Davenport designed interior displays for a private museum in Lenox, Mass.

Davenport has received five Langley Suggestion Awards and numerous Group Achievement Awards. He was the fabrication session chairman for the Industry-wide Cryogenic Models Workshop held at Langley in 1982.

Davenport and his wife, Ann, live in Hampton. They have two sons.

Come Fly With Us

Tired of Travel? Try Videoconferencing

While traveling to intercenter conferences offers Langley managers and researchers the opportunity to meet their peers and discuss programs, traveling to the other centers is inconvenient, time consuming and expensive.

Langley's satellite communication system now offers an alternative to travel. Langley recently joined the Shuttle Video Network, which gives the center the ability to participate in live video meetings with other NASA centers (with the exception of Lewis).

According to Ted Bright, Project Manager for the new system, "After five successful video conferences, the system has proved to be reliable and easy to use."

Langley's videoconference system uses a portable MISAR camera system, which does not require special lights or manned cameras. MISAR is a computerized camera system that is programmed to focus on each speaker at the conference, and as the speakers change, the camera angle changes. Occasionally, the camera will sweep the conference area for the viewer's visual interest. Langley's videoconference system provides real-time transmission of audio.

Currently 15 conference rooms in five buildings on center are available for video conferences.

With additional equipment, the system could accommodate data links to other NASA centers. Some NASA centers already have this capability, and Langley is investigating its application for several projects.

Preparing for a live videoconference differs from preparing for a live conference only in preparation of viewgraphs. Viewgraphs used in videoconferences should use a bolder type than standard viewgraphs. The Photo/Graphics Branch will prepare viewgraphs for videoconferencing at request.

Continued on page 2.

25th Anniversary
1958-1983

Videoconferencing System Now in Operation

One monitor in the MISAR system displays the picture that Langley is transmitting, while another is used to display the picture Langley is receiving. This effective means of live video/audio transmission between NASA centers is expected to ease time constraints on harried conference travelers. It is also the opportunity for more researchers to attend intercenter conferences.

Continued from page 1.

While videoconferencing is not intended to replace travel, it offers a viable alternative. To schedule a videoconference, call Bright, ext. 3511. He must determine if the meeting planned is appropriate for a videoconference. Then, the videoconference must be scheduled with the Shuttle Video Network and with the other participating party.

For those interested in videoconferencing but not familiar with the procedure, Bright can arrange an observation of a live videoconference.

Bright says, "Come fly with us, we're less expensive, we offer wider seats, we're more convenient, always on schedule, less tiring, more friendly and have never in our history lost a single piece of luggage."

Savings Bonds Earn Variable Rates

Effective November 1, 1982, the U.S. Savings Bonds began offering a variable market-based rate for all Savings Bonds held five years or longer. This rate for the first market-based interest period, November 1, 1982 to April 30, 1983, is 11.09 percent. The rate is effective for Series EE Bonds purchased between November and April, and for Series E and EE Bonds and Savings Notes with semiannual interest periods beginning during those months, when they are held at least five years.

Under the market-based interest system that went into effect November 1, new bonds and those already outstanding receive 85 percent of the average return on five-year Treasury marketable securities when held five years or longer after November 1, 1982. Each semiannual Savings Bond rate is based on the Treasury five-year rate for the preceding six months.

The current 11.09 percent rate is based on an average market return of 13.05 percent on five-year Treasury securities between May and October 1982. The next Savings Bond rate will be announced in May 1983, based on the average five-year Treasury rate between November 1982 and April 1983.

The market-based interest system keeps interest rates on Savings Bonds held at least five years parallel with market rates during the same period. The market-based rate is calculated every six months.

The redemption value of a bond held five years or longer is determined by the Treasury by averaging each of the six-month rates and compounding semiannually from the first period. As always, bondholders can find the redemption value of their bonds using the Table of Redemption Values provided by the Treasury Department to banks and other redemption agents.

New bonds are guaranteed to earn a minimum rate of 7.5 percent, compounded semiannually, if held five years or longer. Series EE Bonds purchased before November 1, and all Series E Bonds and Savings Notes issued since November 1947, retain their guaranteed yields as a minimum to the end of their original or current-extended maturity periods. The minimum yield is effective only if the market-based rate falls below the guarantee.

Thanks

C. Willis Cross Jr. writes, "I want to thank my many friends for such an outstanding retirement party. I appreciate all the effort that went into making my party such an enjoyable and memorable occasion. The fellowship, gifts and mementoes and album hold a special place in my heart as do each of you. I will be at home most of the time and hope you will keep in touch."

Houbolt Honored

Dr. John C. Houbolt, Chief Aeronautical Scientist in the Aeronautics Directorate, was recently granted a Space Act award for his scientific contribution titled, "Analysis, Design and Development of the Lunar Orbit Rendezvous Concept."

Houbolt received the award Feb. 24 during a meeting of the NASA Inventions and Contributions Board at NASA Headquarters.

Retiree Deaths

Ray Windler, who retired from Langley in 1962 after 34 years of service, died Jan. 3. He was 80. Windler's son, Milton, serves as Flight Director at Johnson Space Center.

Walter E. Ellis, who retired from the Flight Instrumentation Division in 1976 after 29 years of service, died March 1. He was 70.

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 115, telephone 3006.

Editor . . . . . Jean Saunders
Editorial Assistant . . . . . Pat Zoeller
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.

Colloquium Topic

Scholar Shares Views on Man, Machine Anomalies

As the information and energy processing technologies press toward more sensitive components and more interactive systems, the role of the human consciousness in the man/machine interfaces merits re-examination.

Robert G. Jahn, Dean of the School of Engineering and Applied Science at Princeton University, will discuss "Man/Machine Anomalies: An Engineering Perspective" at 2 p.m., Monday, March 14.

Jahn's interest in psychic phenomena traces to his supervision of a student project begun in 1977, and although his present research in this area is a very minor part of his professional activity, it has achieved international prominence in the field.

Jahn's principle areas of study include high temperature gasdynamics, ionized gas kinetics, plasmadynamics and plasma propulsion, and his book, *The Physics of Electric Propulsion*, remains the standard text in its field.

He has received the Curtis W. McGraw Research Award of the ASEE, and he is a Fellow of both the American Physical Society and the American Institute of Aeronautics and Astronautics. He has also served on several NASA Advisory Committees, and is a member and past-chairman of the Board of Trustees of Associated Universities, Inc.

At the colloquium, Jahn will discuss the results of a number of basic experiments in controlled low-level psychokinesis and remote perception. Psychokinesis is physical system changes caused by the human consciousness. These experiments will be described in detail along with early attempts at parametric correlation and theoretical models.

Landsat Management Transferred, Problems Arise

NASA has transferred the operation and management of the Landsat earth remote sensing satellite system to the National Oceanic and Atmospheric Administration's National Environmental Satellite Data and Information Service (NESDIS).

In the 10 years since NASA launched the first Earth Resources Technology Satellite-1, or Landsat-1, the program has developed into a valuable source of information for agricultural and urban planning, geologic exploration, land management studies, snow melt and flood runoff analysis, crop stress location, and other tasks requiring large-scale views of earth surface areas.

The program began in 1972 as a research and development effort to determine the usefulness of satellite multispectral information. In 1979, NASA determined that the Landsat program was past research and development stages and plans were made to transfer the program's operational assets to NOAA, with the objective that NOAA management pursue eventual commercialization of the system.

The three previous Landsat satellites are not involved in the transfer because Landsat 1 and 2 are no longer operational and Landsat 3 will be retired later this year due to age related degradation.

NASA will retain management control over one of the two earth survey instruments aboard the Landsat 4 spacecraft, the Thematic Mapper. NASA will continue to use this instrument during the experimental research and development phase of the new sensor system. According to the terms of the Landsat agreement, the Thematic Mapper will be transferred to NOAA's control in early 1985.

Under the terms of the transfer completed on February 1, 1983, NASA relinquished operational control over the fourth Landsat satellite, launched July 16, 1982, the ground operations control center, and the Multispectral Scanner data processing facility, both located at Goddard.

NESDIS will operate the system and, under separate arrangement with the Department of Interior, will also control a satellite data distribution facility at Sioux Falls, S.D.

Problem Interferes with Pictures

An inoperative satellite transmitter on Landsat 4 has interrupted the flow of data from space, which produces pictures of the earth in 90-foot squares.

The X-band transmitter on the Landsat 4 satellite, which sends data from the Thematic Mapper to ground stations, failed to operate on Feb. 15. Less detailed pictures are being received from Landsat 4 from the Multispectral Scanner.

Unless the problem can be solved, no more Thematic Mapper data can be received until a new satellite communications system, the Tracking and Data Relay Satellite, is launched on the next Space Shuttle, STS-6, now scheduled in March.

Thanks

Charles Péré writes, "Thanks to my many friends for making my retirement party a most memorable occasion."

Student-Designed Experiment to Fly on LDEF Mission

When the Long Duration Exposure Facility (LDEF) is transported into space by a Space Shuttle, it will carry an experiment designed by Georgia Institute of Technology alumnus Marie Fair. She recently visited Langley for the flight certification test of her optical systems experiment.

LDEF, designed and built at NASA's Langley Research Center, is a simple, reusable facility that will expose a wide variety of experiments to the environment of space.

Fair's experiment, called Active Optical System Components (AOSC), will expose basic elements of electro-optical systems to the space environment for approximately 12 months. It will then be returned to earth and analyzed to see how the elements held up during the long exposure. The samples to be exposed include lasers, crystals, detectors, paints, filters, mirrors, window samples and film.

"We will check to see if the parts have degraded and, if so, how much," Fair explained. "A lot of the components have special types of coatings on them to keep component temperatures below levels at which deterioration can occur. We want to see what happens to these coatings -- will they flake or fall off? We will also determine the effects of long-duration space exposure on the performance parameters of the radiation detectors, lasers and selected optical components."

In the future, optical and electro-optical systems will find increasing applications in space-based systems and the components must survive space hazards. Environmental hazards peculiar to space include radiation-induced discoloration, electrically active flaws or distortions. These may arise from sublimation, outgassing and decomposition effects, as well as deposition of such products and other debris onto component surfaces. Other hazards are abrasion or cratering of surfaces caused by meteoroids and cosmic dust.

LDEF will permit exposure of electro-optical components to a true space environment at a reasonable cost. LDEF will be delivered to Earth orbit by the Orbiter Challenger on its fifth flight. Once in orbit, LDEF will be removed from Challenger's payload bay by the Remote Manipulator System, the Canadian-built grappling arm, and then deployed. Fair said that LDEF will be the largest satellite that has been deployed by the manipulator arm.

– photo by Don Ward and Fred Jones

Marie Fair, a graduate of Georgia Institute of Technology, stands beside the Long Duration Exposure Facility panel that will house the experiment she designed. The Active Optical System Components experiment will fly on the first LDEF mission, scheduled for STS-13 in April 1984.

After about 12 months in space, LDEF will be retrieved by the Orbiter Atlantis on its maiden voyage, which is scheduled to be STS-25. The arm will again be used to replace the satellite in the payload bay. Once LDEF is returned to Earth, the experiments will be removed and returned to the experimenters for analysis.

LDEF operations focus on selected experimenters who design, build and mount their experiments, such as Fair's AOSC, in trays for attachment to the LDEF structure.

"All the parts for the AOSC experiment fit into a tray, which is divided into six subtray panels," Fair explained. "They are bolted to a plate in a manner which simulates their likely surroundings in an operational system and covered with machine-sewn fiberglass strips and a sun screen. The experiment is designed for certain tolerances so it will not get much vibration and will not slide or shatter."

A total of 163 components have been acquired for the AOSC experiment. "Different parts have been supplied by NASA, others by the manufacturers of the components," Fair said. "Some companies have given us the parts and said, 'If you test it, it is yours; let us know what happens to it when you get it back.' "

Four Langley researchers have contributed components to be included in the experiment. Dr. James B. Robertson, Flight Control System Division, and Ivan O. Clark and Dr. Roger K. Crouch, Instrument Research Division, have installed pyroelectric infrared detectors to determine the effects of long-duration space exposure and launch environment on their performance. The detectors are used for air-pollution monitoring and thermal mapping of the Earth. Because pyroelectric detectors can detect radiation in the infrared region while operating at room temperature, they are a prime candidate to fill NASA's thermal infrared detector requirements.

Gale A. Harvey, Atmospheric Sciences Division, contributed ultraviolet optical materials and detectors to Fair's LDEF experiment. His experiment will measure the type and extent of deterioration of the components in a typical Shuttle-Spacelab environment. These components may be used in diffuse radiation mapping and Earth-looking mid-to-far ultraviolet measurements.

The AOSC experiment, one of 48 experiments from nine countries to fly on the first LDEF mission, now scheduled for April 1984, began in 1977 as a study activity between Georgia Tech and NASA.

Fair said she began developing the experiment in 1978 while a student at Georgia Tech. She worked with Dr. Donald Blue, principal investigator, at the Engineering Experiment Station, which is the applied research arm of Georgia Tech. She said the experiment was basically designed around that time, but was not completed until about a year ago. After the first successful launches of the Space Shuttle, Fair began reworking, upgrading and changing some of the components, getting it ready for the flight certification tests.

"It was important to me to come to Langley and see the experiment that I designed accepted for flight, especially after being with it for so long. No way was I going to the West Coast without seeing the experiment certified," said the Georgia native, who plans to live in Los Angeles now that she has graduated from Georgia Tech.

The experiment has been accepted for flight and is in storage, where it will remain until four or five months before launch. Several components, such as Harvey's special short wave radiation film that must be fresh at launch time, will be added before the AOSC experiment is shipped to the Kennedy Space Center. There the experiment will be integrated on LDEF and placed into the cargo bay of Challenger.

"This (designing the experiment and seeing it certified for flight) has been a very rewarding experience," Fair said. "I learned a lot that many people never have the chance to learn. Not many people have a chance to design something that is going to fly in space. It has been very interesting knowing that what I did design is going to be aboard the Space Shuttle. I just happened into this experience and it is very, very exciting."

King Named New Aerovan Lecturer

Steven W. King has been named AEROVAN Lecturer at the Langley Visitor Center. In his new position, King will be traveling nationwide with NASA's newest traveling exhibit unit, the AEROVAN. This large, walk-through trailer has nine colorful exhibits which present the latest in aeronautical research. The Van travels to trade shows, air shows and aeronautical colleges telling the story of the first A in NASA -- Aeronautics.

A native of Durham, N. C., King brings a rich scientific background to his AEROVAN position. A veteran of the U.S. Air Force, he holds a doctorate in biochemistry and clinical chemistry from the University of North Carolina. He has extensive experience as a scientist and research chemist. He is the author of 21 technical articles and has made presentations at several national scientific meetings. King has also served as a volunteer tour guide at the Science Museum of Virginia.

As AEROVAN Lecturer, King is very excited about telling the public what NASA is doing that will affect people in their everyday lives. "I've been a NASA enthusiast since the first Echo satellite. I share that same fascination for aeronautics and the extreme sophistication and highly advanced technology of today's research aircraft. The AEROVAN will give me the perfect

opportunity to combine my scientific background with my love of people and travel." King's hobbies include photography, music and camping.

The AEROVAN's itinerary for the first four months of 1983 includes trips to the Wright Patterson Air Force Museum, Old Dominion University's Engineering Open House, the Sun 'n Fun Air Show in Lakeland, Fla., Kennedy Space Center, the Central Florida Air Show and Embry Riddle University in Daytona Beach.

Visitor Center Features Home Built Aircraft

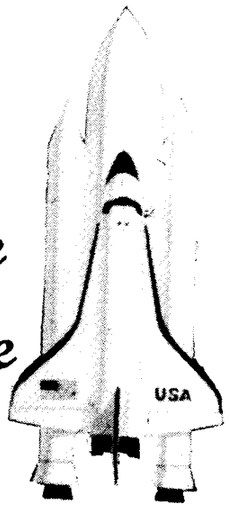
Many people have built model airplanes and dreamed of flying. Members of the local Experimental Aircraft Association chapter have chosen to make those dreams a reality. They design or purchase designs for sport aircraft that they build themselves.

At the NASA Visitor Center this month, visitors can see four aircraft being built by local EAA chapter members in various stages of construction. A completed aircraft, built by retired aircraft mechanic Gideon Hagood, will be on display. His Pietenpol Aircamper, a high wing, two-seater aircraft powered by a Chevrolet Corvair Engine, has a 29-foot wing span and is 15 feet long. The Pietenpol design dates back to 1930 and was among the first successful homebuilt aircraft designs.

Throughout the month, visitors will be able to see Jim Green actually working on his aircraft, the Dragonfly, an advanced aircraft design which makes use of composite materials. The fuselage of a partially completed aircraft, a version of the Piper J-3 Cub being built by Don Gregory, will be on display, as will be the frame of a Bakens-Deuce airplane being built by Ray Hobbs. On Saturdays and Sundays, EAA club members will be available to answer questions.

In addition to the homebuilt aircraft on display, a number of EAA films and video presentations will be offered. "A New Day is Dawning" is a fast-paced film which tells the EAA story. "Affair in the Air" gives highlights of the association's annual Oshkosh Fly-In and features interviews with a number of aviation personalities. "Flying High" is a highly entertaining video program on aerobatic flying which includes some hair-raising aerobatic stunts. "Icarus' Children," originally produced for public television's NOVA series, traces the history of man-powered flight.

Space Shuttle Update



An analysis of Shuttle cargo contamination is expected to be complete by today. Here is the statement issued by NASA Headquarters earlier this week:

"Following a preliminary analysis of particulate matter found on the Tracking and Data Relay Satellite (the week of Feb. 28), NASA and the TDRSS contractor team decided on Saturday (March 5) to proceed with the present spacecraft schedule. The TDRS-A is presently on board the space shuttle orbiter Challenger at launch complex 39 at KSC. The decision was based on a spacecraft inspection and it was determined that available information has identified no known spacecraft problem. The detailed evaluation, to be completed within a week, has begun to further analyze any potential impact on the spacecraft systems. Any additional actions concerning the spacecraft will be based on the results of the additional analysis."

Also by today, all three main engines are expected to be reinstalled in Challenger. At press time, a KSC spokesman said that no further problems are expected with the engines. After installation, about one week of engine checkout will follow. Some of that work will be done in parallel — at the same time — with countdown operations, assuming cargo managers give the go-ahead for launch.

Launch date is tentatively targeted for no earlier than March 26 and no later than March 31.

Seminar Focuses on Unusual Microprocessor

"A Software Engineer Looks at the INTEL iAPX 432" is the title of the next computer science seminar Wednesday, March 23, at 3 p.m. in the Activities Center. Dr. Chris Wild, Old Dominion University, will speak.

The INTEL iAPX 432 is an unconventional 32-bit microprocessor designed to significantly reduce the cost and time to develop software-intensive microprocessor applications. The design of this machine was heavily influenced by the current trends in software engineering, and it has been labeled as an ADA machine.

To achieve its design goals, the iAPX 432 incorporates a radically different machine architecture which includes many operating system functions in hardware, object-oriented addressing, and extensive protection capability.

Thanks

Robert Nye thanks his Langley friends for the many expressions of kindness shown during his recent illness. "The cards, flowers, visits and, above all, the prayers, are greatly appreciated. It's good to be back at work."

Microwave Instrument Detects Aircraft Icing

An instrument that can be used on operational aircraft to warn the pilot of the onset of dangerous ice buildup has been developed by Ideal Research Inc. under contract to NASA's Lewis Research Center. The device also can be used as a research tool to study aircraft icing and in cloud research.

Called the MIAMI (Microwave Ice Accretion Measurement Instrument), it is the only device that measures actual ice thickness and accretion rate in addition to giving an icing onset warning.

A small (1.4 x 0.4 x 0.2-in.) microwave waveguide is implanted on the plane just below the surface to be monitored. A microprocessor monitors the resonant frequency of the waveguide. As ice forms on the surface of the waveguide, it causes the resonant frequency of the waveguide to decrease. The frequency shift is measured by the microprocessor and converted to a dc voltage that is proportional to the ice thickness.

The microprocessor also computes the change in ice thickness with respect to time to obtain the ice accretion rate. Ice thickness and ice accretion rates are displayed on digital panel meters. The display can show either a severity level (TRACE, LIGHT, MODERATE OR HEAVY) or a rate of accretion in inches per minute.

The microprocessor is programmed to recognize the difference between ice and other substances (oil, grease, dirt, insects) so that valid signals are generated only when ice forms.

Aerospace Penpoints

by Wesley Berryman

The Nobel Prize for chemistry I got just for doing what I like to do—for having a good time & learning something about the nature of the universe.

I would have been happy to devote all of my time to this effort for the rest of my life.

LINUS PAULING

Wesley Berryman said his sentiments could be expressed similarly. He recently retired from Langley and plans to pursue publishing his "Aerospace Penpoints" in booklet form.

The *Langley Researcher* staff thanks Berrymen for his many contributions to the paper, such as the "Aerospace Penpoints" and the covers for the Christmas issues, and wishes him "good luck" in the future.

Happenings

HAPPY HOUR, with live entertainment, will be held today from 4 to 6:30 p.m. in the Activities Center.

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

THE GUILD OF THE PENINSULA NATURE AND SCIENCE CENTER will hold its 7th annual "Going Once" auction on March 19, at the Williamsburg Conference Center/Lodge. Proceeds from the auction of items donated by area merchants benefit the Nature and Science Center for its many on-going projects. Tickets are by invitation but anyone wishing to be added to the guest list may call the Center at 595-1900. Reservation deadline is March 5.

SOFTBALL. The 1983 organizational meeting of the NASA Softball Association will be held Tuesday, March 15, at 4:30 p.m. in the Activities Center. A representative from each prospective team must attend.

AFGE LOCAL 2755 will meet Wednesday, March 16, at 4:30 p.m. in Building 1232-B.

LANGLEY HISTORICAL SOCIETY will meet March 16 at 11:30 a.m. in the Columbus Room, Langley AFB Officers' Club. Dr. Henry O. Malone, Chief Historian, U.S. Army Training and Doctrine Command, Fort Monroe, will be the guest speaker. The luncheon is buffet-style. Everyone is invited to attend. For further information, call Lt. Col. Gene Alfaro at 593-9300.

OPERA. The Virginia Opera Association presents Donizetti's comic opera "The Elixir of Love." The opera, in Italian, will be presented March 11, 13, 16, 18 and 20 at the Norfolk Center Theater. For more information or tickets, call 623-1223.

SHUTTLE PASSES. Witness the spectacular launch of the Space Shuttle as Challenger makes her maiden voyage, planned for late March. Car passes are available for families to view the launch from the Kennedy Space Center. To receive passes, call Ann Suit, ext. 3341.

AN ARTS AND CRAFTS SHOW will be held March 26 and 27 in the Activities Center. Call Betty Farmer, ext. 2062, for more information.

CRUISE. Special prices are now available through LAA for a cruise from Norfolk to Bermuda, sailing April 26 – May 3. For reservations call Ernie Greene, ext. 2312, or 838-0567. Reservations may also be made by returning the coupon on the back of the Cruise International brochure to the address listed.

MORE LAA TRAVEL. Watch for details in the next *Researcher* on the LAA Alaska trip being planned for September.

CALLIGRAPHY COURSE. An eight-week Beginning Calligraphy class will begin March 21 at Thomas Nelson Community College. Call the Office of Continuing Education at 825-2935 to enroll. Wesley Berryman is the instructor.

THE PENINSULA SYMPHONY OF VIRGINIA will present the third in its series of free Family Concerts Sunday, March 13, at 3 p.m. in the Phi Beta Kappa Hall on Jamestown Road in Williamsburg, For further information, call 851-0362.

"MELODY TIME," will be shown, as part of the Walt Disney Film Festival, Sunday, March 13, at 3 p.m. in the Activities Center. Admission is 75 cents.

TIDEWATER DINNER THEATER. "The Teahouse of the August Moon" is playing at the Tidewater Dinner Theater in Norfolk through April 3. Weekday prices are $13.75; weekend prices are $14.75. Tickets are available at the Activities Office.

EASTER EGG HUNT. The LAA will hold the annual children's Easter Egg Hunt Sunday, March 27, at 2 p.m. Admission is 50 cents per person. Volunteer workers are needed for the afternoon. Call Fran Sabo, ext. 3611, if interested.

VIRGINIA OPERA ASSOCIATION. "The Elixir of Love." will be performed March 11, 13, 16, 18 and 20 at the VOA Center in Norfolk. Discount tickets are available for March 18 and 20 matinee performances. ($10.50 – $23 regular-priced tickets are available for $5.75 – $16.50).

BLOODMOBILE. The Red Cross Bloodmobile will be held at the Activities Center March 16 from 9 a.m. to 3 p.m. For more information or an appointment, call the Health Unit, ext. 3976 or 2246.

Notice

Employees who were unable to attend Dr. Hearth's Feb. 22 address, "The Outlook for Langley," can view a videotape of the address at 10 a.m., March 18, at the Activities Center. Employees attending should charge their time to job order number A1980.

DISCOVERY, a human relations group for single people, meets the second and fourth Friday of each month at 7:30 p.m. at the Unitarian Fellowship of the Peninsula, 415 Young's Mill Lane, Newport News. The topic for tonight is "How do I respond when I feel threatened or put down? When do I feel most vulnerable?" The group discussion will be preceded and followed by a social time. Bring snacks or beverage to share. Attendance fee is $2. For more information, call 877-5791.

READING OUTLET CENTER TRIP. The bus will leave the Hangar at 12 a.m., March 19, and arrive in Reading, Pa., in time for breakfast and an all day shopping expedition in the many outlet centers. The bus will leave for Hampton at 5 p.m. and arrive at 11:30 p.m. Trip cost is $35 per seat. The NAGS trip is open to all interested people, however, there are only five seats still available. For reservations, call Betty Joyner, ext. 3285.

MADISONIANS CONCERT. See a taste of Broadway in Newport News as the MADISONIANS from James Madison University perform at Menchville High School, Friday, March 11, at 7:30 p.m. Tickets are $4.50 and $3.50 (student). Advance discount tickets are available from Burt Lightner, ext. 3661, and Jim Raper, ext. 4539.

ANTIQUE SHOW AND SALE. The 13th Annual Walsingham Antique Show and Sale will be held March 18-20 in the Upper School Gymnasium in Williamsburg. The show hours are from 11 a.m. to 9 p.m. Friday, 11 a.m. to 7 p.m. Saturday, and 12 to 5 p.m. Sunday. The show will feature 26 dealers from several states, a luncheon lecture, a jewelry appraisal clinic, homecooked lunches daily and new for this year, a Porcelain Tea. For more information, call Nancy Dixon at 253-1474.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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New 'Software Submittal Guidelines' Available

The Technology Utilization Office announces the publication of a new "Software Submittal Guidelines." In accordance with NASA policy, computer software developed by NASA, or NASA contractors, is made available to other government agencies and industry through COSMIC. COSMIC is NASA's software dissemination center operated under contract by the University of Georgia. The Technology Utilization Office is responsible for coordinating the submittal of software to COSMIC. Further information and copies of the new "Software Submittal Guidelines" are available from the Technology Utilization Office, Mail Stop 139A, ext. 3281.

Key Positions

Alice C. Massey has been selected Head, Institutional Programs Branch, Programs and Resources Division, under Competitive Placement Plan 83-2.

Dr. James C. Yu has been designated Assistant Head, Aeroacoustics Branch, Acoustics and Noise Reduction Division.

Hampton P. Stump, Jr. has been selected Head, Instrumentation Coordination Section, Instrument Application Branch, Instrument Research Division, under Competitive Placement Plan 83-3.

Raymond C. Scholz has been selected Supervisory Engineering Technician, Technical Support Section A, Laboratories Operations Branch, Operations Support Division, under Competitive Placement Plan 83-9.

swap and shop

FOR SALE

Articles

Lawn Mower, 21 inch rear bagger, Briggs and Stratton engine, used once, $150. Call Butler, 722-8454.

Trailer Hitch, 2,000 lbs., $20. Call Butler, 722-8454.

Sofa: Traditional-style with moss green tweed upholstery, extra fabric included, $100; double bed box springs and mattress, $75; slotted Mag Rims, size 14x7, $40; Kraco CB radio, GC, microphone wire needs repairing, $50; Royce power CB microphone, desk model, $30. Call 898-5113, after 5:30 p.m.

Insulation board, foil covered, 4' x 8' x 3/4", $5 each; Stained paneling, 4' x 8' x 1/4", $3 each. Call Mathis, 722-7629.

Vehicles

1979 Datsun 210 Wagon, 5 speed, A/C, AM/FM/tape stereo, full service record, 34+ mpg, SB radials, excellent condition. Call Heyman after 6 p.m., 229-9514, Williamsburg. $3950.

FOR RENT

Sandbridge: Cottage with three BR, phone, liv. din. kit., washer, dryer, 50-yds from ocean, $450/wk., reservations limited. Call Kent, 420-8391.

WANTED

TO RENT: Motor home RV for two weeks this summer. Call 877-9151 after 5:30 p.m.

One additional person to carpool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Dan Giesy, ext. 4591 or 625-7558, Norfolk.

FOUND

Prescription glasses found in Headquarters building parking lot. Call Barbara Newton, ext. 3221, to identify.

cafeteria menu

WEEK OF MARCH 14 — 18

MONDAY: Beef Barley Soup; Salisbury Steak; Chicken Croquettes; Macaroni, Franks & Cheese. Snack Bar: Grilled Cheese; Taco; Hot Italian Sausage.

TUESDAY: Maryland-style Crab Soup; Shrimp Chop Suey; Turkey Breast Nuggets; Grilled Pork Steak. Snack Bar: ¼ lb. Cheeseburger; Rib BQ.

WEDNESDAY: Vegetable Soup; Veal Parmesan; Baked Chicken; Beef Stroganoff. Snack Bar: Turkey Club; Hot Beef.

THURSDAY: Ham & Lima Bean Soup; Corned Beef & Cabbage; Braised Chicken Livers; Seafood Quiche. Snack Bar: Corned Beef Reuben; Chicken NASA.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Beef Liver & Onions; Chicken Teriyaki. Snack Bar: Oyster Sandwich; French Bread Pizza; Polish Sausage.

WEEK OF MARCH 21 — 25

MONDAY: Chicken & Rice Soup; Spaghetti & Meat Sauce; Crab Cake; Sliced Pork BBQ. Snack Bar: Chicken NASA; Ham & Cheese Club.

TUESDAY: Cream of Broccoli Soup; Baked Lasagna; Chopped Steak; Quiche Lorraine. Snack Bar: Rib BQ; Hot Beef; French Bread Pizza.

WEDNESDAY: Fresh Vegetable Soup; Meat Loaf; Monte Cristo Sandwich; Chicken Chow Mein. Snack Bar: Polish Sausage; Turkey Club; Taco.

THURSDAY: Chicken Gumbo Soup; Braised Chicken Livers; Beef Enchiladas; Polish Sausage & Sauerkraut. Snack Bar: Knockwurst; BLT.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Baked Stuffed Cornish Hen; Cheese Omelette. Snack Bar: Chicken NASA; Oyster Sandwich.

Panel to Study Enterprise in Space

The National Academy of Public Administration, at NASA's request, recently established an 11 member panel to study potential private industrial and commercial development of space.

The opportunities for private investment in space range from ground-based support activity to the manufacturing of materials in the low-gravity of space to the communications satellite business.

The academy panel will help NASA explore and formulate policies to foster private investment by identifying institutional barriers which may inhibit private sector investment; proposing policies and programs to foster such investment; and assessing alternative ways for government and the private sector to work together. The academy's final report will be issued in the spring.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 7 April 8, 1983

Challenger Makes Debut

Challenger, the second of NASA's fleet of four Shuttle Orbiters, proved its metal (and composites) this week as it began a five-day mission in Earth orbit.

The 93-hour countdown to launch ended without a single unplanned delay, and the Shuttle lifted off exactly on time at 1:30 p.m. Monday, April 4. Several hundred thousand Easter week vacationers had a near-perfect view of the Shuttle launch and early ascent.

The first major task of the mission, deployment of the Tracking and Data Relay Satellite (TDRS-A), was completed ten hours after launch at 11:32 p.m. A still unknown problem in the satellite's inertial upper stage (IUS) caused the TDRS to remain in an elliptical orbit rather than the planned geosynchronous orbit. Ground controllers think they can gradually nudge the satellite closer to a perfect geosynchronous orbit during the next several weeks.

The second major mission objective, a space walk into Challenger's payload bay, is scheduled (at Researcher press time) for Thursday afternoon, April 7.

The four-man crew of Challenger had universally nice things to say about the craft during the first two days of flight. Paul Weitz, a veteran of the Skylab 2 mission in 1973, is commander. His rookie crew consists of pilot Karol Bobko and mission specialists Dr. Story Musgrave and Donald Peterson.

Mission specialists Musgrave and Peterson were scheduled to don their

Continued on page 13.

STS-6 Carries Langley Orbiter Experiment

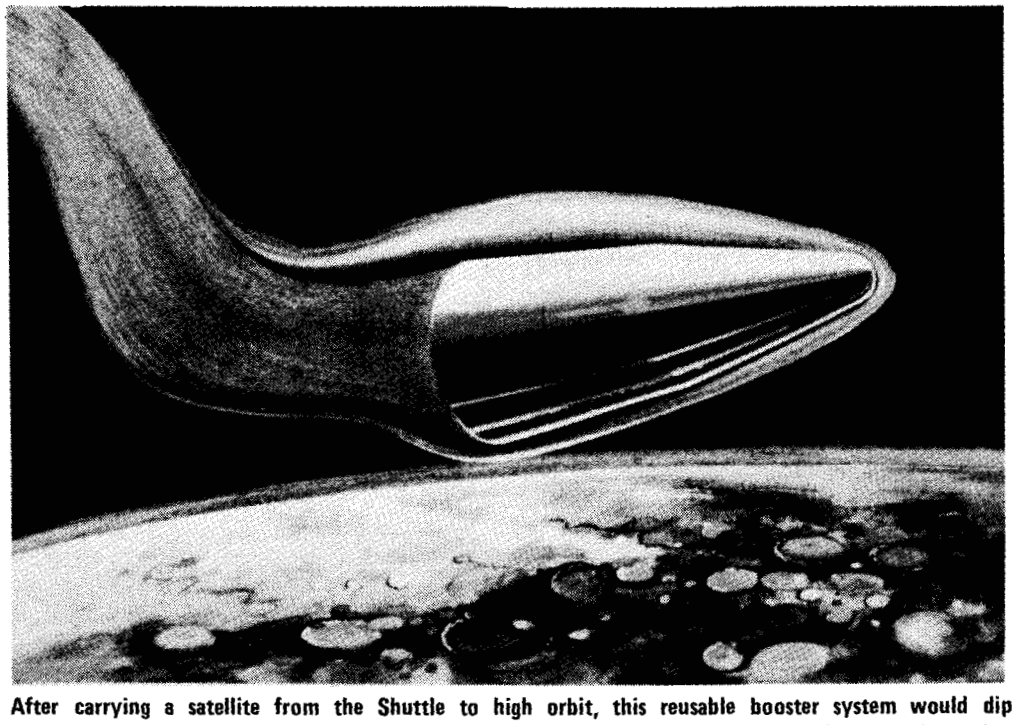
A package of highly-sensitive instruments are installed on the Shuttle Orbiter Challenger for STS-6, the sixth flight of the Space Transportation System (STS), at the request of the Langley Research Center.

Called HIRAP, for High Resolution Accelerometer Package, the experiment is designed to measure vehicle accelerations caused by aerodynamic forces acting on the shuttle orbiter during the high altitude portion (above 45 mi./73 km) of atmospheric reentry. Langley researchers will use data from HIRAP to determine aerodynamic characteristics of the orbiter at altitudes where the atmosphere is rarefied, or extremely thin. Aerodynamic flight at these altitudes cannot be simulated in ground facilities.

Aerodynamic data resulting from the experiment are important to development of future reusable orbital transfer vehicles now in the conceptual stage. These vehicles will one day carry payloads from the low-Earth orbit of shuttle to geosynchronous orbit, and return for reuse. Upon return, orbital transfer vehicles may use aerodynamic maneuvering in the upper atmosphere for braking and guidance to place them back into lower orbits for rendezvous with the shuttle and return to Earth.

This aerodynamic maneuvering will occur in the same altitude range as that in which the HIRAP experiment will operate. Currently used vehicle stages for orbital transfer are expendable and can only deliver payloads to higher orbits,

Continued on page 2.



After carrying a satellite from the Shuttle to high orbit, this reusable booster system would dip into the upper reaches of the Earth's atmosphere to slow for return to the Shuttle. Information on flight characteristics through the atmosphere at rarified heights is to be gathered by Langley's "HIRAP" on STS-6 through 12.

25th Anniversary
1958-1983

STS-6 CREW. These four astronauts are the first crew members to man the Space Shuttle Challenger. Seated are Paul J. Weitz, (left), commander, and Karol J. Bobko, pilot. Standing are Donald H. Peterson, (left), and F. Story Musgrave, both mission specialists.

STS-7 to Land at KSC

STS-7, Challenger's second mission, is scheduled to land at Kennedy Space Center if benign weather conditions are present on the scheduled reentry date. USAF Lt. Gen. James A. Abrahamson, head of the Space Transportation System, said if strong crosswinds or other unfavorable weather conditions, such as a cloud cover, exist at Kennedy, the landing will be retargeted for Edwards Air Force Base, Calif.

Since weather conditions will be the deciding factor on where the Space Shuttle will land, the primary landing site will be chosen while the Challenger is in orbit.

Preparing both landing sites for end-of-mission ground recovery and turn-around activities is not expected to be a problem since an orbiter cooling and purge equipment convoy has always been available at Kennedy in the event of a return-to-launch-site Launch abort.

Langley Experiment

Continued from page 1.

not return them.

The experiment package was developed as part of the Orbiter Experiments Program of NASA's Office of Aeronautics and Space Technology. This program provides for research experiments to be flown aboard the shuttle orbiter to obtain data with which researchers may expand and improve the technology base required for development of second generation space transportation systems.

The HIRAP experiment will be carried on all Challenger flights for the next several years. A twin HIRAP instrument is also being installed on the Orbiter Columbia during its modification, currently underway at Kennedy Space Center.

Principal technologist for HIRAP is Robert C. Blanchard of the Space Systems Division.

Secretaries' Program Planned

A Secretaries' Program will be held in the Activities Center Tuesday, April 26, from 9:30 to 10:30 a.m. The Langley Activities Association will sponsor a fashion review titled, "The Working Woman's Wardrobe." Refreshments will be served.

Since this year's program has been designed principally for secretaries, supervisors will not be asked to participate but will be welcome if they desire to attend.

Reservations are required since seating is limited. Please make your reservations with Pat Gates, ext. 2058, by April 15.

Your time should be charged to Job Order A-1980.

Performance is based on patience and practice.

Symposium Addresses 'Computer-Aided Geometry Modeling'

Langley is sponsoring a "Symposium on Computer-Aided Geometry Modeling" from April 20 – 22 at the Activities Center.

The symposium will focus on understanding how best to represent geometric objects and regions in a computer environment, and assessing future trends in geometry modeling for computer applications. Presentations of invited papers, contributed papers, poster papers and demonstrations will address several aspects of the methods and theories of the subject and illustrations of several applications of geometry modeling.

Copies of the program are available from Susan Bostic, Mail Stop 246, or Julie Fowler, Mail Stop 125.

NASA employees and contract managers are asked to submit the registration forms, which are included in the program, to their division office. If the number of registrants exceed the capacity of the Activities Building, an attendance quota for each division will be imposed.

The $15 registration fee will be waived for NASA employees.

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 115, telephone 3006.

Editor . . . . . Jean Saunders
Editorial Assistant . . . . . Pat Zoeller
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.

Conway Appointed Assistant Chief of FED

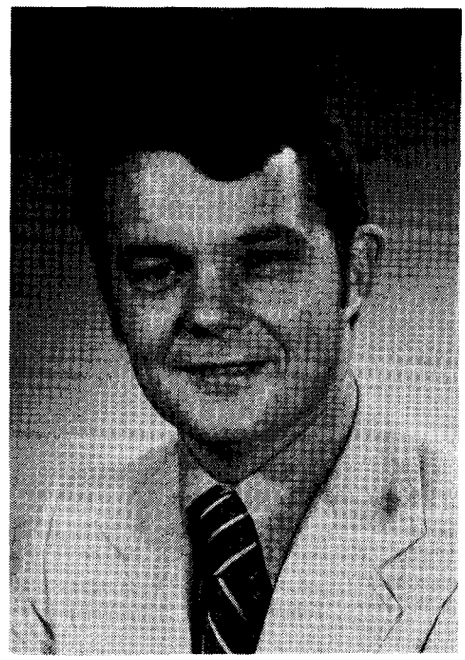
Bruce A. Conway has been appointed Assistant Chief, Flight Electronics Division, at Langley. He is former Technical Assistant to the Director for Electronics.

In this position, Conway will be responsible for assisting the chief in directing a broad program of spacecraft and aircraft instrumentation engineering research and applications. He will take part in the overall management and technical direction of electronics sensor, communications and information systems technology activities in support of Langley's spacecraft flight projects and research programs.

Conway began his NASA career in 1961 as a student trainee in the cooperative engineering program between Langley and Virginia Polytechnic Institute and State University. From 1965 to 1972 Conway was an aerospace technologist. He served as the Technical Assistant, Flight Dynamics and Control Division, from 1972 until July 1975. From August 1975 to July 1976 Conway served a one-year tour as Chief of Avionics at NASA Headquarters in Washington, D.C., as part of the NASA Career Development Program.

Upon his return to Langley in August 1976, he became Staff Assistant to the Director for Electronics. In March 1981 he was appointed Technical Assistant, where he assisted the Director for Electronics in the conception, monitoring and implementation of research programs in electronics for aerospace applications. He also participated in the management of Directorate activities, such as computation and instrumentation which support virtually all of Langley's in-house research programs.

Conway received a bachelor of science degree in aerospace engineering



from Virginia Polytechnic Institute and State University in 1965. He earned a master of science degree in aerospace engineering from George Washington University in 1974.

The author of five technical papers, Conway has received two Langley Group Achievement Awards, a NASA Group Achievement Award and a Skylab Achievement Award.

Conway and his wife, Carol, live in Seaford. They have two children: Robert, a junior at Georgetown University, and Cathy, a senior at York High School.

Status Review Set for April 18

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 18; the morning session will begin at 8:30 and include presentations by External Affairs Office and Management Operations.

STRUCTURES

Current Topics in Aeroelasticity

Research Tests Supporting the Aircraft Landing Dynamics Facility (ALDF) Update

AERONAUTICS

A Method of Reducing Orifice Induced Pressure Error

Preliminary Measurements of Velocity, Density and Total Temperature Fluctuations in Compressible Subsonic Flow

Surface Hot-Films Suitable for Transition Detection in Cryogenic Wind Tunnels

SE&O

Summary

NTF Update

Annual Maintenance Plan for Major Facilities

The afternoon session will begin at 1:30.

ELECTRONICS

Modeling and Application of a Total Energy Rate Sensor

Software Reliability

PROJECTS

STEP/Experiment Workshop Plans

Integrated Dynamics/Controls Flight Experiment Objectives

SPACE

A Photochemical and Transport Study of Stratospheric Nitrogen Dioxide Using Nimbus 7 LIMS Data

Comparison of Four Antenna Concepts

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.

Speakers Bureau

Roy Insley gave an overview of the Space Shuttle program to York County School students on March 4.

Mitch Thomas spoke about Langley's lightening research to the Williamsburg Amateur Radio Club on March 8.

Robert Baucom addressed a West Virginia University student group via telelecture on March 8 about composite materials.

Ray Goodman talked about space exploration with the Fort Eustis Boy Scouts on March 9.

Roy Insley gave a Space Shuttle overview on March 10 to the members of the Poquoson Ruritan Club.

Cary Spitzer spoke on "Space Exploration — Present and Future" on March 23 to the attendees of the Wirebound Box Manufacturers Association Convention.

Cary Spitzer presented a program on March 29 to the Denbigh Kiwanis Club about the Viking and Voyager missions.

— photo by William Salyer

Workshop participants included Donald P. Hearth, Langley Director, James M. Beggs, NASA Administrator, John D. Hodge, Director of NASA's Space Station Task Force, Paul F. Holloway, Langley Director for Space, Dr. Walter B. Olstad, NASA Associate Administrator for the Office of Management, and Philip E. Culbertson, NASA Associate Deputy Administrator.

Workshop Attracts VIPs Nation-wide

Almost 700 aerospace technical specialists met last week in Williamsburg to define a technology development program that will support a possible future U.S. space station in Earth orbit.

Through four days of large and small gatherings within the framework of a workshop, the specialists from NASA and other government agencies, industry and universities planned, discussed, argued, philosophized and generally got better acquainted with each other and with their separate studies on how to establish a permanent human presence in space.

At opening and closing banquets, the specialists were told to let their imaginations soar in planning a future space station, but to make certain that their final plans could meet the hard test of economic practicality.

U.S. Representative Harold Volkmer, Chairman of the House Subcommittee on Space Science and Applications, admonished the specialists not to come to Congress with vague plans and ideas for any future space station. He said that Congress will back such a project only if it can be shown to have definite and important benefits to the nation.

Three nights later, NASA Administrator James Beggs told the same audience that it must "dream large dreams" in order to succeed with a project as important as a space station.

Beggs also said that the "end result" of the workshop and similar future meetings could "serve as the focal point for the development of new advanced technology, as was the case with Apollo and the Space Shuttle. Developments of this kind not only strengthen the government-industry-university partnership that NASA pioneered, but benefit the nation as a whole."

After first-day presentations on NASA's space station approach, mission analysis studies and possible user missions, the workshop participants broke into working panels of special disciplines for two days of intent discussion and planning.

The final day's agenda included reports on the panel meetings and a summary of the workshop.

The technical disciplines considered by the panels are data management; attitude, control and stabilization; communications; thermal requirements; crew and life support; structures and mechanisms; systems and operations technology; auxiliary propulsion; power; and human capabilities.

Similar workshops are planned for the future as space station planning continues.

Recipe For Life

Take equal parts of Faith and Courage, mix with a Sense of Humor, sprinkle with a few Tears, add a large helping of Kindness. Bake in a Good-natured oven, and dust with Laughter. Remove all Indulgence and Pity for self. Serve generously.

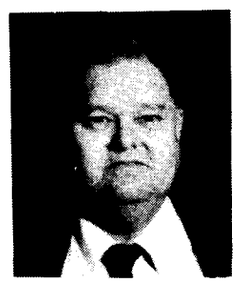
Williamsburg Hosts Summit

Memorial Day weekend will feature a host of dignitaries in Colonial Williamsburg as President Reagan and six foreign heads of state and government join together for the ninth annual world economic summit.

Leaders from the United States, Great Britain, Canada, the Federal Republic of Germany, Italy, France and Japan will meet May 28-30 in the Historic Area and volunteers are needed to assist the 1,500 support personnel and 4,500 journalists who will attend the summit meetings. Meetings and dinners will be held in the Capitol, the Governor's Palace, the Williamsburg Lodge and Conference Center, the Williamsburg Inn, Carter's Grove and William and Mary Hall.

Part-time and weekend volunteers are needed, beginning in mid-April, for typing, language translating, public relations, security and other special skills. Employees wanting to offer assistance during the 1983 Summit of Industrialized Countries should call the Office of External Affairs, ext. 2932, for a volunteer form, which is to be mailed directly to the address given on the form.

In Memoriam



Guy W. Boswick Jr., a public affairs specialist in the Office of External Affairs, died March 24 in the Medical College of Virginia Hospital in Richmond. He was 57.

Boswick had nearly 30 years of federal service at the time of his death. He had worked full time at Langley since March 1957 and held several short-time appointments in 1947 and 1955. He served in the U.S. Army Air Force from February 1944 to May 1946 and worked at the U.S. Naval Air Station from October 1946 to May 1947.

Boswick did much to promote Langley and its work through special programs that he planned for visiting dignitaries and groups. He developed many close ties and friendships with military and community leaders, co-workers and the public. "Guy was thought of as Langley's 'chief host' and will be greatly missed by us all," said Gary Price, Head of the Office of Public Services.

1983 Shuttle Schedule

FLIGHT	ORBITER	CREW	SCHEDULED LAUNCH DATE	DURATION	PAYLOAD
STS-6	*Challenger*	**Cmdr.** Paul J. Weitz (Capt., UNS - ret.) **Pilot** Karol J. Bobko (Col. USAF) **Mission Specialists** F. Story Musgrave* Donald H. Peterson (Col. USAF - ret.)	April	5 days	TDRS-A — NASA's Tracking and Data Relay Satellite
STS-7	*Challenger*	**Cmdr.** Robert L. Crippen (Capt., USN) **Pilot** Frederick H. Hauck (Capt., USN) **Mission Specialists** John M. Fabian (Lt. Col., USAF) Dr. Sally K. Ride* Dr. Norman E. Thagard*	late June	6 days	OSTA-2 — Office of Space and Terrestrial Applications instrument package SPAS-1 — German Shuttle Pallet Satellite TELESAT-F — Canadian communication Satellite PALAPA-B1 — Indonesian communication Satellite
STS-8	*Challenger*	**Cmdr.** Richard H. Truly (Capt., USN) **Pilot** Daniel C. Brandenstein (Cmdr., USN) **Mission Specialists** Dale A. Gardner (Lt. Cmdr., USN) Guion S. Bluford Jr. (Lt. Col., USAF) Dr. William E. Thornton*	late July, early August	3 days	INSAT 1-B — Indian communication Satellite TDRS-B — Second element in NASA's Tracking and Data Relay Satellite system
STS-9	*Columbia*	**Cmdr.** John W. Young (Capt., USN - ret.) **Pilot** Brewster H. Shaw Jr. (Major, USAF) **Mission Specialists** Dr. Owen K. Garriott* Dr. Robert A. Parker* **Payload Specialists** Dr. Bryon K. Lichtenburg (U.S.) Dr. Ulf Merbold (West Germany)	late September	7 days	Spacelab 1 — European Space Agency's orbiting research center
STS-10	*Challenger*	**Cmdr.** Thomas K. Mattingly (Capt., USN) **Pilot** Loren J. Shriver (Major, USAF) **Mission Specialists** Ellison S. Onizuka (Capt., USAF) James F. Buchli (Major, USMC) 5th crew member to be named	late November, early December		DOD-84-1 — Classified, Department of Defense payload

*Civilian

Parlez-Vous Français?

Wornom Reviews Experiences at French Research Center

Dr. Stephen Wornom, Theoretical Aerodynamics Branch, recently spent 14 months in Paris working with a theoretical research group at NASA's French counterpart, the National Institute for Research and Studies in Aerodynamics, which is more familiarly known by its acronym ONERA. Wornom's research with ONERA is part of a cooperative agreement between NASA and ONERA. Wornom discussed some of his impressions of ONERA and its work in a recent interview with the Researcher.)

Researcher: What is the purpose of the cooperative agreement between NASA and ONERA?

Wornom: The overall goal of the research done under the cooperative agreement is to develop a new generation of numerical methods which will increase the present capabilities of NASA and ONERA in using computers as numerical wind tunnels. Eventually, we would like to do 100 percent of the design phase of an airplane with computers and use the very costly wind-tunnel testing only to verify the design and for situations where no computer capability exists.

Researcher: Has your work at Chatillon fostered a stronger relationship between NASA and ONERA?

Wornom: In addition to my work at Chatillon, the cooperative agreement provides for ONERA's researchers to spend several months at Langley beginning in September 1983. France, as a gesture of good faith, has also given NASA access to some of Le Balleur's results from previous work. And because I was at Chatillon, two researchers from Langley who were attending a conference in Europe stopped at the French facility and heard several official presentations about ONERA's work. The cooperative agreement has been beneficial to both sides.

Researcher: In what way was the center different from Langley?. . .similar to Langley?

Wornom: Chatillon, the ONERA Center where I worked, is one of ONERA's six research facilities. Chatillon doesn't have any wind tunnels. While work at Langley covers a broad area of both experimental and theoretical research, Chatillon is almost entirely devoted to theoretical work. Langley is consequently spread over several acres in many different buildings, while the Chatillon facility is in an 11-story building in suburban Paris.

When I think of ONERA I think of it as NASA's French counterpart. It serves the French government in the same research roles that NASA serves the United States, with the exception of space research. In France, the space program is separate from the aeronautics program. France participates in the European Space Agency. But when you speak of aeronautical research in France, the name that comes to mind is ONERA.

When we began the cooperative program, we (Langley) proposed two projects to ONERA that we were interested in researching. One proposal was what we call a high-risk proposal, one that could be the best way or the worst way to approach the problem, while the other was a low-risk project. The low-risk project was based on already proven concepts -- we were pretty sure it would work. Although the high-risk project was more appealing to us, we wanted to stress the ONERA that the project was high-risk with no guarantee of return.

I still remember the ONERA official's response to our two proposals. He said, "(The high-risk project is) no problem! If NASA and ONERA cannot afford to look at high-risk proposals, then, tell me who can?"

It seems that both ONERA and NASA share this attitude. They give their researchers a lot of leeway and support, just as NASA does.

Researcher: Do their research programs closely parallel Langley's or does their research focus on different areas?

Wornom: We are interested in the same research topics, however, we often approach them differently. As an example, in the past, there was a vast difference between the computer power at NASA facilities and at European research facilities. That gap has narrowed greatly now and in another two or three years, ONERA's Chatillon facilities will be on the same level as Langley's, but in the 1970's the difference in our computational power and Europe's was significant. At that time a method for computing boundary-layer flows, the integral boundary layer method, was currently held in general disdain within NASA. After all, we had great computer power and this simple method just seemed too rudimentary. However, England and other European countries didn't have our computer power so they worked with and improved the method. The bottom line is that at an 1981 AGARD conference which compared present methods for computing flows over airfoils it was concluded that the current state-of-the-art integral boundary methods, gave the best results. Not surprisingly, the three methods most often used were developed in Europe. Perhaps by studying in a different environment, I also learned to approach research problems differently.

Researcher: Did the differing culture pose any major problems?

Wornom: Two years before I went to France I took a year of French at night school. I also took French at night school while I was at Chatillon. Obviously, since I worked all day and went to school at night, I don't know very much about the famous Parisian night life. But language was a major problem even though several people in my group spoke excellent English. While that helped greatly, communicating with secretaries, telephone operators and library aides was very hard and sometimes an amusing experience for

both of us.

It is much more prevalent for the French to be bilingual than it is in the United States. And the reason is fairly obvious, in France you are only a few hours from Britain, Spain, Germany and several other countries. After all, France is not as large as Texas. However, because a large percentage of the population is bilingual does not mean they choose English as their second language. They often speak the languages of their neighboring countries. But in the scientific field, it is common for researchers to at least be able to read English because most journals, references and other information sources are written in English. The French tend to be perfectionists and they do not want to converse in English unless their English is perfect. The accent makes the difference in really being able to speak and understand the language. I have made progress in the language but I am not fluent. It is an impossibility for an adult to become fluent in that short a period. I hope one day to speak fluent French.

Researcher: In your opinion, what are some of the areas of research in which ONERA excels?

Wornom: From my point of view, they seem to excel in the area of computing the flows over airfoils which account for viscous effects. They have an intensitive research emphasis in computing unsteady flows using the same techniques that Le Balleur applied to computing steady inviscid-viscous interactions. Their work in this area seems advanced to me.

Researcher: What aspect of your work at Chatillon did you enjoy the most?

Wornom: I enjoyed the unbroken concentration on my work that I experienced while at Chatillon. Naturally, at your own center you have presentations and administrative duties. While at Chatillon, I spent 100 percent of time in research. Each year I set goals, research goals, for myself. This past year I felt that I accomplished more than any other year that I've worked with NASA.

The aspect of the cooperative program that I enjoyed most was the combination at having the opportunity to work with ONERA researcher Jean-Calude Le Balleur while devoting all of my time to research. Le Balleur is probably one of the top two or three researchers in the world in the field of computing viscous-inviscid interactions. Working with a researcher of his caliber was an honor and an exciting experience.

Researcher: What impressed you most about ONERA's work?

Wornom: While I was impressed by the educational background of ONERA's employees, what impressed me most was the level of complexity of the problems they attempted to solve. In almost every area, they are working in three dimensions which is the toughest problem you can look at today.

Researcher: Did you find your French co-workers different in attitude and habits from your Langley co-workers?

Wornom: The French researchers at ONERA have a much more formal manner than those at NASA. They would never address their superiors by their first name, while at Langley I address my Branch Head by his first name. Their hierarchy is much more rigidly defined. Even contact between people on a peer level is not as easy as it is here. Here we greet everyone, but in France they are very likely to walk past someone without acknowledging them at all. However, once the French make contact, it is a deep relationship. And if they invite you to dine at their home, that is a real, true gesture of friendship. No wonder! They spend a fortune on the meal, probably three times what the average American would spend on a meal. Their food and wine are unbelievable.

Once a Frenchman accepts you, he really extends himself. The French do not believe in empty gestures of politeness. If a Frenchman offers to meet you at an airport, he would like to meet you. He would not offer because he felt it was only polite.

Another French custom that differs from our American way is that they have a normal meal in the middle of the day. A Frenchman would never just eat a sandwich or a salad at lunch.

I don't believe I met a French researcher at ONERA who didn't have a consuming interest in some area of the arts. Of course, the French price themselves on living in the cultural center of the world. Their educational system is geared to be liberal, focusing on history and literature as well as mathematics and sciences. I saw some excellent collections of classical music in private homes there, and some of the most extensive collections of American jazz that I had ever seen.

Naturally, since they are very interested in the arts, they consider Americans lacking in that area. French researchers regard American researchers as very efficient in their technical fields, but quite ignorant outside of their field. What does the average American engineer know about history? painting? music? However, my French co-workers at ONERA could converse about the arts for hours.

The number one American television program in France is "Dallas" so you can imagine the average Frenchman's image of the typical American.

Researcher: How has France's new government affected ONERA?

Wornom: As you know, the French now have a socialist government. Although this will surprise people here the socialist government has increased funding for research. Consequently, ONERA has been able to hire new people. The external community in France is very supportive of ONERA's work.

Researcher: And, the inevitable question, is Paris really beautiful in the spring?

Wornom: It is very beautiful!

THE GREATEST TRUTHS are the simplest; and so are the greatest men and women.

H. W. Hare

Crewmembers Named for STS-13, Spacelab 2 and 3

Commanding STS-13 will be Robert L. Crippen, who was pilot on STS-1 and is scheduled for command of STS-7. His crew includes Francis R. Scobee, pilot; and mission specialists Dr. George D. Nelson, Terry J. Hart and Dr. James D. van Hoften.

STS-13, the sixth flight of the orbiter Challenger, is scheduled as a five-day mission in April 1984. Its major objectives are repair of the malfunctioning Solar Maximum Mission satellite and deployment of the Long Duration Exposure Facility.

Commander of the Shuttle crew for STS-18 (Spacelab 3, which is scheduled for launch prior to Spacelab 2) is Robert F. Overmyer. Overmyer was the pilot of STS-5. With him will be Frederick D. Gregory, pilot; and mission specialists Dr. Don L. Lind, Dr. Norman E. Thagard and Dr. William E. Thornton. Both Thagard and Thornton are scheduled for Shuttle flights prior to Spacelab 3, Thagard on STS-7 and Thornton on STS-8. Payload specialists will be announced later.

Spacelab 3 will be the first operational Spacelab mission, carrying experiments in materials processing, space technology and life sciences.

Mission specialists on STS-24 (Spacelab 2) will be Dr. Anthony W. England and Dr. Karl G. Henize. Other crewmembers and payload specialists will be named later.

Originally scheduled to precede SL-3 into orbit, SL-2 is a developmental flight carrying 13 major experiments in fields such as plasma physics, infrared astronomy and solar physics. The transposition of the two Spacelab flights is caused by a delay in completion of the Instrument Pointing System, necessary for SL-2 experiments.

LOOKING TO THE FUTURE – The eighth space Shuttle external tank looms over the shoulders of Shuttle astronauts Dick Truly, left, and Dale Gardner, right. Truly and Gardner will fly together on STS-8. Within ten minutes after their launch, this external tank will separate from the Space Shuttle and the astronauts will be on their way to launch NASA's second Tracking Data Relay Satellite and the Indian communications and meteorological satellite – INSAT 1-B. The external tank, manufactured by the Michoud Division of Martin Marietta Aerospace, weighs an unbelievable 1,638,565 pounds when fully loaded.

Research Featured in Science Digest

The research activities of two Atmospheric Sciences Division (ASD) scientists are featured in two articles in the current issue of *Science Digest* (May, 1983). "The Origin of Life: A New Recipe for Cosmic Soup" describes the research of Dr. Joel S. Levine, Theoretical Studies Branch and "El Chichón: The Volcano that's Changing the World" summarizes the activities of Dr. Michael P. McCormick, Aerosol Research Branch.

"Cosmic Soup" describes how theoretical calculations performed by Levine and colleagues toppled the orthodox view about the composition of the early atmosphere that spawned Earth's first life. The article on "El Chichón" describes the measurements of the volcanic cloud obtained by McCormick and colleagues using groundbased and airborne LIDAR and satellite techniques.

Recent Retirees

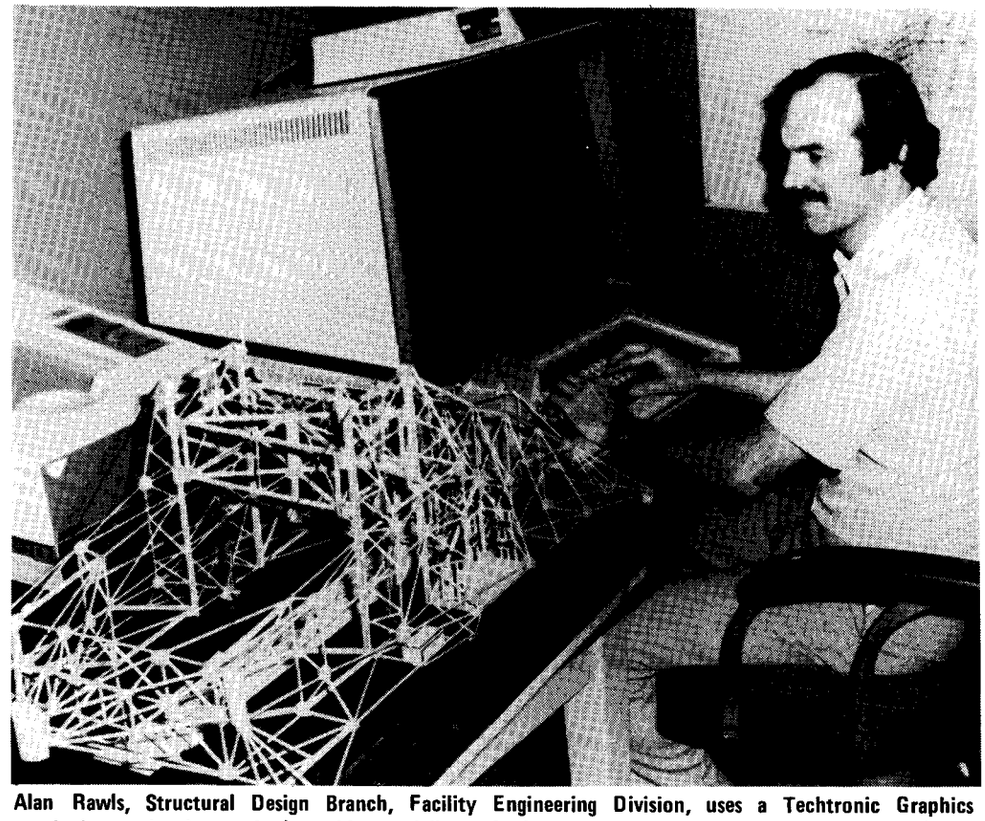
John S. Evans, High-Speed Aerodynamics Division; **Waldo I. Olhman**, Flight Dynamics and Control Division; **Clarence I. Brooks**, Operations Support Division; and **John R. McGehee**, Structures and Dynamics Division, retired April 1.

Odell A. Morris, High-Speed Aerodynamics Division, retired April 3.

James Patton and Philip Brown, Low-Speed Aerodynamics Division, are test pilots in Langley's spin research program. In this program planes equipped with jets or recovery chutes, are intentionally put into a spin. Research pilots hope to learn through these tests the characteristics that add to a plane's susceptibility to the stall/spin situation.

All In A Day's Work

Sally Johnson, Fault Tolerant Systems Branch, determining the performance of a fault-tolerant clock synchronization algorithm. AIRLAB's ten VAX-II computers will be used to investigate techniques for using several processors doing the same computations concurrently and voting on the outputs so that a fault on one processor will not fault the entire system. To control their natural tendency to drift apart, the physical clocks of the individual processors must be resynchronized periodically so that the processors are all voting on the same outputs at the same time.



Alan Rawls, Structural Design Branch, Facility Engineering Division, uses a Techtronic Graphics terminal to do interactive graphic modeling of the Landing Loads carriage, using CAD/CAM software.

Space Telescope Subject of New Book

NASA's huge Space Telescope, scheduled for launch into earth orbit in 1985, will provide an unprecedented increase in our knowledge of the universe, according to a new NASA publication.

The new book, "Space Telescope," is aimed at the general reader and details the telescope's capability, what it is expected to see in space and even an indication of its probable impact on science and human thought.

NASA Administrator James M. Beggs stated: "There is good reason to believe the Space Telescope will be the most important scientific instrument ever flown."

This new instrument will be able to see objects 50 times fainter and seven times farther away than any telescope on earth. This means it will be able to view a volume of space equal to 350 times that which we can now see from ground observatories.

What the human eye will see will be, literally, a whole new universe unobscured by the atmosphere via a 2.4-meter (95-inch) mirror in the spacecraft. Astronomers can presently see via ground observatories less than 1 percent of a universe that Space Telescope is designed to view.

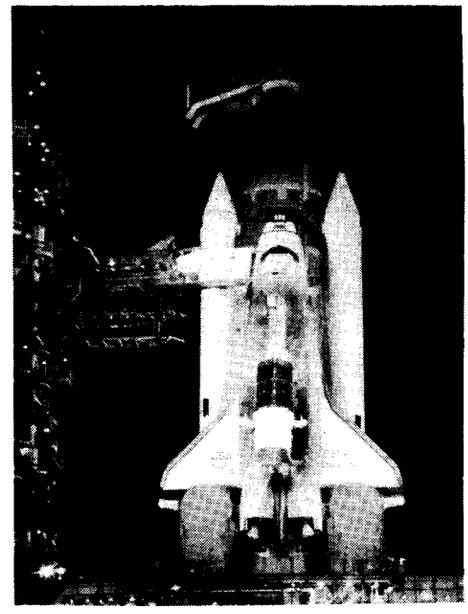
Its launch weight will be about 11,500 kilograms (25,500 pounds); it will be 13.1 m (43 feet) long and have a diameter of 4.27 m (14 ft.).

It will be placed in a 600 kilometers (375 miles) circular orbit by the Space Shuttle where it can be serviced and brought back to earth for refurbishment.

The book is available at the U.S. Government Printing Office, Washington, DC 20402. The price is $5.50. The GPO stock number is 033-000-00862-7.

Thanks

William D. Deveikis writes, "Sincere thanks to those who planned, participated in, and attended my retirement "wake." The event was so exciting, I couldn't sleep that night. May my next wake be as joyous. The gifts were appropriate and are appreciated. Best wishes to all my associates at Langley."



This double exposure by Technicolor photographer, Klaus Wilckens, uses trick photography to cause the TRW, Tracking Data Relay Satellite to appear to be inside the cargo bay of the Orbiter Challenger, at complex 39 launch site. Actually, the payload that is on the sixth Shuttle mission had not been loaded in the cargo bay when this photograph was taken.

– photo by Fred Jones and Don Ward

Langley Director, Donald Hearth, (right) and Richard Long, Director of the Army Structures Lab (RTL-AVRADCOM), discuss an Army CH-47 (Chinook) helicopter model which is part of a display that was shown at the Langley Visitor Center in March. The display portrays the missions and activities of the U.S. Army Aviation Research and Development Command (AVRADCOM) with headquarters in St. Louis, Mo. The display will next be exhibited at the Applied Technology Lab at Ft. Eustis, which is also an element of AVRADCOM.

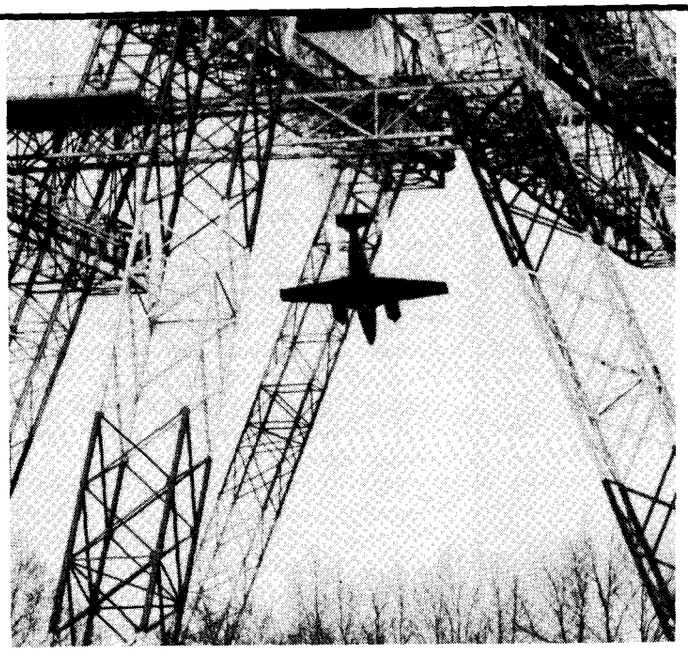
Pickup Riding, a Bad Idea

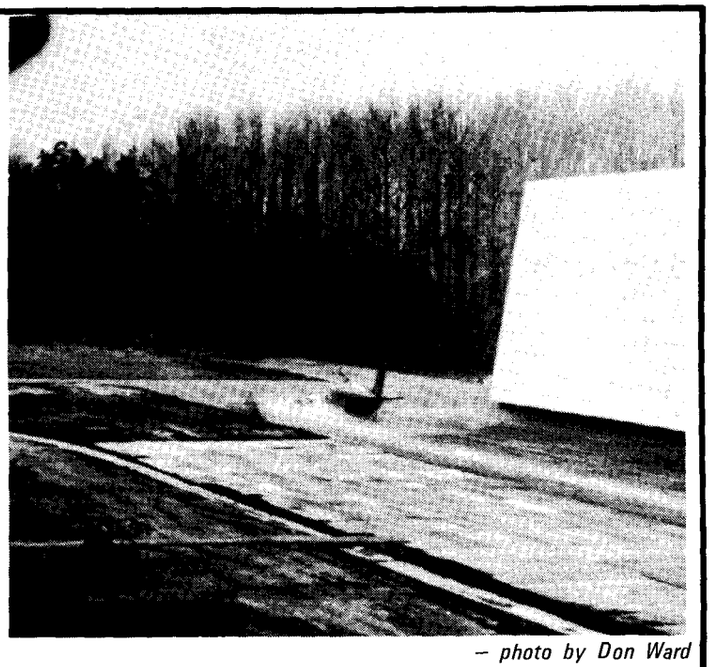
The following article appeared in "Family Magazine" and is reprinted courtesy of the National Safety Council.

The back of a pickup truck is not a safe place to ride. The National Transportation Safety Board made a survey of fatal accidents involving pickup trucks that occurred between 1975 and 1979 and found that an average of 242 people were killed each year while riding in the cargo space of pickups. In addition, an unknown number of passengers who may or may not have been riding in the back died later as a result of injuries they suffered, or sustained disabling injuries.

Most victims were 22 years or younger, and in six specific accidents studied by the NTSB, an average of eight people were riding in the cargo area.

Carrying occupants in the back of a pickup affects vehicle handling because the unrestrained passengers are free to move around and can cause a shifting of weight or a sudden change in the vehicle's center of gravity. And an accident that would be trivial if an ordinary car were involved can be serious or fatal with a pickup.





– photo by Don Ward

The NASA-25 airplane, the last scheduled test under the NASA/FAA Crash dynamics Program, is shown at the Impact Dynamics Research Facility shortly after ignition of four solid propellant rockets used to obtain the desired impact velocity for the test. NASA-25 also represented the third in a series of full-scale crash tests to demonstrate the potential improvement in crash behavior using modifications to the floor structure beneath the passenger area. This structure was re-designed to collapse and absorb much of the vertical impact energy of the airplane at reduced crushing loads.

Pioneer 10 Beyond The Known Planets

On June 13, 1983, the U.S. unmanned spacecraft, Pioneer 10, will cross the orbit of Neptune. With that crossing, Pioneer will be farther out from the sun than any known planet, and will, in effect, have left the solar system.

Though Pluto is normally the outermost planet, its orbit is so elliptical (elongated) that for the next 17 years it will be inside Neptune's orbit, and Pluto will never again catch up with Pioneer.

Pioneer 10 will be farther out than Pluto at 2 p.m. PDT on April 25, 1983, 4,472,497,438 kilometers (2,779,209,908 miles) from the sun and traveling at 30,558 mph with respect to the sun. (At Pluto distance, Pioneer's speed of travel will be 30,613 mph.)

At 5 a.m. PDT, on June 13, 1983, the spacecraft will cross the orbit of Neptune at 4,527,978,612 km (2,813,685,909 mi.) from the sun. It will then be outside all of the known planets in the solar system.

At Pioneer's Neptune distance of 2.81 billion miles, it will take four hours and 20 minutes for spacecraft data, traveling at the speed of light, to reach the Pioneer Operations Center at NASA's Ames Research Center, Mountain View, Calif. At Pluto distance, one-way light time will be 4 hours and 16 minutes. At Neptune distance, communication time will be increasing at an average of about one minute every four days.

This first flight by a spacecraft beyond the planets is an event which will occur only once in human history.

Pioneer carries a message for any intelligent beings who might find the spacecraft, which after traveling 3.5 billion miles is by far the longest-distance letter ever sent.

Experts at NASA's Deep Space Network expect to be able to track Pioneer out to somewhere beyond five billion miles.

NASA and other groups plan to mark the historic flight of Pioneer, the first man-made object to leave the solar system, with ceremonies involving pioneer participants, investigators, and other interested people.

Since its launch March 3, 1972, Pioneer 10, the first spacecraft to Jupiter, has traversed the asteroid belt, survived Jupiter's punishing radiation belts, and operated almost without flaw. By June 13, 1983, Pioneer 10 will have traveled 3.59 billion miles on its flight path, will have received more than 98,900 commands from earth, and transmitted more than 126 billion bits of scientific data.

Pioneer 10 has an array of achievements and discoveries, including:

- First trip to Jupiter.
- First crossing of the Asteroid Belt and finding that it presents little hazard to spacecraft.
- Discovery that Jupiter is a liquid planet.
- First model of Jupiter's huge, pulsating, magnetosphere and tremendously powerful radiation belts.
- First accurate measurements of mass and densities of Jupiter's planet-sized moons.
- First closeup pictures of Jupiter's Great Red Spot and belts and zones showing details of atmosphere circulation.
- Proof of origin of the gegenschein and zodiacal light (interplanetary dust).

Key Position

Kemp L. Parrish has been selected Supervisory Engineering Technician, Technical Support Section D, Tunnels Operations Branch, Operations Support Division, under Competitive Placement Plan 83-10.

Visitor Center Features New Views of Space

This painting by Sara Larkin, titled "Spacescape," was completed for the NASA Art Collection. It is one of 20 planetary spacescapes by Larkin on display at the Visitor Center. Larkin, whose works have been exhibited at the National Air and Space Museum and NASA Headquarters, uses a technique which combines classical skills with new materials to project the blackness and never-ending depths of space. Her work is drawn from memory with no photographic processes involved.

"New Views of Space" -- paintings by Sarah Larkin -- are featured at the Langley Visitor Center this month. Approximately 20 of Larkin's paintings, which record man's first exploration of space, are on display.

Larkin's artwork transports the viewer to places and moments of discovery, providing views of our solar system as a passenger aboard a space probe such as Voyager might see them. She notes, "I paint the planets not simply as they appear in photographs, but as they would look if you saw them without any technical translation -- with only the naked eye."

All Larkin's work is drawn from memory with no photographic processes involved. The technique employed is Larkin's own invention. Planets are primarily pastels on board, lacquers and/or acrylics painted and airbrushed, and overlay of acrylic or glass sprayed with black enamel. Her technique combines classical skills with new materials to project the blackness and never-ending depths of space. She depicts the moons and planets of our solar system as spheres of swirling, muted colors against a background of infinite blackness.

Recycling Could Save Money for Future NASA Space Missions

Inhabitants of a future space station could save millions of dollars by growing their own food.

A study conducted by Boeing Aerospace Co., Seattle, for NASA's Controlled Ecological Life Support System (CELSS) program at Ames looked into the recycling needs of future NASA missions.

NASA astronauts have always carried supplies such as food and oxygen and have stored waste. But weight penalties and transportation costs for longer missions and larger crews could prohibit storing or resupply in the future. At some point, recycling refuse into consumable supplies will become economically attractive.

Boeing researchers looked at NASA planning forecasts for the next 50 years and examined six typical missions to determine which of them could benefit from recycling.

Although the study indicated recycling would save money for all long-duration missions, it was found to be impractical for missions with short durations. The most effective use of recycling would be for a permanently occupied station.

For a space station which would operate longer than six years, regenerating 50 percent of the diet is less costly than resupplying the required food.

If the station operates more than eight years, producing 97 percent of the diet is more economical than resupplying an equivalent amount of food. A conservative estimate indicates this system would save at least $68 million over a 15-year space station lifetime.

Retiree Deaths

Percy R. Keffer Sr., Langley's first modelmaker, died March 22, at the age of 85. He worked at the center for 47 years and at the time of his retirement in 1967, was assigned to the Mechanical Services Division.

August B. Sansone, 79, died March 24. He retired in 1968 as an electrical supervisor in the Electrical Systems Division, after 37 years of service.

Thanks

The family of **Guy Boswick**, Office of External Affairs, is most appreciative of the generous donations of blood in his behalf and the flowers, visits, cards and prayers during his illness and death. "Co-workers and friends like you are reassuring and terrific 'spirit boosters.' Even though Guy was so ill he was very much aware of your generous support and constant concern," Shirley Boswick said.

Askley B. Smith writes, "I want to thank my friends and co-workers for making my retirement dinner party an enjoyable and memorable occasion. It is a great feeling to be with so many good people at one time. I will always cherish your friendship.

"A special thanks to those whose efforts went into planning and arranging the party to make it an unforgetable occasion. I also would like to thank the 'Professor' from Mathews, Va., who M.C.'ed the party, good work. The gifts, album and mementoes will long be treasured. I hope to see you all from time to time, I miss your fellowship most of all."

Challenger Launched

Continued from page 1.

space suits yesterday and begin a three-and-a-half-hour extravehicular activity at about 4:15 p.m. The space walk is similar to the one planned for the fifth Shuttle flight last November until equipment failures in both space suits forced cancellation of the walk into Orbiter Columbia's payload bay.

When Challenger lifted off Monday, it was an improved model Orbiter. It weighed almost 2,500 pounds less than Columbia and has several new features, including a heads-up display landing system and special see-through glass in front of the cockpit windows, which will provide a view of important landing information during reentry on Saturday.

Several changes have been made to Challenger's thermal protection system: more than 600 thermal tiles have been replaced by a blanket-like thermal material, and all 30,000 tiles have been specially treated (densified) to improve their durability.

The sixth Shuttle also had a lighter external tank, weighing about 10,000 pounds less than the standard tank. Lighter casings were also used for the two solid rocket boosters, each of which was 4,000 pounds lighter, increasing payload weight by 900 pounds.

Challenger's three main engines operated at 104 percent of rated-power-level, as compared with 100 percent for Columbia's main engines.

Several experiments are being conducted by the Challenger crew, including electrophoretic separation processes and further investigation of the effects of gravity on continuous flow electrophoresis; materials processing to attempt the quantity production of very tiny and identical latex beads in the 10 micron diameter range; and the recording of lightning activities with motion picture film and photo cell readings.

An artificial snow experiment, proposed by two Japanese high school students and sponsored by a Tokyo newspaper, will attempt to produce snowflakes in zero gravity. Results will be videotaped by cameras aboard Challenger.

Two other "Getaway Special" experiments are a seed germination experiment owned by a South Carolina seed company and a multiple disciplinary project built by students at the Air Force Academy.

The five-day flight of Challenger and its crew is scheduled to end with a landing at 1:49 p.m. Saturday at Edwards Air Force Base, Calif. Weather at the time of landing is predicted to be good.

Live television of the approach and landing will be available to Langley employees and the general public at the Visitor Center.

LAA Alaskan Tour

September 18-28, 1983

Once again LAA has put together an exciting 11-day tour to America's last frontier — Alaska.

You will fly from Norfolk to Vancouver, British Columbia. There you will directly board the luxurious Holland America Cruise liner, the Nieuw Amsterdam, and cruise along the Canadian coast. After a visit to Ketchikan, the first Alaskan port of call, you continue your cruise via the inside passage to Juneau, the capital city of Alaska. You will take a special cruise of the famous Mendenhall Glacier and arrive through the Lynn Canal at the notorious town of gold rush days — Skagway. There you will begin your overland Alaskan Adventure and enjoy an additional 6 days travelling through the Alaskan interior. You will even spend a night in a border lodge on Beaver Creek.

There is Fairbanks, McKinley Park and Anchorage to explore and visit before boarding your flight for Seattle and your connecting flight back to Norfolk. Depending on flight schedules, it may be necessary to spend an extra night in Seattle.

Call the Activities Office, ext. 3139, or Ernie Greene, for brochure and details, ext. 2312 or 838-0567.

Key Positions

Harry F. Benz has been selected Assistant Head, Information Systems Research Branch, Flight Electronics Division, under Competitive Placement Plan 83-11.

James I. Richardson has been selected Supervisory Engineering Technician, Technical Support Section A, Laboratories Operations Branch, Operations Support Division, under Competitive Placement Plan 83-12.

Intercenter Meet in Progress

The 15th intercenter meet is well underway and will continue through April 24.

Runs are scheduled for April 11 — 2 mile and 10 K at NASA at 5 p.m.; April 12 — 2 mile at Bethel High track at 11:30 a.m.; April 13 — 2 mile and 10 K at NASA at 5 p.m.; April 19 — 2 mile and April 21 — 10 K, both at NASA at 5 p.m.

Last fall Langley won the 10 K competition due to increased support from the contractors. Join the fun and run with the group. If you can't make the scheduled runs, timings can be set up on any other weekday at 5 p.m. at NASA. Non-NASA runs can be used on a certified course provided they are held by April 24.

Volunteers are needed to help time the runner. Call Bill Woods, ext. 2483, if you can help.

Japanese Develop Long-Range Shuttle Plans

While the Japanese are known for building small cars and manufacturing tiny transistor radios and calculators, the current Space Shuttle design on the drawing boards, or rather in the computers, at the Japanese Institute of Space Science is 1.5 times larger than the U.S. Shuttle.

The Institute recently completed wind tunnel testing of their prototype Shuttle model which is designed to shuttle from the Earth to space without the help of a rocket booster at launch.

According to current Japanese plans, the "second generation" Shuttle will be 52 meters long and 28 meters wide, with a fuel tank in the fueslage.

The projected launch date for the Japanese Space Shuttle will be in 15 to 20 years.

Energy Saving Tip

Get the most out of the electric lamps you use, and save electricity. Light-colored transparent shades spread the light more effectively than darker shades.

Boyne Named Museum Director

Walter J. Boyne, acting director and former deputy director of the National Air and Space Museum, has been named director of the museum. He succeeds Noel W. Hinners, who resigned in 1982 to become director of the Goddard Space Flight Center.

A member of the National Air and Space Museum staff since 1974, Boyne organized the assemblage and installation of artifacts in preparation for the opening of the new museum structure on July 1, 1976. He served as curator of aeronautics and chief of preservation and restoration at the museum's Paul E. Garber Facility at Suitland, Md., from 1975-1978. He was the museum's executive officer and assistant director from 1978-1982.

Thanks

Walter T. Pickrell writes, "I would like to say thanks to all my friends and associates who participated in my retirement party for the useful gifts, well-wishes, and fellowship. All of these contributed to an evening which will be long remembered. Wishing you continued success."

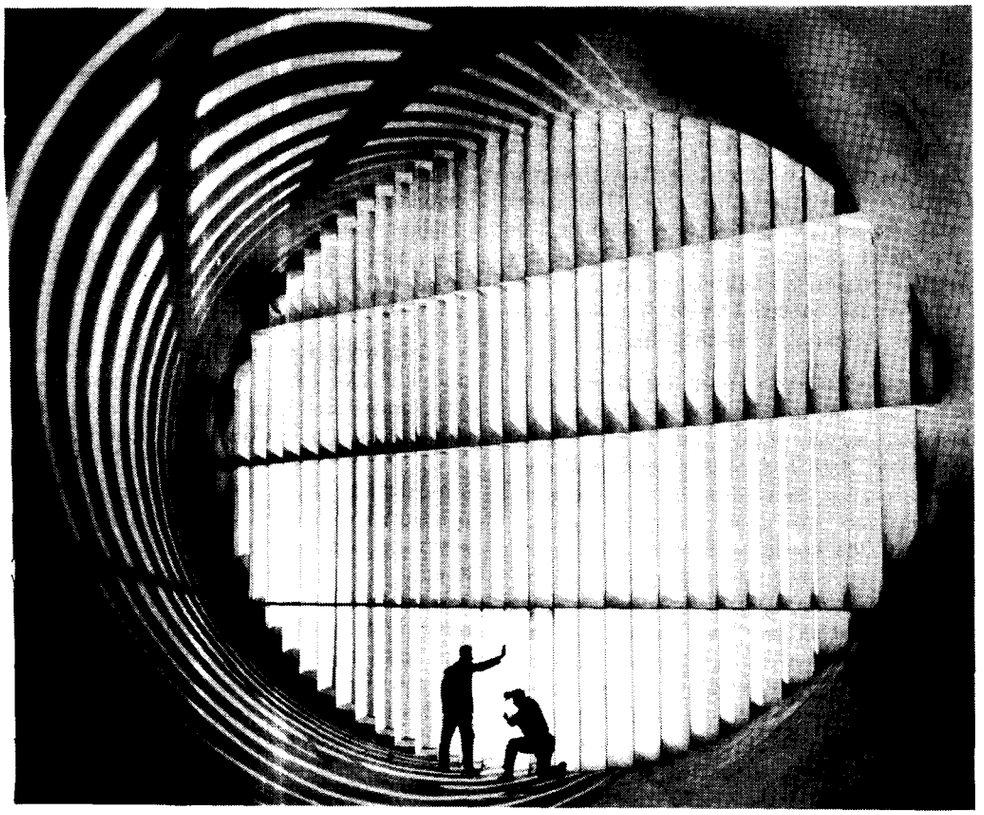
Are You a Member of a Technical Society?

If you are a member of a technical society, your membership could make you eligible for discounts on technical journals and other technical publications.

Discounts for technical society members can provide a substantial savings on publications. Robert C. Basford, Cecil E. Kirby, John J. Korte, Merven N. Pfeiffer, James R. Rooker and John F. Wilson, all from the Facilities Engineering Division, saved their division over $1,000 on the publication price of six volumes of the 1983 Boiler and Pressure Code by applying their membership discounts to the purchase.

Membership discounts can only be applied to volumes ordered for an individual's personal reference, or ordered on an indefinite loan basis. Discounts are not applicable for volumes intended for use in public reference rooms.

When filling out a purchase request form for a technical journal or publication, note on the request your technical society membership. If your society provides membership numbers, list your personal membership number.



ART AND SCIENCE NEVER GROW OLD, THEY JUST PROGRESS. This 1953 photo artistically shows the guide vanes used to turn the rushing air around an elbow in the 8-Foot Transonic Pressure Tunnel. Renovations to the tunnel in January 1982 included installing a honeycomb and five successive screens downstream of the guide vanes. The vanes force the air to turn the right angle smoothly and prevent the air from becoming turbulent and rushing toward the outside curve, as water does when it rounds a sharp bend in a brook. The honeycomb and screens also help to suppress air turbulence before the air enters the test section.

Vis-a-Vis Space

A financing corporation that could make loans to Space Shuttle customers, who could then pay back the cost of a shuttle flight over a period of years, has been proposed by freshman Rep. Robert G. Torricelli (D.-N.J.) during a House Science and Technology Committee hearing on the National Aeronautics and Space Administration budget. His proposal led committee member Rep. William Carney (R.-N.Y.) to take a credit card from his pocket and ask, **"You mean I could send my wife into geosynchronous orbit with this?"**

— Washington Staff

(Editor's note: The above was reprinted from Aviation Week & Space Technology, February 14, 1983 issue.)

Happiness is something
we create in our mind
By daily acts of thoughtfulness
in the art of being kind.

— Helen Steiner Rice

Speakers Bureau

John C. Lin spoke at Hampton Institute Feb. 7 on "Drag on Wavy Aerodynamic Surfaces."

Robert B. Lee, III, Mary Jackson and **Vivian Merritt** participated in a panel discussion "Career in Mathematics" Feb. 9 at Tabb High School. Lee also spoke to students at Capt. John Smith Elementary School Feb. 14 on a science career and at Hampton Institute Feb. 16 on affirmative action.

Roger Hathaway discussed careers in aerospace Feb. 11 at Magruder Middle School.

Les Rose discussed NASA Spinoffs at the Wesley Methodist Men's Club meeting Feb. 13 and the Federal Highway Administration Conference Feb. 15.

Dr. Pat McCormick spoke on volcanos to members of the Poquoson Kiwanis Club Feb. 22.

Karen Spriggs gave a talk on computer programs to members of the York High Science Club Feb. 23.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

CRUISE. Special prices are now available through LAA for a cruise from Norfolk to Bermuda, sailing April 26 – May 3. For reservations call Ernie Greene, ext. 2312, or 838-0567. Reservations may also be made by returning the coupon on the back of the Cruise International brochure to the address listed.

THE SKYWATCHERS will hold a public viewing session at Cooper Elementary School Friday, April 15 or, if cloudy, Saturday, April 16, from 7:30 p.m. until midnight. The evening's activities, which will be repeated throughout the night, include slide shows and constellation identification as well as viewing through various telescopes. Family and children are welcome to attend. No admission fee. (Directions: take Marcella Drive off N. Armistead Avenue)

MUSEUM EXHIBIT. "Drums Along the Chesapeake," an educational exhibit featuring regional Woodland Indian life of the 1600s, will be the key display of the Syms-Eaton Museum starting March 14. Tours of the Kecoughtan Indian Village and National Geographic filmstrips of "The Life of the American Indian" will also be available. All Syms-Eaton Museum programs are free of charge. The museum is open Monday through Saturday from 10 a.m. to 4 p.m. and on Sunday from 12 to 5 p.m.

GARDEN CLUB. The 1983 NASA Garden Club plot dues will remain the same for this year - $7 and $4 for a 20' x 40' and 20' x 20', respectively. A third tiller is being purchased this year. Plots are still available. For information call Jack Neubauer, ext. 3457 or write Mail Stop 494.

LAA ATLANTIC CITY TOUR. A bus will depart from Riverdale Shopping Center for Atlantic City Saturday, May 21, at 6:30 a.m. and return Sunday, May 22. For details and reservations call Frankie Ward at the Activities Office, ext. 3139.

DOG TRAINING SCHOOL. Thomas Nelson Community College is accepting registrations for 8-week puppy and basic control obedience classes in the College for the Young (starting with sixth grade) and adult Mini Course Program beginning Saturday, April 9. For more information, call Jo Horvath, TNCC, 825-2936.

The NASA Dog Training School is registering a novice obedience class immediately following the TNCC class. This class is designed for owner and dog who have completed a puppy or basic control class. For information regarding this class, call Doris Bryan, 898-6273 after 5 p.m.

BRIDGE PLAYERS. An "Open House" will be held at the Peninsula Duplicate Bridge Center, 700 Newmarket South, Suite 301 (next door to Ft. Eustis Credit Union), Sunday, May 1, from 4 to 6 p.m. Refreshments and free instructions in fundamentals and play of duplicate bridge will be offered. American Contract Bridge League sponsored game will follow. All interested bridgers are invited to bring their friends. Come with or without a partner. For more information, call Frances Allen, 595-2491, or Maria Vallas, ext. 4508.

EXHIBITION GALLERY ON STARS. A major exhibition gallery focusing on astronomy will open June 9 at the Smithsonian's National Air and Space Museum.

The gallery, entitled Stars, will take visitors on a tour of the known universe -- from ancient times to the present -- and provide a look at upcoming plans for further exploration.

The museum is admission free. Through May 27, the museum will be open seven days a week from 10 a.m. to 5:30 p.m. (except April 3-9, when hours will be extended to 7:30 p.m.).

HONEY BUNCH. The NASA-Langley Apicultural Club will meet Monday, April 18, from 7 to 9 p.m. in Room 180 of Building 1209. After a brief business meeting, there will be a program on spring management and swarm prevention.

VOLUNTEERS. Colonial National Historical Park, which includes Jamestown Island and Yorktown Battlefield, is beginning an active program for volunteers. The program is designed to give volunteers experience in park operations and the opportunity to support the National Parks by assisting in park related projects. Front-desk operations, tours, artifact conservation, resources management and horticulture activities are all open to interested volunteers. For more information contact the Volunteer Program Coordinator, Colonial National Historical Park, Box 210, Yorktown, Va., 23690, or call 898-3400.

PATRIOT PASSES. One-year admission tickets to all Colonial Williamsburg exhibition buildings, craft shops, bus service and Carter's Grove Plantation are available at the Activities Office for $20.50/adults and $10.50/children.

BUSCH GARDENS season passes are on sale for $40 at the Activities Office.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

DISCOUNT TICKETS are available at the Activities Center for King's Dominion, at $10 each and Busch Gardens, at $10.50 each. Children under 3 years old are admitted free.

AVIATION OPEN HOUSE. Come join the fun at the "Wings and Things" open house on April 16 and 17 at the National Air and space Museum's Paul E. Garber Facility in Suitland, Md. The facility's exhibit areas, normally accessible by reservation only, will be open to the public from 10 a.m. to 3 p.m. during the two-day celebration. Visitors may tour three hangar-like buildings housing more than 75 air and space craft or stop by the restoration shop to view skilled craftsmen at work. Visitors may pull on a jet helmet and pose in the training cockpit of an F-100 Super Sabre or don an aviator's scarf, goggles and leather helmet and stand next to the RT-14 Meteor belonging to acrobatic pilot Roscoe Turner. Picnics are encouraged, and a small picnic area and food cart will be available.

"SWISS FAMILY ROBINSON," the last film of the Walt Disney Film Festival for this year, will be shown April 17, at 3 p.m. in the Activities Center. Admission is 75 cents.

CONSUMER SAVER COUPON BOOKS, good for various restaurants and activities through December 31, can be purchased at the Activities Office. This is a value worth over $600 for $10.50 each. For further information call ext. 3139.

MOVIE TICKETS. Discount tickets to the Coliseum Mall Theaters are now available at the Activities Center at $2.75 each. These tickets are good for any film, any time.

GET OUT OF THE WAY TODAY around 1:30 p.m. for the Tour of America. The 75 cyclists will enter NASA at the Langley Golf Course gate, proceed to Ames Road and out the NASA main gate. The Tour of America will end Sunday in Washington, D.C., at the close of the Cherry Blossom Festival.

Continued on page 16.

National Aeronautics and
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Happenings

Continued from page 15.

WEDDING. Evelyn Myers, Personnel Division, and Robert T. Harris, Operations Support Division, will be married today at 11 a.m. in Hidenwood Presbyterian Church.

TOASTMASTERS helps you prepare for today's communication and leadership demands through an organized communication and leadership program. Opportunities are provided to sharpen your thinking and listening skills, to improve abilities in evaluating yourself and others, to express yourself more effectively in group discussions or in impromptu situations, to practice group leadership, to make conference or meeting arrangements, to serve as master of ceremonies, and to conduct meetings in accordance with proper parliamentary procedures. The TAC Air Toastmasters Club meets at the Langley Air Force Base Officers' Club at 7 p.m. on the second and fourth Wednesdays of each month. For further information, call Davis Wright, ext. 4631 (H: 826-5597) or Jimmy Cawthorn, ext. 2042 (H:723-1592).

BASEBALL. The Peninsula Pilots will be versus Winston Salem in an opening night doubleheader at 6 p.m. on April 5 at the Peninsula War Memorial Stadium. Admission will be a $1 for the two seven inning games. Tickets may be purchased at the Activities Center. The games, sponsored by the Peninsula Shrine Club, will include a 45-minute Shrinedom on Parade Show between the games.

TIDEWATER DINNER THEATER. "They're Playing Our Song" is playing at the Tidewater Dinner Theater in Norfolk through May 29. The show is a funny, romantic story about an established composer and his relationship with a zany aspiring young female lyricist. Discount tickets are available at the Activities Center.

cafeteria menu

WEEK OF APRIL 11 — 15

MONDAY: Chicken Noodle Soup; Spaghetti & Meat Sauce Dinner; Chicken Fried Steak; Knockwurst Reuben. Snack Bar: Chicken NASA; Hot Smoked Sausage.

TUESDAY: Ham & Three Bean Soup; BBQ Beef Ribs; Turkey Nuggets; Baked Filet of Fish. Snack Bar: Roast Beef & Cheese Club; Taco.

WEDNESDAY: Fresh Vegetable Soup; Chicken & Dumplings; Beef Liver & Onions; Salmon Loaf. Snack Bar: Rib-B-Q; Polish Sausage.

THURSDAY: Tomato & Rice Soup; Salisbury Steak; Beef Stew; Braised Chicken Livers. Snack Bar: Hot Italian Sausage; Beef & Cheese Burritos.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Roast Beef au jus; Chicken & Spanish Rice. Snack Bar: Ham & Cheese Club; Oyster Sandwich.

WEEK OF APRIL 18 — 22

MONDAY: Chicken & Rice Soup; Braised Short Ribs; Chicken Croquettes; Ham & Macaroni au gratin. Snack Bar: Hot Italian Sausage; Sloppy Joe.

TUESDAY: Seafood Gumbo; Pork Chops & Apple Sauce; Creole-style Chopped Steak; Baked Filet of Fish. Snack Bar: Knockwurst; Beef & Cheese Burrito.

WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; BBQ Beef & Rice; Meat Loaf. Snack Bar: NASA Sub; ¼-lb. Cheeseburger.

THURSDAY: Old Fashioned Bean Soup; Veal Parmesan; Seafood Quiche; Braised Chicken Livers. Snack Bar: Chicken NASA; French Bread Pizza.

FRIDAY: Bull Island Clam Chowder; Fish Cake Dinner; Franks & Baked Beans; Chicken Cacciatore & Spaghetti. Snack Bar: Turkey Club Sandwich; Oyster Sandwich.

LANGLEY HISTORICAL SOCIETY will meet April 20, from 11:30 a.m. to 12:30 p.m. in the Chesapeake Room, Langley Air Force Base Officers' Club. The guest speaker will be Richard Weinert, Jr., historian, U.S. Army Training and Doctrine Command, Fort Monroe. His topic will be "Coastal Defenses." Everyone is invited to attend. The luncheon is buffet-style. Visitors to Langley, please use the LaSalle Street gate. For further information, contact Lt. Col. Gene Alfaro, 593-9300.

MOVIE THEATER TICKETS for Newmarket South are on sale for $2.35 each at the Activities Office.

swap and shop

FOR SALE

Vehicles

1980 Ford Fairmont Futura, 2 door, 6 cyl., AT, AC, AM/FM radio, only 12,000 miles, GC, $4,500. Call 599-4331 after 4:30 p.m.

1983 Pontiac 2000 SE Hatchback, EFI, 5 speed, PS, AC, AM/FM, R.W. Def., sunroof, new, less than 1,500 miles, sticker price, $10,200, MUST SELL, $8,950. Call 826-8591.

Animals

Elkhound, pure bred w/papers, 3 years old, exc. w/children, $100. Call 244-4233.

Collie pups, AKC reg., high quality, shots, wormed, 10 weeks old, one sable and one tri-color, $250 each. Call 877-4422.

Real Estate

For Sale or Rent: Suffolk, two-story frame house in nice neighborhood, 3BR, 1½ baths, DR, LR, eat-in-kitchen, den, game room, garage, $325 per month or $41,900 and owner will help finance. Call 898-5113.

FOR RENT

Sandbridge: cottage with 3 BR, AC, phone, liv., din., kit., washer, dryer, 50 yards from ocean, $450/wk., reservations limited. Call Kent, 420-8391.

WANTED

One additional person to car pool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Giesy, ext. 4591 or 625-7558 (Norfolk).

FOUND

Chrome gas cap, probably from a Pinto, found in front of Building 1200. Call Wallis, ext. 4637.

Local Area Networks is Seminar Topic

The April Computer Science Seminar will feature Edwin P. Riddle of the Analysis and Computation Division describing Local Area Network (LAN) technology.

The overview will include broadband and baseband networks, Ethernet, SNA, and network gateways as well as a description of network capabilities and limitations. The seminar also will include a discussion of the role LAN's are expected to play at Langley in support of scientific computing and access to centralized mass storage systems.

The seminar will be held Thursday, April 14, at 3 p.m. in the Activities Center.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 8 April 22, 1983

Challenger is 'Proof of the Pudding'

Superb Spacecraft has Fantastic Voyage

"Challenger is one hell of a flying machine," said its first Commander, Paul Weitz, just after he landed the new Orbiter at Dryden Flight Research Center April 9. Pilot Karol Bobko echoed that opinion, calling the sixth Shuttle mission "a fantastic voyage."

The Shuttle program's top manager, Lt. Gen. James Abrahamson, said "the mission was just incredibly (pause) routine." He described Challenger as "a superb spacecraft," citing the fact that only 22 anomalies occurred during its first flight, compared with 82 during the first flight of Columbia two years ago.

The second Orbiter logged 2.1 million miles during just over 80 orbits of Earth in five days. The mission completed all of its goals, including the smooth deployment of a Tracking and Data Relay Satellite and a ballet-like space walk inside the payload bay by Mission Specialists Story Musgrave and Donald Peterson.

Flight Director Gary Coen called Challenger "the proof of the pudding. It works the way it was built to work." Challenger was much cleaner in its total operation than Columbia, Coen added,

Continued on page 3.

Remsberg, Maestrello Receive Thompson Fellowships

Two Langley researchers have been awarded Floyd L. Thompson fellowships for 1983-84.

Dr. Lucio Maestrello, Transonic Aerodynamics Division, will spend one academic year at the California Institute of Technology. Dr. Ellis E. Remsberg, Atmospheric Sciences Division, will study at the University of Washington.

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.

While at the California Institute of Technology, Maestrello will explore and quantify experimentally active control of laminar-turbulent transition and develop a theory. "This research work is designed to extend the Liepmann-Nosenchuck experimental work, which was done in water, to air where the boundary layer excitation is produced by incoming sound waves," Maestrello explained. "Liepmann and Nosenchuck succeeded in controlling the boundary layer in water in a time dependent frame thus delaying the rapid evolving transitional stages."

Maestrello said active control is a new powerful method used in flow control and made possible by the

Continued on page 2.

– photo by Bill Salyer

Drs. Lucio Maestrello and Ellis Remsberg (center) receive congratulation from Director Don Hearth and Deputy Director Richard Petersen upon receiving Floyd Thompson fellowships for the next academic year. The Floyd Thompson Fellowship Program was started in 1977 to encourage the development of research potential among the Langley staff.

25th Anniversary
1958-1983

– photo by Don Ward

LIFE IN THE FAST LANE. Seventy-five cyclists from seven nations sped down Durand and Ames roads April 8 on the first leg of the three-day world classic Tour of America, a new open road bicycle race. Pictured above is one of the many heartaches of world-class cyclists – the necessity to change a tire. However, not too many precious seconds were wasted. The dexterous bike mechanic and rider accomplished the feat in only 14 seconds. Former world champion sprinter Bert Oosterbosch, a West German, took top honors in the race that stretched from Virginia Beach to Washington, D.C.

Thompson Fellows

Continued from page 1.

developments and improvements of computer controlled experiments. This new concept is of great scientific interest and has tremendous potential for reducing drag. The energy required to stabilize flow using active control can be very small compared with passive methods. "The eventual goal of this research effort is to control these forced instabilities using the active control method pioneered by Liepmann and Nosenchuck," Maestrello said.

"The opportunity to be associated and work with internationally recognized leaders in fluid mechanics, along with relatively undisturbed and intensive period of research, will enhance and improve the center's position in planning and conducting analytical and experimental efforts towards aerospace vehicle drag reduction," Maestrello said.

Remsberg has produced several, high accuracy, data sets about the properties of the upper atmosphere based on the results of the Lim Infrared Monitor of the Stratosphere (LIMS) experiment.

He said he would be working with people who have extensive experience in combining such large satellite data sets with complementary conventional meteorological data sets in order to draw specific scientific conclusions about the upper atmosphere. "I want to learn essential details of these procedures, work with counterparts there on refining the theory of ozone distribution in the mesosphere, based on data recently acquired at Langley and to discuss a recently approved research proposal dealing with the photochemistry and dynamics of the upper atmosphere," Remsberg explained.

"The proposed research at the University of Washington is highly relevant to the Langley charter to maintain excellence in remote sensing technology and atmospheric sciences," Remsberg said.

Maestrello began his Langley career in July 1970 as an aerospace engineer. He has worked as an acoustician and aerodynamcist conducting experimental, analytical and numerical efforts in aeroacoustics and flow stability. He was Head of the Aeroacoustics Section from May 1975 to February 1977. His present work in the Airfoil Branch includes theoretical, experimental and numerical research in aero-fluid mechanics, specifically drag reduction through active control. He is also involved in the design of a unique test apparatus, the Laminar Flow High Reynolds Number Transition Research Apparatus.

A native of Legnago Verona, Italy, Maestrello received a bachelor of science degree in mechanics from Instituto Galileo Ferraris, Verona, in 1950. He earned his doctorate in acoustics from the University of Southampton, England, in 1976.

Maestrello and his wife, Caterina, live in Newport News. They have two daughters and two sons.

Remsberg joined the Langley staff in 1973 as an aerospace technologist in the Lidar Applications Branch. Since 1977 he was assigned to the Atmospheric Sciences Branch, now known as the Theoretical Studies Branch. His present research involves remote sensing of the atmosphere and analysis of data from the Nimbus 7 LIMS experiment. He is particularly interested in the distribution of stratospheric ozone and water vapor, and has specialized in atmospheric physics and chemistry and passive and active remote sensing.

Remsberg received a bachelor of science degree in physics from Virginia Polytechnic Institute in 1966 and a master of science degree and a doctorate in meteorology from the University of Wisconsin in 1968 and 1971, respectively.

Remsberg and his wife, Judy, live in Grafton. They have a daughter and a son.

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Editor . . . . . Jean Saunders
Editorial Assistant . . . . . Pat Zoeller
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.

Challenger is Superb Craft

Continued from page 1.

and "the experience picked up with Columbia reasonably explains the differences."

The only tile reported to be missing was one that was lost from the right wheel door during final approach. Six of the new thermal insulation blankets were lost or damaged during ascent: three were lost from the right Orbital Maneuvering System (OMS) engine pod; one was lost and two were bent on the left OMS pod. No apparent damage was caused by the loss.

The blankets are about 15-inch square pieces of layered silica fabric. They were installed on Challenger in a few areas that receive relatively low heating during re-entry. They are lighter, cheaper and easier to apply than the thermal protection system tiles that protect most of the Orbiter.

Challenger was returned to the Kennedy Space Center at the end of last week, where the launch team will work around the clock to prepare it for the second mission, now tentatively scheduled for June 9.

That is a 60-day turnaround from landing to launch, which will be a record if it is accomplished. The shortest turnaround time for Columbia was 80 days between flights 3 and 4.

The eighth Shuttle flight (Challenger's third) is tentatively scheduled for the first week in August and the ninth flight (Columbia's return to service) is set for September 30.

Langley Hosts IEEE Workshop

"Research Laboratories for Reliable Systems Research" will be the focus of an IEEE Computer Society Fault-Tolerant Technical Committee workshop held at Langley from April 27-29. The workshop's subject is particularly relevant to the activities of AIRLAB -- Langley's new research laboratory dedicated to reliable systems research.

While a limit of 50-60 attendees has been imposed, some of the workshop participants will be traveling from Europe and Asia to attend the workshop.

Billy L. Dove, Assistant Chief of Flight Control Systems Division, will serve as general chairman of the workshop. The workshop will convene at the Activities Center.

Tech's Goal, to Get Chair

Efforts are underway at Virginia Polytechnic Institute and State University to establish a permanent professorial chair in the Department of Aerospace and Ocean Engineering in honor of former Johnson Space Center Director Dr. Christopher C. Kraft Jr.

One contribution to the effort came last week from Lady Bird Johnson, widow of the former President. In a letter to Mrs. Johnson, Kraft said he was "surprised and flattered" and gave credit to her late husband for his efforts on behalf of the U.S. space program. The Committee of 100, a group of distinguished graduates of Virginia Tech, has set the endowment of the chair as a major goal. Kraft graduated from Virginia Tech in December 1944 with a bachelor of science in aeronautical engineering.

Thanks

Tommy Forrest wishes to thank all those who planned and attended his retirement party. "Thanks for the album and gifts, and thanks also to the 'perfect impersonator'."

John S. Evans writes, "My thanks to those who attended the party held recently at Fort Monroe on the occasion of my retirement from government service. It gave me great pleasure to be able to share that evening with so many friends who will be long remembered and appreciated. As I see it, there is every reason to believe that these friendships will continue into the coming years."

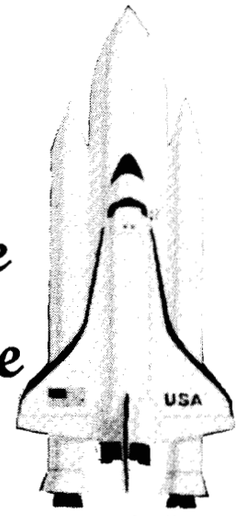
Retiree's Death

Powell M. Lovell, Jr., who retired as Head of the Office of University Research Grants in 1972 after 24 years of service to NASA, died Saturday, April 9, in Riverside Hospital. He was 61.

Miller Wins Drawing

Gerald E. Miller Fabrication Division, won the March drawing for $20. The drawing is held by the Langley Exchange Council for car pool participants.

Space Shuttle Update



The Shuttle Orbiter Challenger arrived at KSC Saturday, April 16, where it is undergoing about 30 days work in the orbiter processing facility. Items unique to the last flight are being removed, like the airborne equipment that supports the inertial supper stage and the tracking and data relay satellite (TDRS). A complete revalidation of Orbiter subsystems is also underway, as is routine.

The latest status report on TDRS -- which did not achieve its desired geosynchronous orbit after launch from Challenger earlier this month -- said that it remains stable. Meanwhile, NASA and TRW engineers continue to reduce and analyze data in their "continuing effort to develop a plan to reorient the orbit of the spacecraft."

Challenger is slated to carry two communications satellites to orbit the second week in June, the major mission objectives for STS-7. One satellite belongs to Canada and is similar to one deployed by Shuttle in November for the same country. The other satellite belongs to Indonesia and will, likewise, be capable of telephone, television and other data transmissions.

The Canadian-built remote manipular arm will be installed in the payload bay to handle a West German experiment pallet, scheduled to be set outside the Shuttle for a short time during the mission.

NASA plans to have its OSTA-2 experiment pallet aboard also, which will include several materials processing experiments.

Personnel Profile

'. . . Chance, which seems to flow onward without rein, . . .'

— Boethius

by Allan C. Hanrahan

Everyone has his or her favorite or latest "coincidence" story citing the mysteries of happenstance or the machinations of Fortuna, the Roman goddess of fortune.

Since the beginning of civilized peoples, writings about chance or the vagaries of furtune have been produced by such writers as Boethius, the Sixth Century Roman Scholar, who wrote a treatise on the subject in his **Consolation of Philosophy** (probably the last document of Classical Antiquity), which so influenced the medieval Goeffrey Chaucer's classic **The Knight's Tale**, taken from **The Tales of Canterbury**.

Chaucer perhaps, and Boethius, certainly, influenced such recent American writers as the brilliant John Kennedy Toole, author of the Pulitzer Prize-winning novel **A Confederacy of Dunces**, a masterful work rife with instances of chance and coincidence.

All of the foregoing is my way of introducing you to my own humble -- and latest -- tale of "coincidences," which begins in the shop area of Building 1265 where I am talking with **WILLIAM E. (BILL) FELTY**, an Engineering Technician in Technical Support Section C of the Operations Support Division.

As proud parents are occasionally wont to do, Bill and I are talking about our respective children; and he relates that his daughter Sharon, 22, is an art major at East Carolina University and his eldest son Neal, 20, is attending Virginia Military Institute on a football scholarship.

Children's interests are very often assumed and shared by their parents, and Bill is no exception. When Neal was playing youth league football "I used to go down and watch him practice," said Bill, "and I asked the coach, Leo Roach (Leo is a retired NASA employee and was the subject of a 1972 "Profile") if I could help with the uniforms and such, and he made me an assistant coach for that year. But you know," Bill continued, "there are a lot of people who know football and can help coach, so I moved on; but there aren't many around who want to coach soccer," he added, in reference to the efforts he expended on behalf of his youngest son David's interest in that sport, an area of unique accomplishment for Bill.

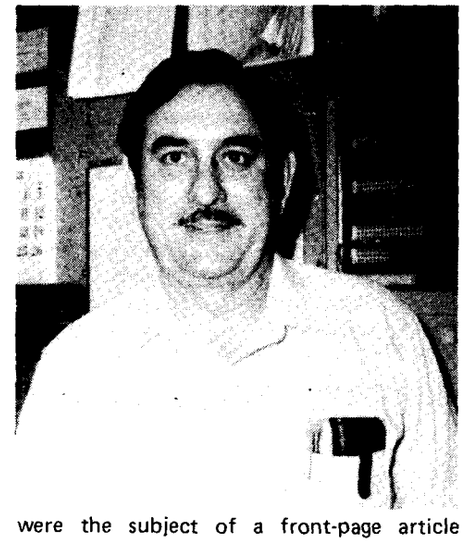
A few years ago it seems there was only one soccer team in York County, and it had to rely on competition from other localities. As one who taught "the basics," as Bill put -- "the fundamentals--" he was one of the first soccer coaches in York County, and helped organize the league that drew 300 applicants its second year, when Bill was President of the league, and by its third year had outgorwn the capacity of the parents to keep up with it, and is now administered by the Leisure Services Department of the York County Government.

Still on the subject of sports, Bill has been a member for some time of the Tabb High School Athletic Booster Club, serving one year as vice president, and for five years has served on the Piney Point swimming pool maintenance committee.

But it is in the realm of science and academics that Bill's 14-year-old son David, along with five of his peers, has generated the most recent and probably highest level of excitement in the Felty household.

David and five classmates of Tabb Intermediate School, among them Johnathan Brumfield, son of Marcus L. Brumfield of the Structures and Dynamics Division, were invited by their former fifth grade teacher to enter the regional Olympics of the Mind competition in Chesapeake, Va. Their project, a self-sufficient, energy-efficient "spring car," based on a concept of the sixteenth century genius, Leonardo da vinci, earned them a first-place in their level of competition, as well as a special award for creativity.

They won the state competition held at Randolph-Macon Colelge in Ashland Saturday, April 16. They have been invited to compete in international finals to be held at Central Michigan Unviersity May 26-28. However, there are a couple of exciting sidelights to their story: they



were the subject of a front-page article (by Barbara Smith) in the March 24 issue of the York Town Crier, and before that, on March 18, they traveled to New Jersey, at the Columbia Broadcasting System's expense, to be video-taped for possible inclusion in a CBS documentary, "Leonardo da Vinci, the Man," to be aired Tuesday, April 26, at 8 p.m. (prime time!). It seems that the CBS-TV scouts at the Chesapeake competition were much impressed and intrigued by what the boys had done, but whether or not the group will be seen is not yet known; their segment may yet fall victim to the film editor.

Bill Felty was one of those who accompanied the group to New Jersey and he admitted it was exciting, but he went on to emphasize that the rest of the parents (in all the ways that were allowed) helped the boys as much or more than he did.

Obviously this Roanoke native and his wife Dolores are proud of the children they have produced. Dolores, coincidentally, works in the Passenger Transportation Branch of the Financial Management Division and has been a center employee for about eight years.

Bill has been a center employee for about 10 years, but for 10 years prior

Continued on page 6.

Final Efforts to Regain Contact with Viking

Engineers have concluded that communications cannot be re-established with NASA's Viking Lander 1 (the Thomas A. Mutch Memorial Station) on Mars, after several months of unsuccessful efforts to regain contact at Jet Propulsion Laboratory.

Communications with Viking Lander 1, which touched down on Mars on July 20, 1976, were lost in late November 1982, and engineers at JPL have been trying since then to contact the station, without success.

Engineers have repeatedly commanded the spacecraft in attempts to reestablish contact. The command sequences were based on detailed studies of possible failure modes.

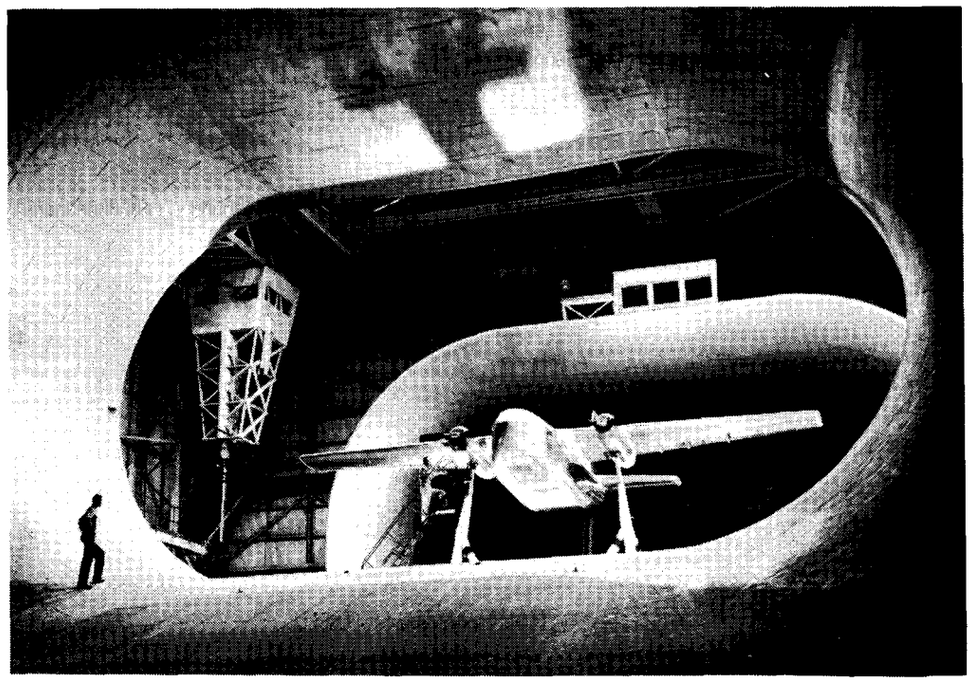
The lack of success had led to the conclusion that communications with the lander probably cannot be achieved.

However, the lander does have an internal program that will initiate transmissions to earth without commands from earth. In the event that the lander is still operating, engineers at JPL will listen on May 5, the first time such automatic transmission would occur. One week later, in case the lander is operating but could not initiate communications on its own, engineers will command the lander to switch to different components of its transmitter, in the event some of those components have failed.

Mars will reach superior conjunction -- where the red planet will be directly opposite the Sun from earth -- in late May and early June. During superior conjunction earth-based antennas will be unable to communicate with the lander.

Viking Lander 1 was launched to Mars in August 1975, it landed on the Martian surface at Chryse Planitia, on July 20, 1976, and was joined by Lander 2 on Sept. 3, 1976. Both landers conducted the most thorough examination of another planet ever undertaken.

Viking Lander 1 was renamed the Mutch Memorial Station in memory of Dr. Thomas A. Mutch, former Viking Lander Imaging Team leader, and former Associate Administrator of NASA's Space Science Division. Dr. Mutch disappeared during an attempt to climb Nun Kun, a peak in the Himalayas, in September 1980.



This 1953 photo shows a four-tenths scale model of a Chase C-123 in the 30 by 60-Foot Tunnel, formerly known as the Full-Scale Tunnel. This workhorse tunnel, which became operational in 1931, was used to check out practically every high performance aircraft used by the United States during World War II. With a test section large enough to accommodate a modest two-story house, the tunnel has also been used throughout the years to test a variety of vehicles and machines, including dirigibles, submarines, radar antennas, gliding parachutes, inflatable airplanes, and free-flying models. After 46 years of active useful service, the tunnel was completely refurbished in 1977. Today, the 30 by 60-Foot Tunnel continues to support research in the military flight dynamics area.

May 6 Deadline for NASA Scholarship Applications

Two $1,500 renewable college scholarships for the 1983-84 school year are now being offered to NASA employees' dependents and former NASA employees' dependents.

The NASA College Scholarship Fund, Inc., a non-profit Texas corporation, has recently been established as the result of a generous gift to NASA employees. The corporation is expected to offer additional scholarships in the future.

The two scholarships currently being offered are renewable each academic year to a maximum of $6,000 over six calendar years.

To be eligible to receive a scholarship, an applicant must be a dependent of a current or former NASA employee, and either graduated from an accredited public, private or parochial high school or currently enrolled in college with good academic standing. An applicant must also have a combined high school and college, if any, grade point average of 2.5 on a 4.0 scale.

After meeting the minimum requirements, applicants will be ranked based on academic preparation, school activities, performance on school aptitude tests, community activities, written recommendations and a written statement of academic purpose by the applicant.

All applications must be received by the scholarship committee no later than May 6, 1983. It is advisable to apply early. For more detailed information and application forms, contact Sylvia Lawson at extension 2214, or Mail Stop 174.

Happenings

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

BINGO is played every Thursday at 7:10 p.m. in the Activities Center.

GARDEN CLUB. The 1983 NASA Garden Club plot dues will remain the same for this year — $7 and $4 for a 20' x 40' and 20' x 20', respectively. A third tiller is being purchased this year. Plots are still available. For information call Jack Neubauer, ext. 3457 or write Mail Stop 494.

NAGS. A proposed outlet shopping trip is planned for May 28 to Burlington, N.C. For more information, call Shirley Davis at 838-7435. The NAGS next meeting is May 17 at the Holiday Inn, Hampton.

VISITOR CENTER SOUVENIR COUNTER is selling balloons, frisbees, pens, pencils and key rings displaying NASA's 25th anniversaty logo.

PERSONNEL PROFILE

Continued from page 4.

to that he worked for various contractors here, so he is no newcomer. It was work with a contractor that initially brought the Felty family to the Peninsula from the Washington, D.C. area, where Bill had taken his discharge from the Air Force in 1954, after six years service. Dolores was working for the FAA at that time and she and Bill lived in the same neighborhood in Washington. They chanced to become acquainted one day while he was working on his car. (Now he spends much of his time trying to keep four cars on the road.)

From 1954 to 1957 Bill worked at various jobs while attending the Capitol Radio Engineering Institute on Sixteenth Street in Washington. Coincidentally, for about a year during that three-year span, this writer lived in that neighborhood and for about five months caught the bus for the suburbs on the corner outside the Institute, sometimes speaking to some of the students as they came to school. While neither of us remembers meeting the other, it seems Bill and I also frequented some of the same neighborhood establishments, so no doubt our paths crossed; now, here we were about 27 years later, sitting in the shop area of 1265, talking about our children.

RED CROSS VOLUNTEER HONORED. Ursula Tillerson, who has supported the Red Cross Bloodmobile at Langley for many years, was recently in the spotlight when the Hampton Roads Red Cross Chapter honored her as the 1982 Volunteer of the Year, recognizing nearly 30 years of steady service. Although in her 80s, she volunteers her time as a bloodmobile worker at many local drives and as a worker at the Hampton Veterans Administration Hospital.

BRIDGE PLAYERS. An "Open House" will be held at the Peninsula Duplicate Bridge Center, 700 Newmarket South, Suite 301 (next door to Ft. Eustis Credit Union), Sunday, May 1, from 4 to 6 p.m. Refreshments and free instructions in fundamentals and play of duplicate bridge will be offered. American Contract Bridge League sponsored game will follow. All interested bridgers are invited to bring their friends. Come with or without a partner. For more information, call Frances Allen, 595-2491, or Maria Vallas, ext. 4508.

LAA ATLANTIC CITY TOUR. A bus will depart from the Activities Center for Atlantic City Saturday, May 21, at 6:30 a.m. and return Sunday, May 22. For details and reservations call Frankie Ward at the Activities Office, ext. 3139.

PATRIOT PASSES. One-year admission tickets to all Colonial Williamsburg exhibition buildings, craft shops, bus service and Carter's Grove Plantation are available at the Activities Office for $20.50/adults and $10.50/children.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

DISCOUNT TICKETS are available at the Activities Center for King's Dominion, at $10 each and Busch Gardens, at $10.50 each. Children under 3 years old are admitted free.

CONSUMER SAVER COUPON BOOKS, good for various restaurants and activities through December 31, can be purchased at the Activities Office. This is a value worth over $600 for $10.50 each. For further information call ext. 3139.

COMPUTER SHOW. The second annual Virginia/Carolinas Computer Show and Office Equipment Exposition will be held at the Pavilion in Virginia Beach, Va., from April 21 — 24. Free introductory seminars on computers as well as business automation will be offered. Admission is $5 for adults and $3 for children 12 years old and under. The show will be open from 10:30 a.m. to 6 p.m. all four days. Robots and video games will also be featured. For further information, call 800-368-2066.

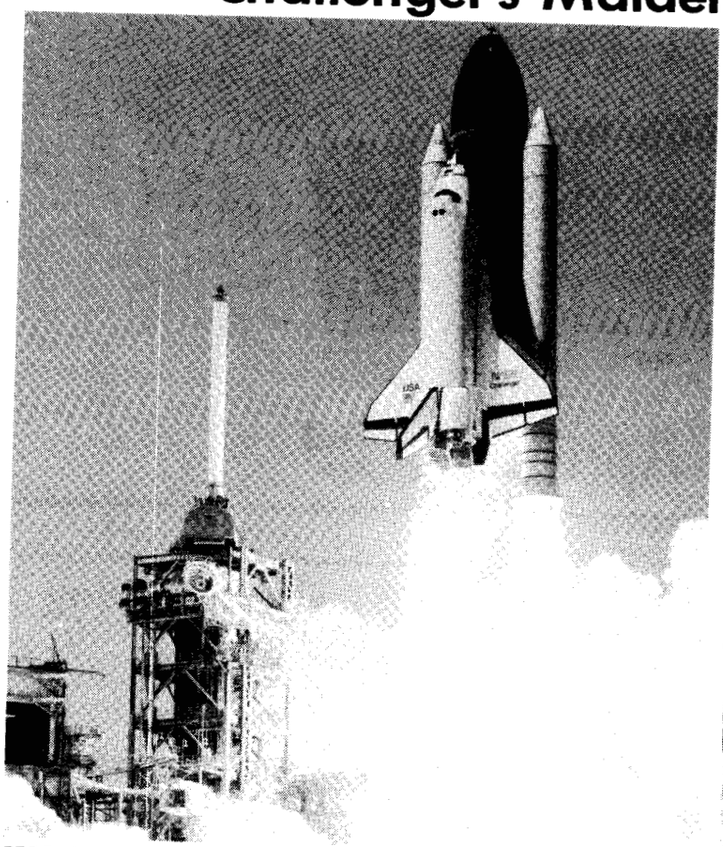
— photo by Don Ward

Artist Sara Larkin poses with her painting, "Earth Rising." Larkin's paintings, which record man's first exploration of space, will be featured at the Visitor Center through April 30. Larkin's work is drawn from memory with no photographic processes involved and the technique employed is her own invention. The moons and planets of our solar system are depicted as spheres of swirling, muted colors against a background of infinite blackness.

AIAA. Lt. Commander Charles Gray, retired United States Navy pilot and instructor, will speak at the April 26 AIAA dinner meeting. Gray, who has logged more than 3,000 pilot hours aboard lighter-than-air vehicles, will talk about his experiences with the U.S. Navy's airships from 1954 to 1959. The meeting will be hosted by the Langley Student Branch. Cocktails will be served from 6 p.m. to 7 p.m. with dinner beginning at 8 p.m. The Chicken Cordon Bleu dinner will be $10 per person and $5 for each student member. For more information, call Cooper, ext. 3615, or Wallsom, ext. 2498, or Melson, ext. 2627.

DISCOVERY, a human relations group for single people, will be held at 7:30 p.m. Saturday, April 23, at the Unitarian Fellowship of the Peninsula. Bring cheese, crackers or beverage to share. Attendance fee is $2. For more information, call 877-5791.

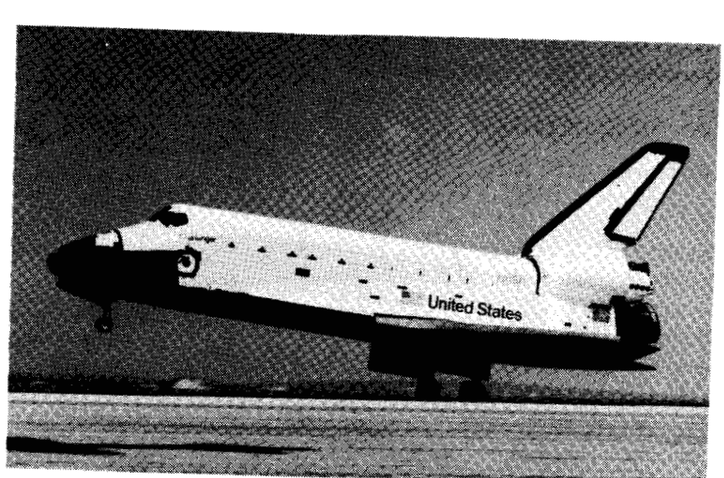
Challenger's Maiden Voyage Successful



PERFECT LAUNCH. The Space Shuttle Challenger lifted off from the Complex 39-A launch pad April 4 at 1:30 p.m. into a cloudless sky. The sixth mission of the Space Shuttle, which is the first flight of the Orbiter Challenger, was manned by four astronauts, Commander Paul J. Weitz, Pilot Karol J. Bobko, and Mission Specialists Donald H. Peterson and Dr. Story Musgrave.

STS-6 ONBOARD SCENE OF TDRS DEPLOYMENT. A tilt table device in the 60-feet-long cargo bay of the Earth orbiting Space Shuttle Challenger aids the deployment of the tracking and data relay satellite (TDRS) and its inertial upper stage (IUS). A 35 mm camera was aimed through the aft flight deck's windows to record the image shortly after 11:30 p.m., EST, April 4.

STS-6 EVA. Musgrave participates in a safety tether dynamics checkout procedure during the mission's April 7 extravehicular activity (EVA). Musgrave is tethered to both the near and far slide wire systems in the 35 mm frame, exposed by Peterson, who shared the cargo bay with Musgrave for the EVA. Clouds and mountains are visible on the Earth below.



STS-6 LANDING. Challenger makes its first landing shortly before 2 p.m., EST, April 9 on Runway 22 at the Edwards Air Force Base. The reusable spacecraft, having just completed a successful five-day mission, was described as "the best Shuttle yet" by NASA officials.

National Aeronautics and
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Langley Research Center
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National Secretaries' Week April 25 - 29

NASTRAN Users' Meeting Planned

The 11th NASA Structural Analysis Program (NASTRAN) users' colloquium, sponsored by NASA and the Computer Software Management and Information Center (COSMIC), will be held May 2 through 6, in San Francisco.

The first two days are scheduled for introductory and intermediate explorations on static analysis, plotting, substructuring, DMAP approach, thermal analysis and other NASTRAN capabilities.

The third day will be question and answer sessions on new enhancements that have been added to NASTRAN, including a hidden line capability, BANDIT, and other enhancements, and improved hydroelastic capabilities.

During the last two days, contributed papers will be presented covering pre-processing of NASTRAN input, NASTRAN conversion, new elements, and various NASTRAN applications.

Participants may register for selected days or all days, depending on needs.

For further information, contact: COSMIC, 112 Barrow Hall, University of Georgia, Athens, GA 30602. Phone (404) 542-3265.

Happenings

Continued from page 6.

THE PENINSULA DIABETES ASSOCIATION will meet Wednesday, April 27, at 7:30 p.m. in the Staff Dining Room of Riverside Hospital. The Diabetes Association is providing support groups for diabetics and their families. Call the Diabetes Association, 877-9472, for more information.

MOVIE TICKETS. Discount tickets to the Coliseum Mall Theaters are now available at the Activities Center at $2.75 each. These tickets are good for any film, any time.

swap and shop

FOR SALE

Articles

Depthfinder, Whiteline, LN, four-inch paper, three depth ranges, sold boat, will sacrifice, $225. Call Kent, 420-8391.

Freezer, Sears Best, 19.5 cu. ft., tawny gold, upright, frost-free, like new, $290. Call Price, 877-7912.

Real Estate

Suffolk: two-story frame house in nice neighborhood, 3BR, 1 1/2 bahts, DR, LR, eat-in kitchen, den, game room, garage, $41,900 and owner will help finance. Call 898-5113 after 5:30 p.m.

Hidenwood/Glendale: Two-story, 2,100 sq. ft., 2 1/2 baths, 4 BR, lg. den, LR, DR, eat-in kit., laundry room, lg shed, CA, gas heat and water, energy efficient, over 1/2 acre lot, fenced bk. yd. Price $76,800. Assume $37,700 at 8 1/2 percent. Call 599-3605.

Vehicles

1978 Honda Hawk, excellent condition, only 3,400 miles, garage kept most of time, complete with cover and helmet. $950 or best offer. Call 826-8781, ask for Dale.

FOR RENT

Sandbridge: cottage, 3 BR, AC, phone, W/D, LR, DR, kit., 1/2 block from ocean, $450/wk. Reservations limited, call Kent, 420-8391.

WANTED

One additional person to car pool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Giesy, 625-7558, or ext. 4591.

FOUND

Men's prescription bifocal glasses. Found in Training Office. Call ext. 2611 to identify.

A 35 year NASA service pin, found in a NASA distribution envelope. Call Gary Beasley, ext. 3141.

DST Starts Sunday

Daylight Savings Time begins at 2 a.m. Sunday, April 24. Remember to turn clocks forward one hour before going to bed Saturday night.

cafeteria menu

WEEK OF APRIL 25 — 29

MONDAY: Chicken Noodle Soup; Baked Lasagna; Diet Platter: Baked Fish w/2 Veg.; Chuckwagon Steak. Snack Bar: Roast Beef & Cheese Club; B.L.T.

TUESDAY: Wisconsin Cheddar Cheese; Chopped Steak Dinner; Chicken Parmigian; Shrimp Fried Rice. Snack Bar: Chicken NASA; ¼-lb. Cheeseburger.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Braised Beef & Vegetables; Western Omelet. Snack Bar: Hot Italian Sausage; Rib BQ.

THURSDAY: Chicken Gumbo Soup; Veal Cordon Bleu; Hot Pork Sandwich; Braised Chicken Livers. Snack Bar: Turkey Club Sandwich; Grilled Cheese Sandwich.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Pot Roast; Chicken Teriyaki. Snack Bar: Sloppy Joe; Taco.

WEEK OF MAY 2 — 6

MONDAY: Beef & Vegetable Soup; Beef Enchiladas; Quiche Lorraine; Ham Steak w/Apples. Snack Bar: Ham & Cheese Club; Beef & Cheese Burrito.

TUESDAY: Cream of Broccoli Soup; Chicken Chow Mein Dinner; Beef Liver & Onions; Baked Filet of Fish. Snack Bar: Rib BQ; French Bread Pizza.

WEDNESDAY: Fresh Vegetable Soup; Fried or Baked Chicken Dinner; Beef Burgundy; Macaroni, Franks & Cheese. Snack Bar: Chicken NASA; Polish Sausage; ¼-lb. Cheeseburger.

THURSDAY: Ham & Lima Bean Soup; Baked New England Scrod; Braised Chicken Livers; Pork Cutlet Parmigiana. Snack Bar: NASA Sub; Hot Smoked Sausage.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Spaghetti w/Hot Italian Sausage; Baked Stuffed Chicken Breast. Snack Bar: Knockwurst; Taco.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 9

May 6, 1983

Langley Researcher Named NASA Inventor of the Year

A researcher at the Langley Research Center has been named NASA Inventor of the Year for 1982.

Dr. Joseph S. Heyman, a section head in the Instrument Research Division, was presented the award by Langley Director Dr. Donald P. Hearth during a special ceremony honoring Langley inventors April 27.

Heyman received the award for inventing an ultrasonic (very high acoustic frequency) instrument, called a pulsed-phase, locked loop strain monitor. The instrument can precisely measure changes in acoustic propagation time with application to residual stress in materials; material curing, such as composites; and measuring thickness variations in materials.

"We are primarily interested in materials characterization for non-destructive examination," Heyman said. "The instrument allows a material to vibrate at its own natural frequency. By measuring this natural frequency, we can determine properties of the material, such as the elastic constants, the thickness or the composite's curing state, so that it can be examined. From that, we can tell if the material is properly made or in a proper state -- the amount of stress placed on the material -- with the ultimate goal of extending the 'safe life' of the material. Such a science base could prove invaluable in operational monitoring of space platforms, for instance."

Heyman said that the instrument is about one thousand times more sensitive than any other ultrasonic measurement. He consideres it a major breakthrough and is now building a multiple pulsed-phase locked loop for imaging. "We will be able to take a material and get a picture, painted in the light of those same properties, for future examination," he explained.

Heyman has received numerous awards for his research, including the IR-100 award, presented by Industrial Research Development Magazine for each of the 100 most significant technical developments of the year. He 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 the Arthur S. Flemming Award by the Downtown Jaycees of Washington, D.C., as one of 10 outstanding young federal government employees of 1981. He was presented a NASA Exceptional Service Medal and a Langley Technology Transfer Award in 1979.

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

Continued on page 2.

—photo by Hubert Lloyd

Dr. Joseph S. Heyman (left), Head, Materials Characterization Instrumentation Section, Instrument Research Division, is presented the 1982 NASA Inventor of the Year Award by Langley Director Donald P. Hearth. Heyman received the award for inventing an ultrasonic instrument called a pulsed-phase, locked loop strain monitor.

25th Anniversary
1958-1983

A Message from the Campaign Coordinator

Savings Bonds Campaign Begins

The 1983 NASA Savings Bonds Campaign will be conducted through May 27. Center Director, Don Hearth, will again serve as Campaign Chairperson for the Langley Campaign.

Savings Bonds are more attractive now than in the past, because they offer a variable market-based rate if held for five years or more. That rate is 85 percent of the average return on outstanding Treasury marketable securities that mature in five years. In addition, the Payroll Savings Plan is automatic, dependable, painless, regular, guaranteed, easy and safe. A Savings Bonds Allotment can be started for as little as $3.75 a pay period.

Once again, the Activities Association will support the Savings Bonds Campaign by donating two $50 Savings Bonds. A drawing from the names of new subscribers and another from names of subscribers who increase their allotment during the Campaign will determine the winners of the Bonds.

Remember . . . Savings Bonds now pay market-based interest rates.

Joseph R. Struhar
Campaign Coordinator

U.S. Small Business Week May 8-14

There's No Business Like Small Business

President Reagan has proclaimed the week of May 8 as Small Business Week to honor the nation's 13 million small businesses and Langley is helping celebrate. For FY 1963, Langley's goals for contract awards to small businesses, minority firms and women-owned firms are $58.5 million, $9.5 million and $3.3 million, respectively.

Small business firms are doing many jobs at Langley, including building and ground maintenance, warehousing, transportation, security, custodial service, data management, and research and development. Last year, Langley was number one in NASA for the highest percentage of business dollar awards made to small businesses (34 percent) and women-owned businesses (two percent).

It is NASA policy to place a fair proportion of its total purchases and contracts for supplies, research and development, and services with small business concerns. Each year, NASA Headquarters sets socioeconomic program goals for contract awards at each center.

The Acquisition Division welcomes names of small business concerns that would be potential sources for fulfilling future contractual requirements.

Heyman Award

Continued from page 1.

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 interactions in materials and a program of applications of ultrasonic techniques to materials physics, solid state physics and electronic materials.

The author or co-author of more than 100 technical publications and presentations, Heyman holds 13 patents. He is a member of Sigma Xi, the American Physical Society, the American Association for the Advancement of Science, the Society for Experimental Stress Analysis and the Institute of Electrical and Electronics Engineers, Sonic and Ultrasonics. He serves on a number of government committees for non-destructive examination.

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 115, telephone 3006.

Editor . . . . . Jean Saunders
Editorial Assistant . . . . . Pat Zoeller
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.

Langley Colloquium/Public Lecture Series Features Bergman

'Accomplishments of Science to the Year 2000' is Topic

In his long career as an ABC-TV science editor, writer and reporter, Jules Bergman has had a unique view of our nation's space program. Not only has he covered all U.S. manned space flights, including the Apollo-Soyuz Test Program, the fall of Skylab, and Space Shuttle pilot training, but he has frequently participated in the astronauts rigorous training programs and flight simulations.

As a prolific writer and colorful commentator, Bergman has chronicled our nation's space program from its infancy to its present state.

As part of the "Our Future in the Cosmos" Public Lecture Series and in honor of NASA's 25th anniversary, Bergman will analyze some of the major events he has covered in the past 30 years during a Langley colloquium Monday, May 16, at 2 p.m. at the Activities Center and at 8 p.m. at the Hampton Coliseum.

During his presentation, "Accomplishments of Science to the Year 2000," Bergman will discuss the perils and promises of the scientific developments expected by the year 2000 in space flight, aviation, medicine and computers, as well as their effects on the future and our quality of life.

In addition to his coverage of the U.S. space program, Bergman, a pilot himself, has covered the first flights of almost every new military and commercial aircraft in the United States. He has also covered the tragedies of major airline disasters around the world.

Among other events, Bergman covered the recall of Ford's Pinto automobile, Three Mile Island and the nuclear power controversy, the perils of asbestos, new developments in cancer research, heart transplants and sports injuries.

In recent years, Bergman has also reported on solar, wind and nuclear energy, as well as the oil crisis, economic cars and mass transit.

Bergman will guest on the WTAR-AM-790 Radio Talk Show beginning at 8:10 p.m. Sunday, May 15.

The Public Lecture Series is sponsored by NASA and the College of William and Mary. Free tickets for the lecture are available by phoning 877-9231, ext. 60, by May 11 or at the Coliseum Box Office.

Mentors Needed for Summer Program

The Office of Public Services needs 25 engineers to serve as mentors for two summer student programs offered in 1983. The two programs, Summer High School Apprenticeship Research Program (SHARP) and the Virginia Governor's School Program are for high school students who have career objectives in science, mathematics or engineering. All mentors are responsible for the laboratory and/or research experiences of the students.

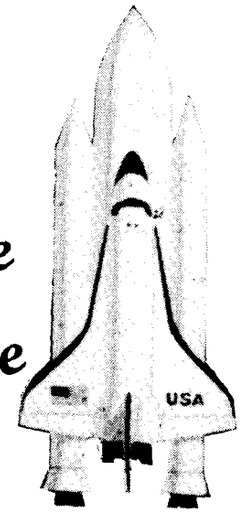
The Virginia Governor's School Program will be a six-weeks program beginning June 20 and ending July 29. The Summer High School Apprenticeship Research Program will last for eight weeks beginning June 20 and ending August 12. Both programs consist of a 40-hour work week.

Students who are accepted into these programs usually have the following profile:

- They are rising high school juniors or seniors who have a high degree of maturity.
- They have firm career objectives in science, engineering, mathematics or related technical fields.
- They have an outstanding academic record which includes higher mathematics and science courses.
- They have been unconditionally recommended by their teachers, guidance counselors, principals and superintendents.

If you would like to volunteer to serve as a mentor, please contact: Roger Hathaway, Office of Public Services, Mail Stop 154, ext. 4358.

Space Shuttle Update



An announcement about a launch date for STS-7, the next Shuttle flight, is expected by the weekend of May 6. Launch time is known to be a minute or so after 7:30 a.m. EDT. Mission duration is six days.

The landing site is still set for Kennedy Space Center. A public affairs spokesman there said they think the landing will be routine, but "we're sure looking forward to it happening here." STS-8 and 9 will have the orbiter land at Edwards. After that, most landings will be at KSC, except for the first landing of each new orbiter.

Meanwhile, launch preparations for the next mission are proceeding well. Cargo and orbiter integrated electronics tests were major activities recently completed.

After one or more tests of the pitch and yaw thrusters on the TDRS satellite in the last several days, Goddard controllers plan to start manuevering the troubled spacecraft Sunday, May 8. They hope to move it to a higher orbit, closer to the geosynchronous altitude orginally planned. The two roll thrusters are inoperative.

TDRS-B, the second element in NASA's Tracking and Data Relay Satellite system, is still scheduled for launch aboard STS-8 this summer. Its shipment to KSC and subsequent launch could be delayed, however, pending results from the investigation board looking into the launch of TDRS-A. Should TDRS-B be rescheduled to a later Shuttle mission, another cargo element would be sought for the upcoming mission in June.

NASA Inventor of the Year, Technology Transfer Awards Presented

Langley Honors Inventors at Luncheon

Thirty-three Langley inventors who received United States patents in 1982, the NASA Inventor of the Year, plus recipients of Langley's Technology Transfer awards, were honored at the annual Inventors' Luncheon Wednesday, April 27.

Dr. Donald P. Hearth, Langley Director, presented the awards. Guest speaker for the luncheon was Louis Mogavero, former Director of NASA's Technology Utilization Program. Mogavero is now President of Trantek Inc., a company specializing in transferring technology between companies, both domestically and overseas, and between government and industry.

Dr. Joseph S. Heyman, who now holds 13 patents, was named NASA Inventor of the Year for his invention, "Pulsed-Phase Locked-Loop Strain Monitor." (See related story on page 1.)

In addition to the NASA award, Heyman received three patent awards for 1982: an acoustic tooth cleaner, a pulsed-phase locked-loop strain monitor and a liquid-immersible electro-static ultrasonic transducer. He shared the latter award with Dr. John H. Cantrell, Jr.

Other inventors receiving awards were Stephen C. Irick, for a continuous self-locking spiral-wound seal; E. Thomas Freeman and Francis W. Dreisbach, both retired, and Charles W. Stump, for a film advance indicator; Anne K. St. Clair, for an electrically conductive palladium containing polyimide films;

Thomas A. Shull, for a digital demodulator; Dr. John D. Buckley, Robert J. Swaim and Robert J. Fox, for a one-step dual purpose joining technique; Thomas Vranas, retired, for a hot foil transducer skin friction sensor; Ronald N. Jensen, for a solar engine; Charlie M. Jackson, Jr., Samuel M. Dollyhigh and David S. Shaw, for a metric half-span model support system; Dr. Wolf Elber, for a means for controlling aerodynamically induced twist;

William E. Miller, for a photocapacitive image converter; Dr. Judd R. Wilkins and David C. Grana, both retired, for an apparatus and process for microbial detection and enumeration; Harold G. Bush, for a mechanical end joint system for structural column elements; Dr. Archibald L. Fripp, Jr., Dr. James B. Robertson and Dr. Roger A. Breckenridge, for pyroelectric detector arrays;

Wilmer H. Reed, III, retired, for a decoupler pylon: wing/store flutter suppression; L. Robert Jackson, for a multiwall thermal protection system; Leland A. Imig, retired, and Mickey R. Gardner, for a heating and cooling system; David B. Rhodes, for scanning a focal laser velocimeter projection lens system; Theodore R. Creel, Jr., and Ivan E. Beckwith, for a sound shield.

Technology Transfer awards were presented to Dr. Jag. J. Singh and to the Instrument Research Division. The citation accompanying Singh's award read, "Outstanding Leadership in the Transfer of NASA Technology, Through the Management of Applications Projects, Responding with Solutions to Problem Statements, and Providing Technical Assistance to Industry and Other Government Agencies, Resulting in Substantial Benefits to the Public and Industrial Sectors of the Nation."

The division's award, accepted by Marvin F. Burgess and David R. Johnson, was given for "Outstanding Achievements in the Transfer of Technology to Industry, Other Government Agencies, and the Public, Resulting in Substantial Benefits to the Recipients and Reflecting Great Credit to NASA."

College Scholarship Fund Established

The NASA College Scholarship Fund, Inc., a Texas non-profit organization established to award scholarships to qualified dependents of NASA and former NASA employees, agencywide, was made possible by an endowment from Pulitzer Prize winning author James Michener.

Michener gave two reasons for his generous gift to NASA employees -- The first, he holds the prople of NASA in high esteem for their good work through the years and, the second, he thinks it is important for education to go forward in this country.

Two renewable $1,500 scholarships will be awarded for the 1983–84 school year during the initial year of the program. Additional scholarships are expected in future years.

–photo by Hubert Lloyd

Langley inventors and recipients of the Technology Utilization Award were honored for their 1982 scientific contributions at the annual Inventors Luncheon April 27. From left are Mickey R. Gardner, Robert J. Swaim, Dr. John H. Cantrell Jr., Robert J. Fox, L. Robert Jackson, Francis W. Dreisbach, Charles W. Stump, Stephen C. Irick, Ronald N. Jensen, Dr. Roger A. Breckenridge, Wilmer H. Reed III, William E. Miller, Thomas A. Schull, Dr. Joseph S. Heyman, David B. Rhodes, Fr. Wolf Elber, Charlie M. Jackson Jr., Thomas Vranas, Anne K. St. Clair, Dr. Archibald L. Fripp Jr., Dr. James B. Robertson, Ivan E. Beckwith, Dr. Jag J. Singh, Harold G. Bush, David R. Johnson, Marvin F. Burgess and Theodore R. Creel Jr. Not pictured are E. Thomas Freeman, Dr. John D. Buckley, Samuel M. Dollyhigh, David S. Shaw, Dr. Judd R. Wilkins, David C. Grana and Leland A. Imig.

Crouch Competes for Spacelab Payload Specialist Slot

A Langley researcher who has always dreamed of flying may have that dream fulfilled in 1984.

Dr. Roger K. Crouch is a candidate for a payload specialist position to fly on Spacelab 3, scheduled for launch aboard the space shuttle in November 1984.

Crouch, who is color blind, explained that he always wanted to be an astronaut and a pilot, but he could not get a pilot's license because the Federal Aviation Administration requires normal color vision in order to fly. He put the flying idea aside and came to work for NASA in June 1962.

Four years ago, Crouch became involved in a program for materials processing in space and was a member of a working group on experiments for Spacelab 3. About that same time, he found out about the payload specialist program. NASA had already selected specialists for Spacelabs 1 and 2 but not for the Spacelab 3 mission. The Materials Processing in Space Office at NASA Headquarters was funding the experiments. "I told them that I wanted to be a specialist and I applied. I felt that getting involved in the program would be my best opportunity and probably my only chance to qualify for flight," Crouch explained.

Not long after he applied, NASA cancelled the program. When it started again in January 1983, the previous applications were reviewed and applications were called to see if they were still interested in becoming a payload specialist. "You betcha,' was my answer. I was so excited. I told them they had made my day," Crouch said.

The applicants were screened and tested. The list was narrowed to seven, then to four, and now two will be selected. "I recently passed my physical in Houston," Crouch said. "That was half of the battle. My color deficiency really won't affect managing the experiments; however, it's up to the selection committee as to how important they believe it will be for the Spacelab 3 experiments." He explained that it just depends on the type of experiment being managed in space as to the significance of normal color vision a specialist needs to conduct the experiments.

Crouch traveled to the Jet Propulsion Laboratory April 6 for the final selection interview. The announcement is expected to be made by NASA Headquarters within the next few months. "All I can do now is wait. I'm optimistic, I'll fly; I know I will."

The selected specialists will go to the Johnson Space Center for three months of astronaut training, becoming familiar with the Space Shuttle and flying in a KC-130 training plane. The specialists will spend some time with the principal investigators of the experiments that will fly on Spacelab 3, learning about the experiments and what results are expected from each.

was impressive to the selection committee.

"That year at MIT also gave me more confidence in myself and my work. I started feeling better about myself and about Langley. In fact, Langley has been very supportive in my endeavor," Crouch said. Langley has already had a test pilot selected as an astronaut. Fred Gregory has been named as the pilot for STS-18. Gregory worked at Langley from 1974 to 1978.

> "I like to know where I'm going but I like to enjoy what I'm doing on the way there."

An aerospace technologist in the Physical and Optical Electronics Branch, Instrument Research Division, Crouch's expertise is in growing crystals. If he is selected to fly, he will attempt to grow crystals with higher purities, to make detectors out of them and to compare growing them in space with growing them on Earth.

Crouch has conducted research in growing crystals since 1975. "I was the 1979 recipient of the Floyd Thompson Fellowship and was privileged to study under Drs. August Witt and Harry Gatos at the Massachusetts Institute of Technology. They had experiments on Skylab and Apollo missions. My research involved studying the effects of gravity on semi-conductor crystal growth and materials processing in space. The fellowship gave me the credibility I needed and I believe my work at MIT

Langley is also involved in other experiments that will fly on future missions. Three other researchers, Dr. Archibald L. Fripp Jr., William J. Debnam Jr., and Ivan Clark, are also doing work in materials processing in space. They will have a crystal growth experiment, Materials Experiment Apparatus (MEA-A2), on STS-12. "It's a small effort but we are getting recognized in the outside community of crystal growers, and that's good," Crouch said.

Crouch, Clark and Dr. James B. Robertson have contributed pyroelectric infrared detectors and Gale Harvey has contributed ultraviolet optical materials and detectors to the Active Optical System Components (AOSC) experiment that will fly on the Long Duration Exposure Facility (LDEF), designed and built at Langley, on STS-13.

Continued on page 6.

Crouch Competes

Continued from page 5.

Excited and optimistic about the prospects of flying on the Space Shuttle, Crouch said that if he does not make the rank of payload specialist -- prime or backup -- this time, he will try again. "I love my life and I love my work," he said. "I like to know where I'm going, but I like to enjoy what I'm doing on the way there. I may not fly on Spacelab 3, but I will fly someday."

Retirement Party

Odell A. Morris, High-Speed Aerodynamics Division, will be honored with a retirement social at the Activities Center Tuesday, May 17, at 11:30 a.m. The cost for the social, which includes gift contribution, will be $5 per person. For reservations contact Shirley Lawson, Mail Stop 160A, before May 16.

Student Shuttle Competition Held

Twenty high school students from Virginia and surrounding states met April 17 through 19 at Langley to learn who will have the opportunity to have their experiments fly aboard the Space Shuttle.

The competition was part of the third National Space Shuttle Student Involvement Project, a joint effort of NASA and the National Science Teachers Association.

The objective of the project is to stimulate the study of science and technology in grades 9 through 12 by engaging students in a competition to develop payload experiments suitable for flight aboard the Space Shuttle.

The students from Virginia, North Carolina, South Carolina, West Virginia, Maryland and Washington, D.C., were among 200 semifinalists from across the country competing to have their experiments placed on the Shuttle. The experiments encompass a wide range of disciplines, including biology, chemistry, astronomy, physics, botany and medicine.

About 1,500 entries for the competition were received by the association. These proposals were grouped into 10 geographic areas or regions determined by the association. The students who met at Langley are from region three.

Interdisciplinary teams of teachers, scientists and engineers, selected by the association, reviewed the proposals at the 10 regional levels and selected 20 entries from each region for the semifinal competition.

According to Roger Hathaway, Langley's Office of Public Services, each student during the semifinals presented his experiment proposal to consultants, who assisted the students in improving their experiments for the national competition. A panel of judges, including representatives from NASA, NSTA, the National Science Foundation, the National Institues of Health, Department of Education, the American Association for the Advancement of Science, and several universities and consulting firms, will then select the national winners.

The winning project will be chosen May 27 and will be based on scientific or engineering merit. The winners and their teachers will attend a special educational conference at the Kennedy Space Center later this summer.

Winning student experiments will be assigned to specific Shuttle flights as the experiments are ready, as Shuttle payload space is available and as future Shuttle flights are confirmed.

GIDEP Seminar Set

A Government-Industry Data Exchange Program (GIDEP) seminar will be held May 13 from 9 to 11:30 a.m. in Building 1209, Conference Room 180. This seminar will provide a general familiarity with GIDEP, a useful tool for the conservation of time, personnel and money through the reduction of reduction of redundant technical effort among government and industry design, research, development, engineering and procurement programs.

– photo by Don Ward and Bill Salyer

These 20 high school students are competing for space on a future Shuttle flight for their experiments. The semifinalists from Virginia, North Carolina, South Carolina, West Virginia, Maryland and Washington, D.C., met at Langley April 17 to 19 to present their proposals to consultants, prior to the national competition.

Happenings

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

BINGO is played every Thursday at 7:10 p.m. in the Activities Center.

NAGS. A proposed outlet shopping trip is planned for May 28 to Burlington, N.C. For more information, call Shirley Davis at 838-7435. The NAGS next meeting is May 17 at the Holiday Inn, Hampton.

VISITOR CENTER SOUVENIR COUNTER is selling balloons, frisbees, pens, pencils and key rings displaying NASA's 25th anniversary logo.

LAST CHANCE to purchase Consumer Saver coupon books, good for various restaurants and activities. A $600 value for $10.50, these books will only be available until May 13, and may be purchased at the LAA Office.

TIDEWATER DINNER THEATER. "They're Playing Our Song" is playing at the Tidewater Dinner Theater in Norfolk through May 29. The show is a funny, romantic story about an established composer and his relationship with a zany aspiring young female lyricist. Discount tickets are available at the Activities Center.

DISCOUNT TICKETS are available at the Activities Center for King's Dominion, at $10 each and Busch Gardens, at $10.50 each. Children under 3 years old are admitted free.

BLOODMOBILE. The Red Cross Bloodmobile will be at the Activities Center May 18 from 9 a.m. to 3 p.m. For more information or an appointment, call the Health Unit, ext. 3976 or 2246.

– photo by Don Ward

BILLY BRADFORD DAY HELD AT HAMPTON'S BETHEL HIGH SCHOOL. Students at Bethel High School arranged a tour of the Langley Visitor Center as part of a special celebration for their new friend, Billy Bradford, from Millenocket, Maine. Through a special Christmas project at the Ronald McDonald House, a temporary residence for families of children in the hospital in Norfolk, the students met -- and "adopted" – Billy. The 14-year-old boy has undergone four serious operations at King's Daughters Hospital to correct injuries he sustained in an automobile accident in which he was severely burned. The students have followed his progress since March 1982, and during Billy's visit to Norfolk March 29, the students honored him with a reception and special tours, declaring that day "Billy Bradford Day." Pictured at the Visitor Center with Marilyn Cobb, tour guide, explaining the Viking Lander are Billy (center), Ray Sterne, student government vice president; Trent Funkhouser, student government president; Billy's stepfather, Don Hart; Gary Pierpont, Bethel High teacher; and Billy's mother, Carolyn Hart.

COMMODORE 64 USERS CLUB. The fourth meeting of the Peninsula Commodore 64 Club will be Friday, May 13, at 7 in room 203 at the NASA Technical Library. The club is presently meeting the second Friday of each month. For more information call Dick Wilmoth, ext. 2675, or Dick Everett, ext. 2715.

NEWPORT NEWS GIRLS' SOCCER LEAGUE, supported by Newport News Park and Recreation Department for school-age girls over seven years old, will play spring and fall seasons Mondays, Wednesdays and Fridays from 5:30 to 7 p.m. at Nicewood Park in Denbigh. For information, call Wolf Elber, ext. 2093 or 595-7963.

NAGS May 17 meeting will be held at 6:30 p.m. at the Holiday Inn, Mercury Blvd., Hampton. Joy McIver, from the Bank of Virginia, will address "How to set up a trust fund, the truth about joint ownership, who are your heirs if you have no will, and how to avoid probate." The roast beef or flounder dinner will include a tossed salad, baked potato, vegetable, dessert and beverage for $7.50. Reservations must be made by May 16, but cancellations can be made until May 17. Looking to the future -- a trip to Burlington Outlets is planned for June 4. For more information about either of these events, call 865-2150 or 865-3285.

LAA ATLANTIC CITY TOUR. A bus will depart from the Activities Center for Atlantic City Saturday, May 21, at 6:30 a.m. and return Sunday, May 22. For details and reservations call Frankie Ward at the Activities Office, ext. 3139.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

PATRIOT PASSES to Colonial Williamsburg, are available at reduced rates. For adults $18.50 and $9.50 for children 6–12 you can have unlimited admission for one year to all regular Colonial Williamsburg buildings, colonial homes, craft shops, films and lectures, and the bus system, plus additional admissions to the Royal Governor's Palace, Bassett Hall, Carter's Grove Plantation and the daily escorted walking tours.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Blood Pressure Checks Scheduled for May

May is designated as National High Blood Pressure Month. Langley employees are encouraged to participate in the center's voluntary annual high blood pressure screening program.

The program is sponsored by Occupational Health Services and will offer blood pressure checks at the following locations:

Occupational Medical Center	Building 1149, daily (1:00–2:00)
Cafeteria	Building 1213, each Wednesday (11:30–12:30)
East Area	Building 643, Room 100B Thursday, May 12 (1:00–2:00) Thursday, May 26 (1:00–2:00)

Hypertension is one of America's most serious and pervasive health problems. About 18 percent, or 60 million Americans suffer from this disorder. Of these, 70 percent have high blood pressure in the mild range. These individuals must be made aware that they are at an increased risk of suffering heart disease, stroke, or kidney disease -- just as those with blood pressure levels in the moderate and severe range.

All employees are urged to take advantage of these check-ups.

swap and shop

FOR SALE

Articles

Air conditioner: Sears window unit, 10,000 BTU, 115 volt, good operating unit, $25. Call 596-3394.

Tennis shoes: Head, new, size 11½, leather top, $20. Call 898-4454 after 6:30 p.m.

Depth finder, LN, Whiteline, three depth ranges; sold boat, will sacrifice, $225. Call Kent, 420-8391, Virginia Beach.

Vehicles

Schwinn Collegiate bicycle: five speeds, 19-inch rims, orange, EC, $80. Call Youngblood, 877-1224.

Real Estate

Suffolk: two-story frame house in nice neighborhood, 3BR, 1½ baths, DR, LR, eat-in kitchen, den, game room, garage, $41,900. Assume 11 3/4 percent loan and owner will finance down payment. Call 898-5113 after 5:30 p.m.

FOR RENT

Sandbridge: cottage, 3BR, LR, DR, Kit, AC, phone, ½ block from ocean, $450 per week, reservations limited. Call Kent, 420-8391, Virginia Beach.

WANTED

To buy "Leroy" lettering set and a wooden hanging porch swing. Berryman, 596-3988.

One additional person to car pool from Virginia Beach to West area on 8 a.m. shift. Convenient for Lynnhaven, Bayside, Great Neck and Shore Drive residents. Call Pinelli, ext. 2994 or 3521, or 428-2231.

FOUND

Prescription sunglasses, Bill Blass frames, in Building 1268. Call ext. 3548.

Prescription glasses with gray frames found on counter at the Photo Lab. Call ext. 3521 to identify.

cafeteria menu

WEEK OF MAY 9—13

MONDAY: Old Fashioned Bean Soup; Chopped Steak; Ham & Macaroni Au Gratin; Turkey Nuggets. Snack Bar: Chicken NASA; Hot Smoked Sausage.

TUESDAY: Turkey Noodle Soup; Veal Parmigiana; Franks, Cheese & Bacon; Chicken Pie. Snack Bar: Roast Beef & Cheese Club; French Bread Pizza.

WEDNESDAY: Fresh Vegetable Soup; Chicken & Dumplings Dinner; Beef & Cheese Burritos; Swiss Steak. Snack Bar: Rib-B-Q; Polish Sausage.

THURSDAY: Chicken & Rice Soup; Broccoli & Cheddar Quiche; Beef Stew; Braised Chicken Livers. Snack Bar: Hot Italian Sausage; Beef & Cheese Burritos.

FRIDAY: Bull Island Clam Chowder; Salmon Cake Dinner; Salisbury Steak; BBQ Chicken. Snack Bar: Ham & Cheese Club; 1/4 Lb. Cheeseburger.

WEEK OF MAY 16—20

MONDAY: Corn Chowder; Beef Liver & Onions; Cheese Omelette; Braised Beef & Vegetables. Snack Bar: Turkey Club; Hot Italian Sausage.

TUESDAY: Beef Barley Soup; Spaghetti Dinner; Corned Beef Reuben; Beef Stroganoff. Snack Bar: Polish Sausage; NASA Sub.

WEDNESDAY: Fresh Vegetable Soup; Pepper Steak & Rice; Diet Platter: Baked Fish & 2 Veg.; Polish Sausage & German Potato Salad. Snack Bar: Ham & Cheese Club; Rib-B-Q.

THURSDAY: Beef & Vegetable Soup; Shrimp Croquettes; Tamale Pie; Braised Chicken Livers. Snack Bar: Chicken NASA; Brench Bread Pizza.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chicken Egg Foo Yung; Sliced Pork BBQ. Snack Bar: Beef & Cheese Burrito; Roast Beef & Cheese Club.

Space Medicine Book Released

An in depth examination of space medicine is the subject of a new NASA book, "Space Physiology and Medicine," by Dr. Arnauld Nicogossian, Chief, Medical Operations, Life Sciences Division, Office of Space Science and Applications, and Dr. James Parker, Jr., of BioTechnology, Inc., Washington, D.C.

The book presents a comprehensive overview of current knowledge on spaceflight medical factors such as weightlessness and the impact on man's health and physiology in space. It is intended as a general reference manual for persons engaged in or concerned with the practice of space medicine.

The findings in the book are supported by a large body of ground based research, including both human and animal experimentation, as well as inflight life sciences accomplishments.

National Aeronautics and
Space Administration

Langley Research Center

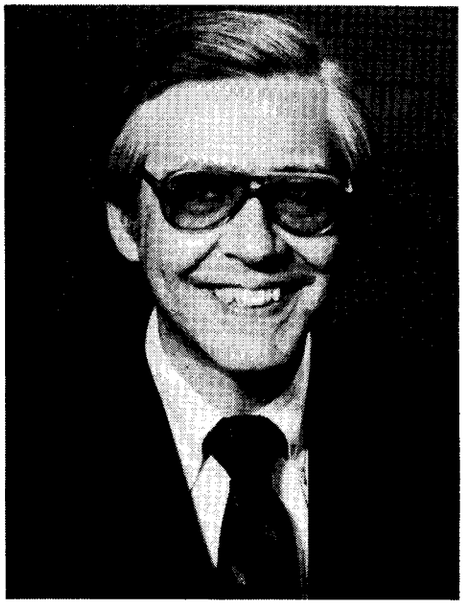
NASA

Langley Researcher

Volume 22 Issue 10 May 20, 1983

Langley Manager Named Deputy Director at Johnson

Robert C. Goetz, Director for Structures at Langley, has been named Deputy Director of the Johnson Space Center. His appointment will become effective July 1.



Goetz will replace Clifford E. Charlesworth, who has held the position since 1979. Charlesworth was made Director of Space Operations, one of three top management positions created in a recent reorganization at the Houston center.

Johnson's Director, Gerald D. Griffin, said the appointment of Goetz "adds strong technical leadership for our future research and development programs. At the same time, it allows Cliff Charlesworth to apply his extraordinary experience toward making the Space Shuttle a truly operational transportation system."

Goetz joined the Langley staff in July 1959, conducting research in hypersonic aeroelasticity in the Dynamic Loads Division. He was a U.S. Air Force officer from late 1959 to 1962, assigned to Langley.

He served in increasingly responsible technical positions until 1979, when he was assigned to NASA Headquarters in Washington, D.C., to head structures and dynamics research. He returned to Langley in 1980 as Special Assistant to the Chief of the Structures and Dynamics Division, where he was in charge of advanced research. He was appointed Director for Structures in June 1980.

He first conducted structural research on the Space Shuttle during its design

Continued on page 2.

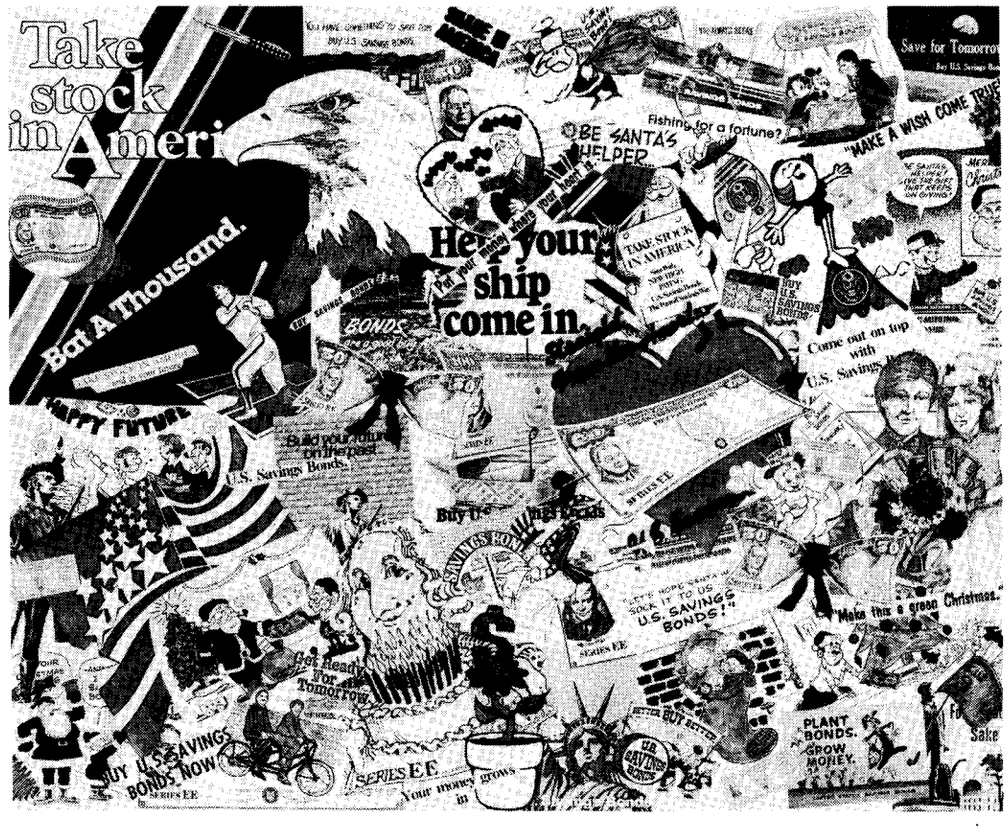
Savings Bonds Rate Set

The market-based interest rate for the Savings Bonds for the six-month interest-accrual period starting May 1 through October 31 is 8.64 percent. This market-based rate is 85 percent of the market rate on Treasury five-year securities during the previous six months.

The rate for the previous market-based period, November 1, 1982, through April 30, 1983, was 11.09 percent. The average yield will change as each new six-month rate is averaged in with previous six-month rates.

The new variable market-based interest system is returning the Savings Bonds Program to a solid competitive position among savings instruments.

Join Langley's Savings Bonds Program



'Self Protection for Women' Program Planned

"Self Protection for Women," sponsored by the Federal Women's Program Committee and the Training Office, will be held June 10 in the Activities Center. This presentation contains practical self-defense techniques that can be learned in **ONE** hour.

Lt. Jim Bullard of the Memphis Police Department, the originator of the program, considers it as pertinent to men as it is to women. Bullard's emphasis is proper "attitude," without which self defense techniques are meaningless.

This is not a typical police department crime prevention program. It is not a rape defense program and definitely not a karate demonstration. The Memphis Police Department promises, "We boldly claim this will be the fastest moving, information packed, positive program you have ever seen." This presentation deals with every form of attack to which women are commonly subjected, ranging from mild forms of flirty molestations to homicidal criminal assults.

Because of the large turn out expected, interested persons are requested to attend according to the following schedule:

8:30 – Aeronautics and Electronics
10:00 – Management Operations and Office of Director
12:30 – Space and Structures
2:00 – SE&O and Projects

Time should be charged to JO A1619.

If you have any questions, call Mary Jackson, Federal Women's Program Coordinator, 3487, or Louise Hamilton, Training Office, 2611.

If an audience of at least 50 people can be guaranteed, an additional session will be presented for spouses of center employees at 7 p.m., June 10. If interested, call Hamilton by June 1.

Langley Hosts EO Council Meeting

Langley's Office of Equal Opportunity Programs will host the NASA Equal Opportunity Council meeting May 26 and 27.

The council is composed of the deputy associate administrators, the NASA personnel officer, the assistant associate administrator for equal opportunity and her senior staff, and equal opportunity officers and deputy directors from each NASA installation.

Langley Deputy Director Richard H. Petersen, chairman of the council, and Langley Director Donald P. Hearth, will welcome the group. Guest speakers for May 26 are James A. Beggs, NASA Administrator, who will speak on NASA's policy, and Clarence Thomas, Chairman of the Equal Employment Opportunity Commission, who will share his views on national EO policy.

Goetz Continued from page 1.

phase in the early 1970's.

Goetz was born in Miami, Fla. He received a bachelor of science degree in aeronautical engineering from Georgia Institute of Technology in 1959 and a master of science degree in engineering mechanics from Virginia Polytechnic Institute in 1967.

He is the author of more than 30 publications and presentations on hypersonic aeroelasticity, Space Shuttle dynamics and aeroelasticity, dynamic loads and flutter. He has received several awards, including a Sigma Xi Award for his master's thesis and a 1981 NASA Exceptional Service Medal for "outstanding contributions to Shuttle technology and for direction of a broad range of analytical and experimental (thermal tile) certification efforts for STS-1 (the first Shuttle flight)."

He is an Associate Fellow of the American Institute of Aeronautics and Astronautics, and he recently completed the Federal Executive Institute in Charlottesville, Va.

Goetz, his wife, Josemarie, and their two children live in Williamsburg.

Historic Area Closes for Economic Summit

Williamsburg, once capital of the Virginia Colony, will be the scene of the Ninth Annual Summit of Industrialized Nations May 28, 29 and 30. President Reagan will serve as host of the first Economic Summit ever held in the United States. Heads of government of six foreign nations, their economic and foreign ministers, their personal representatives and the President of the European Economic Community will meet with the President, Secretary of State George P. Schultz and Secretary of Treasury Donald T. Regan.

In order to meet unprecedented commitments and in light of overriding security requirements, Colonial Williamsburg will be open only to authorized participants in the Economic Summit May 28, 29 and 30. All Historic Area attractions and most Colonial Williamsburg facilities will be closed to the general public on these days. Only persons with official clearance will be admitted to the Historic Area during this time. Also, access to the Historic Area will be limited on Friday afternoon, May 27, and on Tuesday morning, May 31.

Although Colonial Williamsburg will not be available to visitors during the Memorial Day Weekend, nearby attractions in Virginia will be open as usual. The Williamsburg Area Chamber of Commerce (804-229-6511) will have complete information on operating hours and programs at these attractions and invites inquiries.

Colonial Williamsburg will return to full operations by Wednesday, June 1.

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 115, telephone 3006.

Editor . . . . . Jean Saunders
Editorial Assistant . . . . . Pat Zoeller
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 following technical sessions are planned for Monday, May 23; the morning session will begin at 8:30 and include a presentation by the Office of Equal Opportunity.

ELECTRONICS/AERO

Status Report of Laser Velocimetry at LaRC

(a) Laser Velocimetry Measurements

(b) Application of LV Systems in Fluid Mechanics

SE&O

Overview

NTF Update

Annual Maintenance Plan for Major Facilities

PROJECTS

PACE Science Review Results

The afternoon session will begin at 1:30 and will include a presentation by Management Operations.

SPACE

Use of Numerical Filter Technique for Analyzing Earth Radiation Budget Measurements

Langley Shuttle Bailout Study

Space Station Mission Requirements

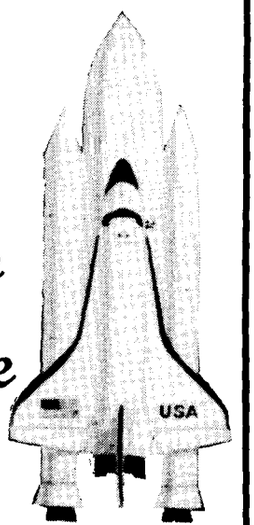
STRUCTURES

Noise Transmission Characteristics of Advanced Composite Structural Materials

Characterizing Delamination Resistance of Toughened Resin Composites

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.

Space Shuttle Update



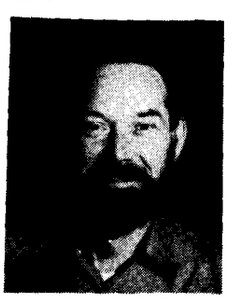
Challenger was scheduled to be moved to the Vehicle Assembly Building shortly after midnight, Friday, May 20, after the shortest stay ever in the Orbiter Processing Facility. A KSC spokesman said that "if we stay on this schedule, this will be the fastest we have ever processed the shuttle before launch." Challenger was in the OPF "30-some days."

The assembled shuttle's move to the launch pad is scheduled for Wednesday, May 25, leading to a June 18 launch. Even before the shuttle arrives at the pad, the cargo for STS-7 will have arrived. The OSTA-2 instrument package, the West German pallet satellite and the two communications satellites are scheduled to move to the pad May 22.

Five shuttle launches remains the agency goal for 1983, with the last still tentatively set for November of December.

The next launch is planned for six days, making the landing Tuesday, June 24. Launch time is 7:33 a.m. EDT; projected landing time at KSC is 6:53 a.m. EDT.

In Memoriam



William E. Cole, an electrical engineering technician in the Operations Support Division, died May 6. He was 51.

"He was one of our test technicians," F. Dolan Clontz, supervisor in the Electrical Drives and Systems Operations Section said. "He was a very friendly person and very pleasant to be around. He would accept any challenge and never complained. He is missed by all of us."

Cole began his Langley career in June 1953 with NASA's predecrssor agency, the National Advisory Committee for Aeronautics. He graduated from the Langley Apprentice School in February 1958.

He served in the U.S. Navy from March 1949 to February 1953.

VLSI Topic for Seminar

Dr. Richard B. Fair, Microelectronics Center of North Carolina and the Duke University Electrical Engineering Department, will speak Monday, May 23, at 3 p.m. in the Activities Center.

His lecture, "An Overview of Technology Requirements for VLSI," will address limitations of Very Large-Scale Integration (VLSI) technology, the VLSI evolution, and new areas of research.

This seminar should be of interest to both computer scientists and electronics engineers.

New Stock Items Available

Special letterhead paper and envelopes have been placed in Stock to commemorate NASA's 25th Anniversary. Ordering information is as follows:

7530-00-000-1112 – Letterhead paper, white, bond 8-½ " x 11", issued per PG (500 sheets per package).

7530-00-000-1038 – Mailing envelopes, LaRC return address, white, 3-7/8" x 8-7/8", issued per BX (500 per box).

The 25th Anniversary paper and envelopes will be used throughout the remainder of the year or until Stock has been depleted.

Bergman Gives Views on Science, Technology and Medicine

Editor's Note: Jules Bergman, ABC-TV science editor, writer and reporter, visited Langley Monday, May 16, as part of the "Our Future in the Cosmos" Public Lecture Series and in honor of NASA's 25th anniversary. He spoke at a Langley Colloquium and at the Hampton Coliseum on "Accomplishments of Science to the Year 2000." Bergman took time from his busy day to be interviewed by the ***Researcher*** *Editor.*

Bergman: Let me preface this interview by saying that being here today is like coming home. This is where my career covering space science began 37 manned flights ago, with the original seven astronauts and Chris Kraft.

Researcher: In the realm of science and technology, where do you think this country is strongest?

Bergman: This country is strongest, probably, in advanced aerodynamics and still, but slipping, integrated circuits and lasers. But I'm desperately concerned by what we can call a science and technology gap -- the growing gap -- to where Russia, Japan and even smaller countries now turn out more engineers and scientists than we do. Japan, with half our population, turns out 75,000 engineers a year; we turn out 60,000. Everybody is after the buck in this country. The way to succeed is to get your MBA; that's the secret to becoming head of a corporation, ultimately. It is noteworthy, it is significant that in Japan no major corporation is headed by anybody except an engineer. Their schools don't offer MBAs. When Japan wants an engineer to get his MBA, they send him here to Harvard or Yale.

Researcher: Where do you think this country is weakest?

Bergman: This country is weakest in failing to recognize that the economy is changing. First of all, I refer to a 1976 speech by Wilson K. Talley. He said, "a crisis is a trend until it is discovered by the public." I modify that to say, "a crisis is a trend until it is discovered by our politicians." None of this is new. We could see the steel industry failing, the auto industry failing, yet no one did anything. Now we have millions of people out of work. What is very clear is that most of the unemployed will never again be rehired. Their jobs have been replaced by automation and robotics.

So, it is one thing to have bombed the German and Japanese steel mills into extinction in World War II, then give them money to build new ones, while our steel industry was dying of obsolescence. It is quite another not to do anything about it. The same thing is true of Detroit, which let the energy crisis mask its real crisis -- quality control and design control -- despite the fact that no Japanese car is as crashworthy as any American car. The Japanese car is better trimmed inside, has better LED clocks, better seats, and it's prettier inside than most American cars. Things don't fail as often. That's the difference. So the faith of the American public in the products our industry makes has been shaken.

Seven or eight years ago I did a documentary called "Crashes: Illusions of Safety." One half of the documentary was on aircraft and small planes and the other half on automobiles. At that time, people like myself were concerned that car imports had 18 percent of our market. In 1950, however, Detroit had 80 percent of the world's car market; it now has 20 percent.

Researcher: What would you say is the one most important scientific event or discovery of the last 20 years?

Bergman: Genetic engineering and the laser. Let me give you an example. I am on the board at Lenox Hill Hospital in New York. I believe that, in 10 or 15 years, heart bypass surgery may well be gone, replaced by laser vaporizing of the plaque inside the blook vessels. That will be a tremendous advancement. The laser and fiber optics are being used in knee surgery now. Just tremendous

breakthroughs. Everything is being done to reduce pain and the length of stay in the hospital.

Researcher: How do you think the space program will be covered in the future?

Bergman: Coverage of the space program, per se, is already in a state of decline. We have no great targets. The Shuttle, for better or worse, is a space truck, a space delivery system to drop off cargo and satellites and pick up other cargo and other satellites. There is not the dramatic impetus of racing to the moon or beating Russia to the moon. The next flight will be our seventh flight. The only reason it's getting covered is that it has the first woman astronaut.

Researcher: Is the decline due to lack of interest or maturity of the space program?

Bergman: Both. NASA makes it very difficult for a creative reporter, like myself, to come up with new ideas.

Researcher: You have covered space and aeronautics as long as anyone I can remember. Is it hard to nail down a subject to fit a one or two-minute spot, and how do you do it?

Bergman: No. I have covered 37 manned space flights and every flight differs. It was tougher on Mercury flights. My reports all echoed, 'we're still catching up with the Russians, but one day we'll do it.' Most of the Gemini TV news spots ended that way. But Apollo was different. We had caught the Russians. It became very difficult in the latter Apollo lunar landing flights to do a fresh, brief spot. What had changed? Just different astronauts and landing sites. The Space Shuttle is much better from that point of view. NASA has become much more imaginative, free and open in its use of television.

In the old days, we used to battle NASA for cameras aboard, first Mercury, then Gemini and finally Apollo. In Apollo we began to get them. In Skylab we had them. In the Shuttle they have so many cameras -- four in the cargo bay alone and two more in the cockpit -- it's no problem nailing down the subject. The problem is making it interesting.

Researcher: What are some of the pressures and problems in doing network news?

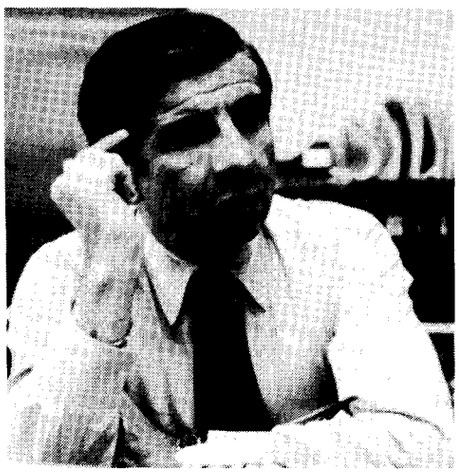
Bergman: It's time pressure. It's finding people to give you the accurate answer. My definition of my job: I spend 12 hours a day on the telephone. In my next life I will have a phone built into my brain. It will save holding the receiver or dialing. I can think 'I need Abrahamson in Washington or anyone else in NASA,' and they will answer.

Researcher: If you were suddenly put in charge of NASA, what would be your first priority, or what changes would you attempt to make?

Bergman: At this point, NASA is confronted with awful realities -- budgetary realities. Obviously, we need a manned space station, but selling that to OMB and the White House, as you've seen and heard, is quite difficult in this era. It's the most worthwhile investment in future technology and science that we can make. I would push not only the manned space station but I would start planning for a Mars manned flight.

That has to be preceded by much more efficient engines than today's chemical engines. In other words, when you go to the outer planets, or even to the close inner planets like Venus and Mars, and you escape Earth's gravitational pull, which requires 25,000 miles an hour or 35,000 feet per second, take your choice, you're mostly drifting. You slow down to 3,000 or 4,000 miles per hour until you reach mid-point and the planetary body begins to attract you and pull you in with its gravity. That's when you speed up. The point I'm getting at is, today's chemical rockets, whether solid or liquid fuel, just aren't good enough. It takes too long to fly from Earth to Mars and back. We don't have life support systems that have ever been tested for that length or that we have faith in. So whatever the power source is, whether its nuclear or some esoteric power source, it has to be better to get us there faster.

The last study I saw of the Mars manned mission was a study done 10 or 12 years ago for the Air Force. In 1970 dollars, the mission was rated at $100 billion; so it would now cost $350 billion in 1983 dollars. By the time it is built and launched in 1990, it would be $500 billion -- so much that no single nation can afford it, which is probably good. It would then become an International Mars Mission, IMM I call it, and would involve at least Western Europe, Japan and, very possibly, Russia and could pave the way for disarmament. Unlike ASTP, which was a relatively short, simple mission, the IMM would involve detailed planning and the nations getting involved in the structure of the other's technology -- unless they build one part and we build the other part. Even so, you have to launch from somewhere. And it involves much, much close work.



That's one of the reasons why I don't think there will be a war, by the way. I think the IMM could well be the most effective form of disarmament that we can get. It will happen. Whether it involves the Russians or Europe or Japan remains to be seen. The precedent is already being set in some ways, with the ESA and Haley's Comet missions, in a much smaller way, of course.

Researcher; If you were retiring tomorrow and had your pick of one last story assignment, what would it be?

Bergman: It would be flying in space as an astronaut. My application is high on the NASA list. I applied as a pilot as most of my experience is in small planes. It has to be the ultimate challenge.

But there are other challenges, too, that are equally fulfilling. For example, neurosurgery. While all the progress has been made in heart work -- bypass, artificial hearts -- nothing substantially has happned in the last 50 years in neurosurgery.

If I were starting my life over, I'd be an astronaut or a neurosurgeon. My life, though, has not been an unhappy or unfulfilling life. All the NASA, Air Force and medical people I've worked with have been superior people, and I pick my people carefully.

Recent Retirees

Kenneth S. Bates, Analysis and Computation Division, and **Margaret L. Hurt**, Transonic Aerodynamics Division, retired April 29.

GWU Needs Professors

The George Washington University, Tidewater Center, is seeking adjunct professors for graduate level courses in management information systems, behavioral sciences, computer science and statistics.

Please submit letter of application and resume to Assistant Dean, The George Washington University, Tidewater Center, 2019 Cunningham Drive, Hampton, Virginia 23666.

Enterprise and QSRA to be Exhibited in Paris

Space Shuttle Orbiter Enterprise will be the keystone of the United States aerospace exhibit at the Paris Air Show, May 26 through June 5, 1983. NASA's propulsive-lift Quiet Short-Haul Research Aircraft will also be on display and will perform flights to demonstrate its quiet short takeoff and landing (STOL) performance and flying qualities.

The Enterprise, which will be flown to the aerospace exposition aboard a modified 747 jet aircraft, was used as a test vehicle in 1977 for a series of low altitude approach and landing flights at Edwards Air Force Base, Calif. It was also used for launch facility checks at the Kennedy Space Center.

The QSRA is a four engine, low-speed research aircraft used for developing design and certification data for future civil and military aircraft propulsive lift to improve takeoff and landing performance.

Logo Marks Anniversary

NASA's 25th Anniversary logo, which is appearing on official agency publications and documents throughout 1983, commemorates 25 fast-paced years of aeronautical research and space exploration.

In 1958, our predecessor, the National Advisory Committee for Aeronautics, transferred intact to NASA 8,000 employees, three laboratories (Langley, Lewis and Ames), two stations, and a reputation for high-caliber research and high-performance workmanship.

Today, NASA's nine research facilities, scattered throughout the nation, are 22,000 employees strong. Our research and workmanship have led to aircraft that fly farther, faster and more efficiently than ever before. We list among our accomplishments explorations of the moon, Mars, Venus, Jupiter, Mercury and Saturn. In June of this year, the spacecraft Pioneer 10 will sail beyond our known solar system. We have come a long way in a very short time.

25th Anniversary
1958-1983

The anniversary logo, when shown in full color, is American in spirit, featuring a red numeral 2 and blue numeral 5 encompassing a five-pointed white star.

It seems appropriate, at a time when we are racing toward the future that Shuttle technology has opened, to reflect on our past. The same dedicated excellence in research and development that brought us to the milestone of our 25th anniversary will lead us to future accomplishments.

Former Co-op Pilots 'First Female Flight'

The C-141 that flew across the Atlantic to West Germany May 16 with the first all female crew was piloted by a former Langley employee.

Capt. Guiliania Sangiorgio, who was a co-op from January 1975 to August 1977, was the flight commander for this U.S. Air Force "first female flight."

Former Langley co-workers said Sangiorgio was a highly motivated individual who always wanted to be a pilot. Because of her love for flying, she turned down a job offer from Langley in April 1978 to join the Air Force. While at Langley, she was considered as an outstanding co-op.

Sangiorgio earned a bachelor of science degree in aeronautical engineering from Embry Riddle Aeronautical University and has accumulated 1,600 hours of flying time since joining the Air Force. She is the first female active duty aircraft commander at the McGuire Air Force Base in New Jersey.

Mars Veteran Led Active Life

Viking's Lander 1 set down on Mars at 8:12 a.m. EDT, July 20, 1976. No one saw it happen, because only telemetry indications marked the touchdown. But about 40 minutes later, Lander 1 began to take its first photograph of the surface of Mars.

Slowly, vertical strip by strip, moving left to right on TV monitors, a rock-strewn, dirt-covered picture grew. After several minutes, an image began to appear that didn't look like a rock; it was too smooth, too symmetrical, too machined looking. Then, as the image expanded, cheers and applause broke out among those viewers who were members of the Viking team. They realized that Lander 1 was taking an electronic picture of one of its own footpads. Now no one doubted that a robot spacecraft had safely landed on the planet Mars.

For almost seven years Lander 1 and its twin, Lander 2, sent back to Earth scientific information on another planet. The Landers took thousands of photographs, searched for life with biological and chemical analysis instruments, measured the degrees of heat and cold through the seasons, compiled weather reports, felt for shocks and motions within the Martian surface, and studied many of the planet's physical and magnetic properties.

Lander 1 lived a fairly long time for a complex machine, and it has provided Earth scientists with a great wealth of information about the solar system.

A fitting epitaph for Lander 1 was provided by an editorial in the New York Times, printed the Sunday after Lander 1 first landed on Mars:

"Time as well as space have, in a sense, been conjoined. The instrument that has performed this miracle is that inhuman little robot, sending out its signals, a mere creature of another miracle whose power is even more spectacular than that of all the Vikings . . . put together -- the miracle of the human mind."

Houbolt to Speak at AIAA Awards Banquet

There has been much controversy lately about the Civil Service retirement system. The media claims it to be an "overgenerous plan." But, is it?

Dr. John C. Houbolt, Langley's Chief Aeronautical Scientist, will discuss "The Civil Service Retirement System -- An Award?" at the AIAA Annual Honor Awards Banquet Wednesday, May 25.

The meeting will be held in the Activities Center, beginning with a social at 6 p.m. A steamship round dinner will be served at 7 p.m. and the program will begin at 8 p.m.

In his presentation, Houbolt will give a brief history on the inception of the system, its failings and where it stands today. Examples will be given to show what the vested interests of a Civil Service individual really are and whether Social Security should be included. A comparison with private sector retirement plans will be given. Houbolt's intent is to show realities in comparison to the perceptions that are in the minds of the nongovernment public.

The cost of the dinner is $10 per member and $8 for student members. Reservations must be made by May 24 with Richard Wallsom, ext. 2891; Robert Calloway, ext. 2483; or Duane Melson, ext. 2627.

Propulsion Trivia

The energy released by the three Space Shuttle Main Engines at full power level, in units of watts, is equivalent to the output of 23 Hoover Dams.

Happenings

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

NAGS. A proposed outlet shopping trip is planned for May 28 to Burlington, N.C. For more information, call Shirley Davis at 838-7435.

TIDEWATER DINNER THEATER. "They're Playing Our Song" is playing at the Tidewater Dinner Theater in Norfolk through May 29. The show is a funny, romantic story about an established composer and his relationship with a zany aspiring young female lyricist. Discount tickets are available at the Activities Center.

PENINSULA SINFONIETTA. Patrick Gainer, who retired from Langley in 1982, will be the oboe soloist for the Peninsula Sinfonietta's chamber music concert on May 22, at 8:15 p.m., in the Campus Center Auditorium at Christopher Newport College, Newport News.

NEWPORT NEWS GIRLS' SOCCER LEAGUE, supported by Newport News Park and Recreation Department for school-age girls over seven years old, will play spring and fall seasons Mondays, Wednesdays anf Fridays from 5:30 to 7 p.m. at Nicewood Park in Denbigh. For information, call Wolf Elber, ext. 2093 or 595-7963.

IBM PC USER'S GROUP will meet Wednesday, June 1, Building 1229, Room 223, at 4:35 p.m.

PATRIOT PASSES to Colonial Williamsburg, are available at reduced rates. For adults $18.50 and $9.50 for children 6–12 you can have unlimited admission for one year to all regular Colonial Williamsburg buildings, colonial homes, craft shops, films and lectures, and the bus system, plus additional admissions to the Royal Governor's Palace, Bassett Hall, Carter's Grove Plantation and the daily escorted walking tours.

SHUTTLE PASSES. Car passes are available for the STS-7 launch, scheduled for June 18, by calling Ann Suit, ext. 3967. There are no provisions, however, for viewing the landing which will take place, for the first time, at the Kennedy Space Center.

TENNIS CLUB '83. The president-elect of LRC Tennis Club is Bill Shinn, with Betty Hughes as vice-president. The club is open to NASA personnel, supporting contractor personnel, and their family members. This year's club-sponsored activities include all traditional events, such as tournaments, ladder competitions and parties, and a few new attractions, such as league competitions, newsletter publishing, and possibly instructions. The club membership drive is currently underway; the dues are $4 for each member. For more information, call Joyce Cammon, ext. 3935, or Bill Shinn, ext. 4534.

DISCOVERY, a human relations group for single people, meets the second and fourth weekend of each month. The next meeting will be held at 7:30 p.m. on Saturday, May 28, at the Unitarian Fellowship of the Peninsula, 415 Young's Mill Lane, Newport News. A discussion will be preceded and followed by a social time. Bring cheese, crackers, or beverage to share. Attendance fee is $2. For more information, call 877-5791.

LAA-BALTIMORE INNER HARBOR TOUR. The Activities Association will sponsor a mini-tour to the Baltimore Inner Harbor June 18 and 19. A bus will leave the Activities Center Saturday, June 18 at 6 a.m. and return Sunday evening, June 19. The trip will include a tour of the Maryland Science Center and Planetarium, World Trade Center, National Acquarium, lunch at Phillip's Harbor Place and a harbor cruise. For details and reservations call the Activities Office, ext. 3139.

LUNCH COUNTER opens May 31 in the Activities Center bar area. Hours of operation for the summer are from 11 a.m. to 1 p.m. Monday through Friday. Sandwiches, snack foods and soft drinks will be available. Please use side entrance into the building.

VISITOR CENTER SOUVENIR COUNTER is selling balloons, frisbees, pens, pencils and key rings displaying NASA's 25th anniversary logo.

Have You Had Your Blood Pressure Checked?

– photo by Bob Nye

Max B. Bryan, Facilities Engineering Division, has his blood pressure checked by Rosalie McLain and recorded by Donna Minton, Kelsey-Seybold employees who provide occupational medical services. May is National High Blood Pressure Month and Langley employees are encouraged to participate in the voluntary screening program. For the remainder of the month, blood pressure checks will be available at the following places: Occupational Medical Center, Building 1149, daily from 1 to 2 p.m.; Cafeteria, Wednesday, May 25 from 11:30 to 12:30; Building 643, Room 100B, Thursday, May 26 from 1 to 2 p.m.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Penalty for Private Use, $300

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NASA HEADQUARTERS
WASHINGTON DC 20546

LAA Sponsors Alaskan Adventure

The Langley Activities Association has planned an exciting 11-day tour of America's last frontier -- Alaska.

The air/sea/land tour includes:

- Scheduled air from Norfolk to Vancouver, British Columbia with return from Anchorage via Seattle;
- 3 day/4 night cruise from Vancouver to Juneau aboard the Nieuw Amsterdam. The Nieuw Amsterdam is making its maiden voyage in June;
- All meals, tips and gratuities are included on this cruise, also the special cruise of the famous Mendenhall Glacier through the Lynn Canal;
- Ground transportation by motorcoach;
- Skaway - 1 night;
- Whitehorse - 1 night;
- Alas/Kon Border Lodge - 1 night;
- Anchorage - 2 nights;
- Sightseeing in Fairbanks and Anchorage;
- Special nature briefings during the Mendenhall Glacier cruise and a visit to Porterage Glacier;
- Optional stay over in Seattle.

For additional information or day by day itinerary call the LAA Office, ext. 3139, or Ernie Greene, ext. 2312, or 838-0567.

swap and shop

FOR SALE

Vehicles

Schwinn Collegiate bicycle: Five speeds, 19-inch frame, 26-inch wheels, orange, EC, $80. Call Youngblood, 877-1224.

Real Estate

Suffolk: Two-story frame house in nice neighborhood, 3 BR, 1-1/2 baths, DR, LR, eat-in kitchen, den, game room, garage, $41,900. Assume 11-3/4 percent loan and owner will finance down payment. Call 898-5113 after 5:30 p.m.

FOR RENT

Beach cottage on white sand dune beach of Chesapeake Bay. Location offers solitude, sun, clear water, view and clams; $220 per week. Call Jim Martin, 693-4241 (Gloucester).

WANTED

One additional person to car pool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Giesy, ext. 4591, or 625-7558 (Norfolk).

Retiree Deaths

Peter F. Flatley, who retired from Langley in June 1972, died April 28 at the age of 70. At the time of his retirement, he was assigned to the Operations Support Division.

James F. Montgomery, who retired from the Business Data Systems Division in December 1981, died April 21. He was 57.

Harris, Burke Appear on 'Forum 15'

James Burke, the host and creative force behind the PBS "Connections" Series, and Roy V. Harris Jr., Chief of Langley's High-Speed Aerodynamics Division, will join Chris Dickon on "Forum 15: The Technology Connection," for a look at the relationship between man and machine, and where it is going.

The talk will air Monday, May 30, at 8 p.m. on WHRO-TV, Channel 15.

Others joining the discussion will be Dr. Hans vonBayer, professor of physics at William and Mary; Al Kyser, an aerospace engineer; and Dr. Walter Maner, assistant professor of computer science at Old Dominion University.

cafeteria menu

WEEK OF MAY 23 — 27

MONDAY: Ham & Lima Bean Soup; Beef Liver & Onions; Pork Chow Mein; Knockwurst & Sauerkraut. Snack Bar: Grilled Cheese; Chicken NASA.

TUESDAY: Turkey Noodle Soup; Baked Lasagna; Chuckwagon Steak; Teriyaki Steak. Snack Bar: Footlong Hot Dog; Rib BQ.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Chopped Steak; Fried Filet of Fish. Snack Bar: Beef & Cheese Burrito; Ham & Cheese Club.

THURSDAY: Seafood Gumbo; Beef, Macaroni & Tomatoes; Monte Cristo Sandwich; Braised Chicken Livers. Snack Bar: ¼-lb. Cheeseburger; NASA Sub.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Franks & Baked Beans; ¼BBQ Chicken. Snack Bar: Hot Italian Sausage; Turkey Club.

WEEK OF MAY 30 — JUNE 3

MONDAY: *HAPPY HOLIDAY!!*

TUESDAY: Old Fashioned Bean Soup; Veal Parmigiana; Baked Filet of Fish; Chicken Fried Steak. Snack Bar: Roast Beef & Cheese Club; ¼-lb. Cheeseburger.

WEDNESDAY: Fresh Vegetable Soup; Fried or Baked Chicken Dinner; Creole-Style Chopped Steak; Seafood Quiche. Snack Bar: Chicken NASA; B.L.T.

THURSDAY: Minestrone Soup; Stuffed Bell Pepper; Beef Tips and Rice; Braised Chicken Livers. Snack Bar: Polish Sausage; Beef & Cheese Burrito.

FRIDAY: Bull Island Clam Chowder; Fried or Broiled Fish Dinner; Beef Enchiladas; Hot Turkey Sandwich. Snack Bar: Ham & Cheese Club; Taco.

Basketball Results

The 1983 NASA Basketball Association (NBA) results from the Herbert E. Boulter Memorial Tournament are listed below:

Langley League

Alchemist - 1st Place
C.B. All-Stars - 2nd Place

Ames League

Klate Holt Eagles - 1st Place
Stars - 2nd Place

Kennedy League

Fireballs - 1st Place
Firestopper - 2nd Place

Johnson League

Tarzans - 1st Place
Net Nuts - 2nd Place

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 11 June 3, 1983

NTF Reaches Major Milestone

Tunnel Shuts Down for Minor Repairs

A major milestone in construction and checkout of the National Transonic Facility was recently reached with the successful completion of a series of cryogenic operational tests.

"Pretty successful," was the low-key judgment of Moses J. Long, Manager of the NTF Project Office. Long is more concerned with the next critical items on his schedule than with the completed milestone.

The series of tests introduced nitrogen into the wind tunnel in a gradual, step-by-step process of lowering the tunnel temperature, building up pressure and reaching for a planned speed of Mach 1.2.

Five series of tests -- a total of 50 separate test runs -- began in early February with slow cooldown. Over a period of 12 hours, the tunnel was cooled to temperatures as low as minus 250 degrees F., before being warmed again.

The second test series, in late February, consisted of more rapid cooldowns, each lasting about five hours, with temperatures again going as low as minus 250 degrees F.

During March, a third test series was conducted. The temperature dipped to minus 280 degrees F., and the speed reached Mach 1.17, extremely close to the design goal.

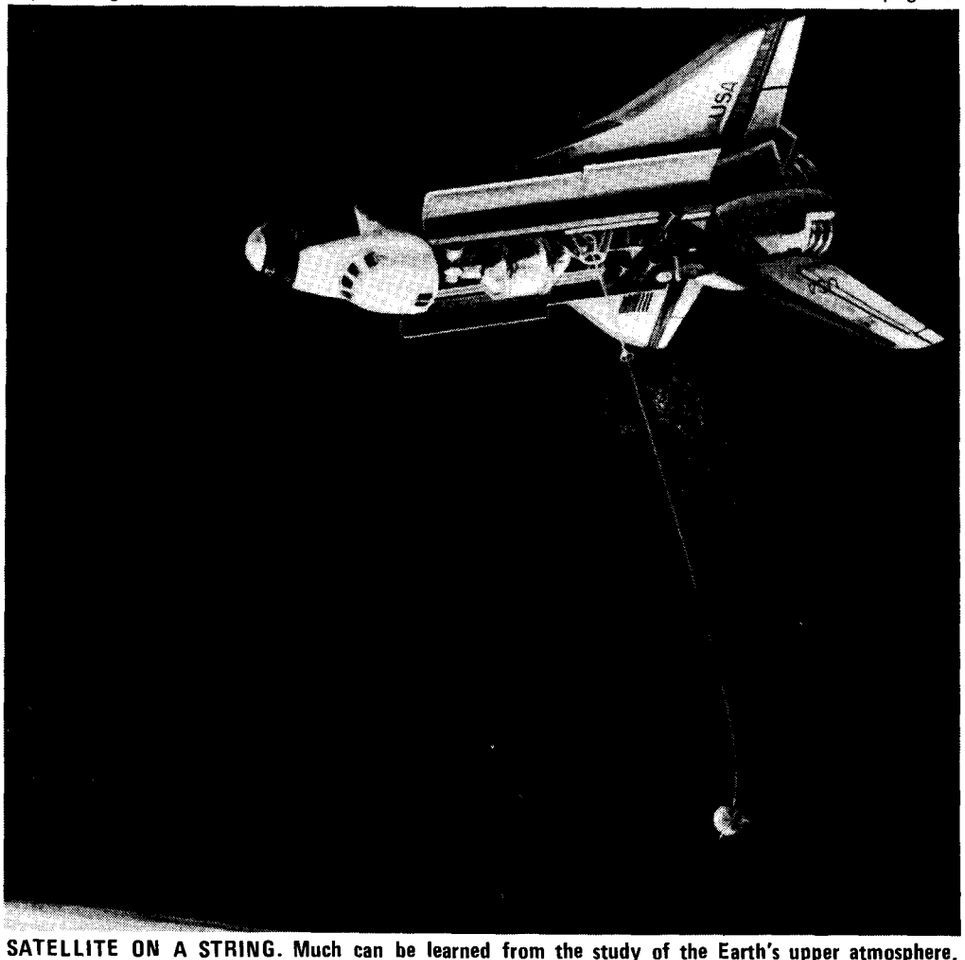
Two more test series, during April and early May, completed the performance tests. During the entire series, tunnel pressure was incrementally raised from 30 psi to 60, to 90, and eventually to just under 130 psi.

Very few problems occurred during the tests, and none was major or caused any damage to the tunnel.

Between now and mid-August, NTF will be shut down so that deferred modifications and minor repairs can be made. A final test series will run from

Continued on page 3.

25th Anniversary
1958-1983



SATELLITE ON A STRING. Much can be learned from the study of the Earth's upper atmosphere, especially by placing data-gathering instruments on the edge of the gaseous envelope that surrounds our planet. Beyond an altitude of about 80 kilometers, the atmosphere is simply too high for airplanes to reach and too low for a satellite to remain in orbit for any useful length of time. The Tethered Satellite System, managed by Marshall Space Flight Center, provides a method to study this region of the upper atmosphere for days -- perhaps weeks. The system calls for a data-gathering satellite to be carried into orbit by the Space Shuttle, then suspended from the cargo bay area on a tether -- super-strong cord that can be as long as 100 kilometers. The satellite, attached to the Shuttle by the tether, would then be trolled through the Earth's upper atmosphere to gather atmospheric, magnetospheric and gravity data. (See related story on pages 4 and 5.)

– photo by Ronnie Booth

Kathi Porter, Langley's ridesharing coordinator, presents the 1983 Commissioner's Ridesharing Award to John F. Stokes, Director for Management Operations. Porter accepted the plaque at a public transportation seminar held recently at the University of Virginia. Langley was recognized by the state Department of Highways and Transportation for increasing its participation in ridesharing by 21 percent over the last four years. Fifty-nine percent of the Langley work force is part of a ridesharing program, and two vanpools and a private buspool, in addition to numerous carpools, commute to and from the center each work day. The Commissioner's Award is made on the basis of the achievement, innovation, and comprehensiveness of management's ridesharing efforts.

Ball is New IG

Lee T. Ball was selected as director, Center Office of the Inspector General, on May 10, to replace Jim Ogiba who transferred to the Financial Management Division at Langley.

Ball, who has worked at Langley since February 1979, was an auditor in the Inspector General's Office before becoming director. Before NASA, Ball worked for the Defense Contract Audit Agency at the Newport News Shipbuilding for five and a half years.

A graduate of Old Dominion University with an M.B.A. in accounting and a licensed C.P.A., Ball will be in charge of auditing and investigations on waste, fraud, abuse, and mismanagement at NASA.

Military Service After 1956?

Veterans with military service after December 1956 were recently sent an announcement explaining the procedure in filing an application to deposit seven percent of their basic pay for post-1956 military service. Any employee with post-1956 service who has not received this information should contact Lahoma Hart, ext. 2523.

Training Notice

If you will complete the requirements for your graduate degree program during Fiscal Year 1983, and HAVE NOT notified the Training Office, please call Susan Little or George Allison, ext. 2611.

Staff Donates 355 Pints of Blood

Langley employees, retirees and contractors donated 355 pints of blood May 18 when the Red Cross Bloodmobile visited the center.

Achieving gallon status were:

9 gallons – Harry Heyson.

8 gallons – Herbert Cunningham, John Benthall and Robert Kenimer.

7 gallons – Lewis Horsley.

6 gallons – John Borowski, Marcella Hogge and David A. Wineman.

5 gallons – Harvey Murray and Wayne Silver.

4 gallons – Lemuel Meetze.

3 gallons – Samuel Sokol, Daniel Milburn, Robert Daugherty, Robert Calloway, Joseph Price and Kathryn Wurster.

2 gallons – Beverly Overman, James McMillan, Ronnie Gillian, James Adkins, David Lorincz, Debra Shimek, Catherine Herstrom, Julie Fowler and Augustine Dovi.

1 gallon – Christine Darden, Julius Gibson, James Antinori, Matthew Nortness, Ruben Remus, Paul Arbuckle, Linda Wall, Wendy Pennington and Cheryl Williams.

Donating blood for the first time were Kimbi Bagnal, Tammy Harris, Russell Surles, John Hefner, Rhonda Harvey, Clarence Stanfield, JoAnn Manassa, Kim Bey, David Babb, Susan Haddock, Mark McMillan, Michael Burroughs, Charles Potter, Robert Young, William Heaphy, Allen T. Gray, Vivian Merritt, John Dorsey, Joe Harrison, Earl Quinn, William Hooper and L. W. Saylor.

Langley Coordinators were Virginia Jones and Annette Forrest. Red Cross Coordinator was Scotty McArthur. Typists were Octavia Judge and Louise Barker. Coffee and doughnuts were provided by the Langley Federal Credit Union.

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 115, telephone 3006.

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.

Langley Houses Presidential Helicopters

Never before has there been an Economic Summit Meeting in the United States, and never before has the Presidential Helicopter Fleet been ground based at the Langley Research Center. That is until Wednesday, May 25, when the Marine One Helicopter Squadron landed in front of the Langley hangar and awaited entrance into the half empty building.

Donald Bryan, head of Research Aircraft Support Section said, "We totally changed the hangar to house the Presidential Fleet."

Half of the hangar was cleared out to make room for the ten helicopters – seven VH-3D's and three H-53's. They arrived early so they could be cleaned and polished and prepared for the foreign heads of state and "their respective foreign and economic ministers," as well as U.S. government officials, and various journalists.

President Ronald Reagan, Great Britain's Prime Minister Margaret Thatcher, Canada's Prime Minister Pierre Trudeau, Japan's Prime Minister Yasuhiro Nakasone, West Germany's Chancellor Helmut Kohl, Italy's Prime Minister Amintore Fanfani, France's President Francois Mitterrand, and European Community leader and President of the EC Commission, Gaston Thorn, were among those that arrived at Langley Air Force Base Friday, May 27 and Saturday, May 28.

After their arrival, they were taken from the airfield by the Presidential helicopters, to their destination in Williamsburg.

The helicopters served as "a taxi service" according to Bryan, in lieu of transporting the dignitaries by automobile.

While the helicopters were at Langley, no one was allowed access inside the tape boundary that surrounded the helicopters. NASA personnel and NASA contractor personnel, however, had normal access to the opposite side of the hangar, and NASA aircraft maintenance work and flight operations continued in a normal fashion.

No photographs were permitted of the helicopters while on the center.

They remained in the hangar for the duration of the Summit Meeting and departed Tuesday afternoon, May 31, marking another "first" for NASA Langley.

Templeton Named Associate Administrator

Patrick A. Templeton, NASA Deputy Assistant Administrator for Legislative Affairs, has been appointed NASA Associate Administrator for External Relations.

Robert F. Allnutt, who has been serving as the Acting Associate Administrator, leaves NASA next month to become the legal counsel to the U.S. Committee for Energy Awareness.

In his new position, Templeton will be responsible for policy level management, direction and coordination of the Agency's relationships with external organizations, both public and private (domestic and international). This includes the news media; the Department of Defense and other federal agencies; state and local governments; industry and private individuals.

Key Position

Robert W. Feldhousen has been selected Head, Construction Branch, Facilities Engineering Division under Competitive Placement Plan 83-25.

NTF Reaches Milestone

Continued from page 1.

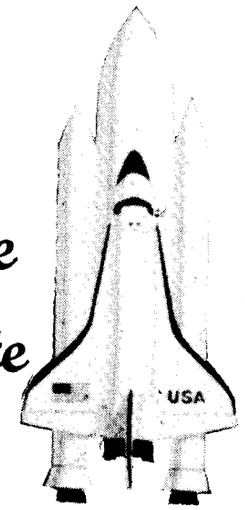
mid-August into mid-September, ending with an Operational Readiness Review, the final stamp of approval for NTF's construction.

Once the tunnel is declared ready for research operations, the Systems Engineering & Operations Directorate will officially "hand over" NTF to the Aeronautics Directorate. The transition is already under way, with 10 Aeronautics people now working at the tunnel, along with 19 from the Operations Support Division and about 26 from Wyle Laboratories, a support contractor.

The first NTF model, a generic transport aircraft model called Pathfinder 1, is already built and scheduled to be placed in the tunnel late this year. Pathfinder 1 and other models will be used during aerodynamic calibration of the tunnel. That process will take about a year, and some research work will be conducted during that time.

Formal dedication of NTF is planned for this fall.

Space Shuttle Update



Preparations for Challenger's second, and the Shuttle system's seventh, flight continue smoothly. Formal countdown begins with the traditional call to stations at 3 a.m., Thursday, June 16. The count will begin at T-40 hours with the customary built-in holds.

Launch target remains 7:33 a.m. EDT, Saturday, June 18 with landing still set for 6:53 a.m. EDT, Friday, June 24. Official planned time for the mission is 5 days, 23 hours and 20 minutes.

The Canadian communications satellite, ANIK C, will be deployed during Challenger's eighth orbit, about nine and one-half hours after launch. It's Indonesian equivalent will be deployed during the 19th orbit, about 26 hours into the mission. Both will be deployed with the use of a payload assist module.

On flight day three, the astronauts will operate the West German mobile pallet twice. The first time it will remain in the payload bay, the second time it is scheduled to free-fly along side Challenger 8 to 10 hours. SPAS-1 is a maneuverable platform designed to fly experiments and will carry 10 experiments on this mission.

OSTA-2, which will remain mounted in the payload bay, will conduct a variety of materials processing experiments. It is sponsored by NASA and the West German Ministry for Research and Technology. Crystal growth is one of several self-contained, automated experiments planned.

Two mid-deck experiments and seven Getaway Specials will also fly.

NASA Tests New Fabrication Process for Space System Components

Scientists at the Langley Research Center are experimenting with a fabrication process for composite materials that one day may be used to manufacture components for large space structures and space transportation systems.

"Many space system components require long continuous structural lengths of very high specific strength," said Ian O. MacConochie, Vehicle Analysis Branch, Space Systems Division. "Therefore, we think this process may lend itself to the manufacture of components for future earth-to-orbit transportation systems and to ground or on-orbit manufacture of continuous members for large antennas, space platforms, space planes and other structures.

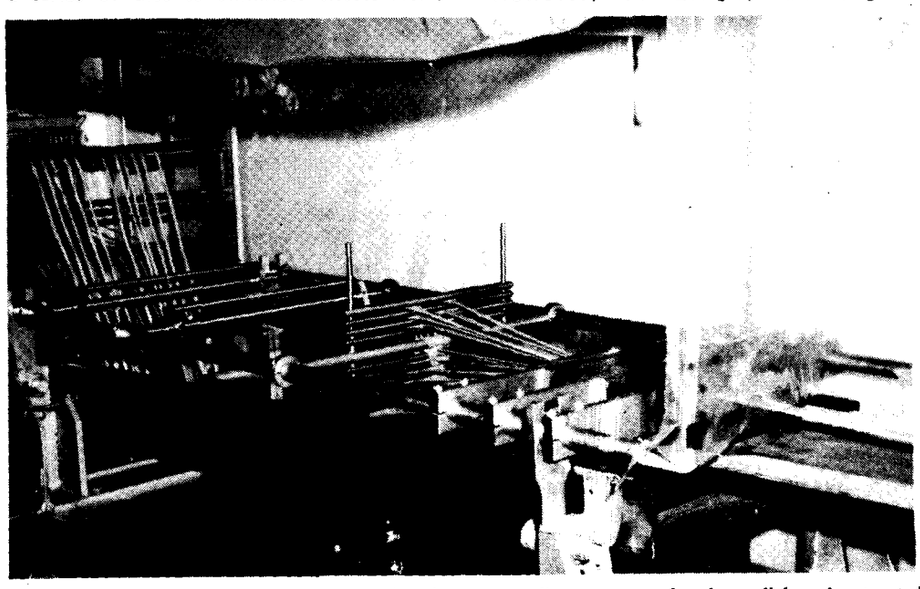
MacConochie explained that on-orbit manufacture is especially advantageous, since structural members would not be limited in length to that of the delivery vehicle's cargo bay.

In the process, (called pultrusion) reinforcing fibers are continuously pulled from a creeling system, collimated (placed parallel), and saturated with a resin which becomes the composite matrix. The material then travels through a series of dies to eliminate excess resin, consolidate and compact the material, and begin shaping the cross-sectional profile to the desired configuration. A heater die then cures the resin and the polymerized composite now can be cut to any length.

Structural components can be produced continuously without splices or mechanical joints and at a speed of up to six feet per minute.

Before pultrusion, composite parts were limited to the size of vacuum and curing ovens in which they were processed. That process was time consuming, because it was a batch, rather than an automated continuous process. The automated process can save many manhours compared with the time required to hand lay the materials. "Hand lay-ups are heavier, inconsistent in thickness and are too time consuming," explained Maywood Wilson of the Fabrication Division's Materials Processing and Development Section.

Wilson and Bruce Bishop, also of the Fabrication Division, have been experimenting with Langley's pultruder for several years. "Basically, the process was started to pultrude structural beams and articles that would be used in recreational areas," Wilson said. "However, at Langley the original concept centered around in-space manufacturing processes, pultruding in the bay of the Shuttle. Materials could be shuttled up into space, then pultruded into shapes that could be expanded into large space structures.



In the pultrusion process, fibers are pulled from a creeling system, placed parallel and saturated with a resin which becomes the composite matrix. The material then travels through a series of dies to eliminate excess resin, consolidate and compact the material and begin shaping the cross-sectional profile to the desired configuration. A heated die then cures the resin and the polymerized composite can be cut to any length.

"We are experimenting now with new lightweight materials and new reinforcing fibers," Wilson said. He explained that a structural member made of fiberglass-reinforced polymer would be 78 percent lighter than steel, 37 percent lighter than aluminum, and stronger than structural steel. The same structure made of graphite fiber reinforcement would be even lighter and stronger.

Wilson said that Langley is the only NASA center developing the process, but that the Marshall Space Flight Center is doing subcontract work in this area.

Pultrusion experiments have been conducted for the Materials, Fabrication, Space Systems and Structures and Dynamics divisions. The work for the Materials Division involved the pultrusion of thermoplastics reinforced with fiberglass.

The Fabrication Division is constructing lighter weight wind tunnel model components, such as wing spars, wing skins and stringers, which are made of fiberglass and polyester and can withstand the shock from various tests.

A demonstration model of a one-kilometer-long Kevlar reinforced cable is being fabricated for the Space Systems Division. The cable could be used to tow a structure from one orbit to another or as a tether to suspend experiments or spacecraft from the Shuttle or a space station in a high orbit to a lower orbit. (See photograph on page 1.)

Experimental pultrusions have been made for the Structures Directorate from both polyester and thermoplastics reinforced with fiberglass. Robert Miserentino of the Structural Dynamics Branch is project engineer for the pultrusion of a 35-foot-long (10.66 meters) suspension beam to be used in dynamic tests of very low frequency members. The intended applications are model space booms, such as for the proposed Mast program and space station. The space station model will eventually consist of several components, including connecting devices, pressurized

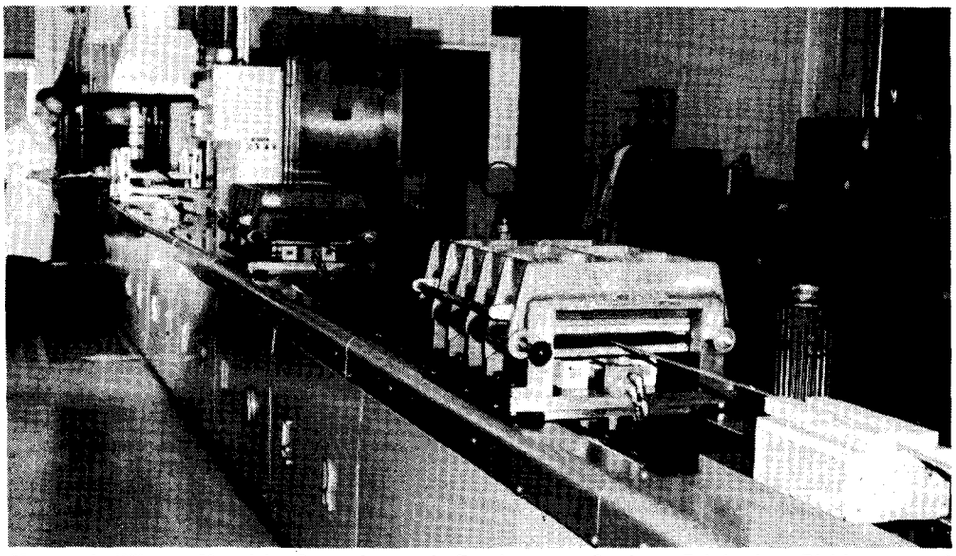
aluminum cylindrical shells, long thin plates and long booms. Future models will be used to develop ground tests methods to evaluate structural dynamics modeling and analytical techniques, thermal distortion effects, deployment within ground test limits, damping phenomena, techniques for low-frequency response control and performance of pointing control.

"Technology exists to pultrude practically any shape whose planes are parallel to its central axis, and technology is being advanced to pultrude and rollform or rollshape in the same operation," Wilson explained. Pultrusion, he continued, is now centered on thermoset (crosslinked) polymer matrix materials reinforced with fiberglass, graphite, Kevlar or hybrids of these reinforcement materials. Resins generally used are thermoset polyesters, vinylesters and epoxies. Resins in the development stages include high temperature thermoplastics.

The real future of pultrusion in the aerospace industry lies in developing the technology to pultrude and rollform high temperature (315 degrees C. or 600 degrees F.), continuous fiber reinforced thermoplastics.

Due to the chemistry in curing, thermoplastics (such as a common, low-temperature polyethylene) can be reheated and formed to a given shape from stock material; whereas thermosets are locked in a fixed position during the cure cycle and cannot be reheated and reshaped. Thermoplastics are also weldable after cure, which is desirable in fabrication.

Pultrusion has great potential for manufacturing component material parts for large space structures and space transportation systems. This process should have a strong influence on the way future space systems are designed and fabricated.



Maywood Wilson, Materials Processing and Development Section, Fabrication Division, records pulling speeds and temperatures and oversees Langley's pultruder as the two moving carriages on top of the machine alternate in pulling the material through the die. Structural components can be produced continuously without splices or mechanical joints.

President Orders Space Station Study

President Reagan has requested the Senior Interagency Group for Space to conduct a study to establish the basis for an Administration decision on whether to proceed with NASA development of a permanently-based, manned space station.

The interagency group will consider four possible scenarios for the continuation of the nation's manned space program, following completed development of the Space Shuttle. These scenarios are Space Shuttle and Unmanned Satellites; Space Shuttle and Unmanned Platforms; Space Shuttle and an Evolutionary Space Station; Space Shuttle and a Fully Functional Space Station.

The issues addressed by the study will include how a manned space station would contribute to the maintenance of U.S. space leadership and how a station would best fulfill national and international requirements versus other possible means of satisfying them. Foreign policy and national security implications and overall economic and social impacts will also be considered.

A working group, chaired by NASA and including State and Defense Department and other representatives of the Senior Interagency Group for Space, has been established to conduct this study. Results of the study will be presented to the Senior Interagency Group this fall prior to their presentation to the President.

Revised Forms Available from Stock

The following forms have been revised and the new February 1983 editions are available from the Stockroom. Previous editions of these forms are obsolete and should be destroyed.

NASA Langley Form 46	Routing Form for NASA "Quick Release" Technical Memorandums
NASA Langley Form 49	Routing Form for NASA Formal Reports
NASA Langley Form 62	Routing Form for Contractor Reports
NASA Langley Form 96	Routing Form for Technical Talk/ Meeting Presentation/Article

Thanks

To the employees of the Flight Electronics, Systems Engineering and Operations Support divisions and Kentron International Inc.:

The family of **Jim Davenport** would like to express their thanks for the kindness shown to them while Jim was hospitalized in Connecticut. Words will never express the wonderful feeling Jim and I experienced knowing of the love and concern everyone among you gave us. I will always remember this as a blessing we received and I thank each one of you.

Linda Davenport

Requiem for a robot

For Viking, it looks as if the mission is finally over

This article is reprinted, with permission, from the Johnson Space Center ***Space News Roundup.***

Controllers at the Jet Propulsion Laboratory have tried unsuccessfully to communicate with the Viking 1 Lander on Mars, and it now appears that the mission is over. All possibilities for fixing the probable failures have now been exhausted. In the following article we look back at the Vikings, a project that was managed at the Langley Research Center, and the lore of Mars in an attempt to pay homage to one of America's most successful space probes.

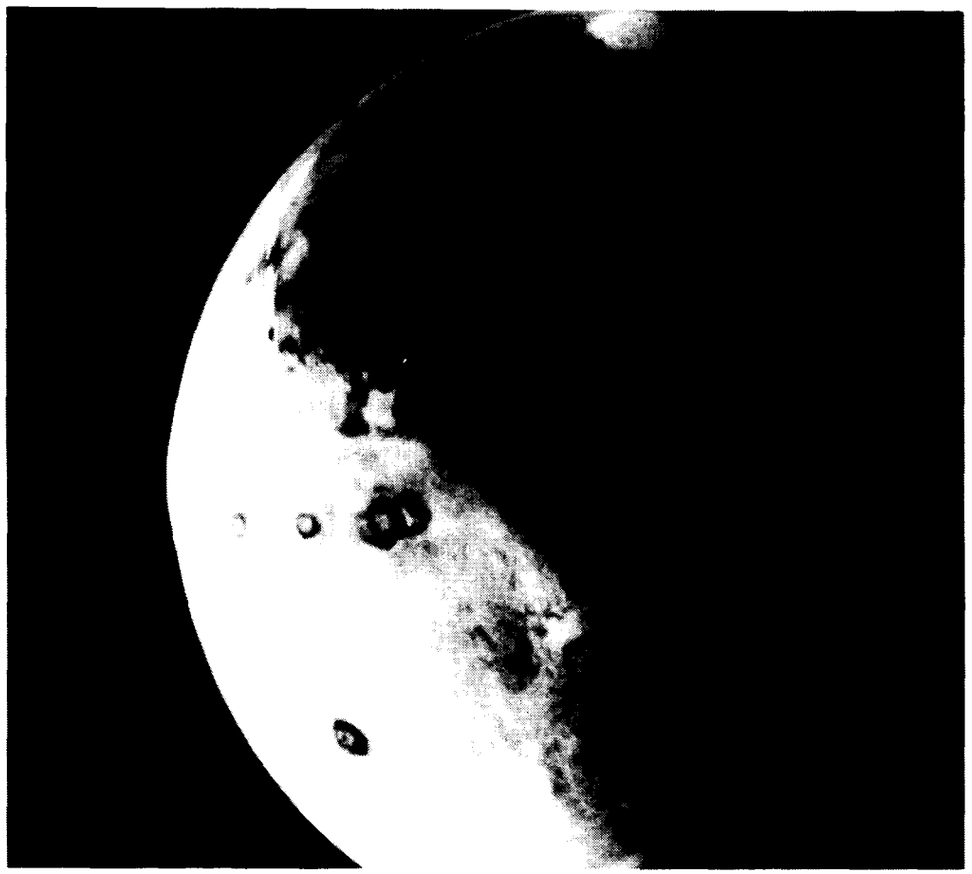
Both the Babylonians and the Romans, centuries apart, observed its progress across the sky and named the point of light after their respective gods of war. The Roman name stuck, and for better than 2,000 years Mars has been of particular interest to those curious among us who watch the stars.

Mars became the springboard for legends of bugged-eyed monsters (the ubiquitous BEMs of science fiction) and for an assortment of characters ranging from John Carter, the human "Prince of Mars," who hacked and slashed his way across most of Tharsis, to the Martians in their terrible machines of destruction who repayed his attentions by frying Los Angeles in a war of the worlds.

From fact to fiction, Mars developed a cult standing of sorts among the planets. In past ages, there was a fairly widely held belief that all of the celestial bodies out there housed life — usually intelligent and often malevolent — and great authors such as Voltaire and Jonathan Swift wrote of the adventures to be found on the shores of other worlds. Of all the planets, however, Mars tended to dominate.

"It is a planet which has special connotations," author James Michener said during a NASA-sponsored colloquium in 1976. "I cannot recall anyone ever having been as interested in Jupiter or Saturn or Pluto. Mars has played a special role in our lives, because of the literary and philosophical speculations that have centered upon it."

Henry S. F. Cooper, in his book ***The Search for Life on Mars***, traces some of those special connotations to the Italian astronomer Giovanni Schiaparelli, whose observations in the 1879s of faint lines on the Martian surface — channels, or *canali* in Italian — through misinterpretation in the English speaking world fostered the belief that a race of super engineers on Mars constructed canals to irrigate their desicated world.



Mars from 560,000 kilometers was photographed on June 17, 1976, by Viking I as the spacecraft neared its rendezvous with the planet. Clearly seen are the Tharsis Mountains, the row of three huge volcanoes standing about 20 kilometers above the surrounding plain. Olympus Mons, Mars' largest volcano, is toward the top; north is toward the upper right corner. The circular feature at bottom of disc is Argyre, a large impact basin.

Over the next two decades, this influenced the American astronomer Percival Lowell, and his influence in turn was widespread. "After his death," Cooper writes, "Planetology went out of fashion, partly because of the claims he had made, but when it became fashionable again, with the advent of the space program in the late 1950s, Lowell's ideas had to be reckoned with once more. Though only a handful of scientists still believed in the canals, a great many still believed that Mars, with its misty Elysiums, might be covered with vegetation."

In our own times, with newer and better technologies telling us that life out in the solar system just does not exist, Mars has remained a resilient last chance for the forces of exobiology. As late as the 1970s, when the notion of green-skinned, bugged-eyed natives romping about in the shadow of Olympus Mons had passed from serious discussion, we were willing to settle for hardy lichens or even sturdy microbes, and indeed the possibilities were there.

Based in part on that hope, and as much or more on the somewhat more prosaic desire simply to explore another planet, the United States sent a series of probes to Mars beginning in 1964 with Mariner 4, continuing with the Mariner 6, 7 and 9 spacecraft from 1969 to 1972, and culminating in the Viking probes in the mid-1970s.

Viking 1 was launched August 20, 1975, and Viking 2 followed on September 9. Each consisted of an orbiter and a lander, sterilized before launch to avoid contaminating either Mars or their own biological experiments. Viking 1 arrived at Mars June 19, 1976, and the Viking 1 Lander touched down on July 20, exactly seven years after Apollo 11 reached the Moon. The site was at 22.3 degrees north latitude and 48 degrees west longitude on the western slope of Chryse Planitia, the Plains of Gold.

Viking Lander 2 arrived at Mars on August 7 and touched down on September 3 at 47.7 degrees north latitude and 225.8 degrees west longitude at Utopia Planitia, the Utopian Plains.

These orbiters and landers were the most sophisticated planetary explorers ever developed at the time of their launch, and in some respects they even surpassed the capabilities of our champion deep space explorers, the Voyagers (which was the original name of the Mars project).

Up to last November 13, they operated far beyond their design lifetimes with few failures. Viking Orbiter 1 exceeded four years of active flight operations in Mars orbit; Lander 1 operated on the surface for almost six and one-half years. Viking Orbiter 2 was the first craft to end its mission, in July 1978, when the last of its control fuel was used up. It had operated for 718 days in orbit. Viking Orbiter 1 lasted until August 7, 1980, being shut down for the same reason as its counterpart after 1,509 days of operations. The last data from Viking Lander 2 reached Earth in April, 1980 and 1,316 days of operations.

Lander 1 was to have been the last outpost. It had power, it seemed to have awsome durability and it was content to contact Earth every week or so with weather reports and a picture of the surface. It had entered its "extended mission," what some dubbed the "eternal mission," and it was programmed to operate through 1994.

Then on November 13, after six years and 108 Earth days of mostly trouble-free operations, a catastrophic failure occurred. Whether this failure happened in the batteries or the computer system or in a cable to the communications antenna, no one is quite sure. After sending more than 2 million weather reports and taking a majority of the 4,500 images returned by both landers, the last Viking appears finally to have signed off.

What we learned in the last six years about Mars is profound. We mapped 97 percent of the surface with a resolution of 300 meters or better, and 25 percent of the surface with a resolution of 25 meters or better. We saw fog in Martian valleys, whispy clouds streaming out from the tallest mountain in the solar system and frost on the ground. We saw evidence of massive floods and erosion caused by water, and we saw dust storms envelop the planet.

We observed that the planet is dryer than any spot on Earth, and that the weather is both uniform and dull. The wintertime low was about -191°F, while the summertime high was a stark -24°F. We clocked fairly placid winds, measuring no gusts above 74 miles per hour. We discovered that the Martian atmosphere, mostly carbondioxide, contains some nitrogen, and we found that Martian soil is chemically very reactive.

The most important search for many of us was that for life, and here the results were more ambiguous, and were debated for several years. The general consensus from the biology experiments pointed to a dead planet. According to some Viking biologists, however, the question is still open. Three of the results indicated the absence of biology in the samples tested. But one result indicated the Martian soil has either an agent capable of rapidly decomposing organic chemicals or that life is present. The soil did not, however, contain any organic molecules that were detectable at the parts-per-billion level.

"In contrast to a few years ago, the interest among scientists today in the proposition that there might be life on Mars is virtually nil," Cooper writes. "In evolutionary terms, the idea that life currently exists on Mars has quietly gone the way of the Great Auk. If there is no life on the one planet in the solar system which, next to Earth, had long been considered the most likely to foster it, then the search will have to shift where neither we nor our machines can easily follow."

For Viking Lander 1, that search now appears to be over, and for the first time since 1975, the clicking and whirrying has ceased, and a stillness has once again descended on the rocky Plains of Gold.

— Brian Welch

LAA Sponsors Alaskan Adventure

The Langley Activities Association has planned an exciting 11-day tour of America's last frontier -- Alaska.

The air/sea/land tour includes:

- Scheduled air from Norfolk to Vancouver, British Columbia with return from Anchorage via Seattle;
- 3 day/4 night cruise from Vancouver to Juneau aboard the Nieuw Amsterdam. The Nieuw Amsterdam is making its maiden voyage in June;
- All meals, tips and gratuities are included on this cruise, also the special cruise of the famous Mendenhall Glacier through the Lynn Canal;
- Skaway - 1 night;
- Whitehorse - 1 night;
- Alas/Kon Border Lodge - 1 night;
- Anchorage - 2 nights;
- Sightseeing in Fairbanks and Anchorage;
- Special nature briefings during the Mendenhall Glacier cruise and a visit to Porterage Glacier;
- Optional stay over in Seattle.

For additional information or day by day itinerary call the LAA Office, ext. 3139, or Ernie Greene, ext. 2312, or 838-0567.

LAA Plans Carnival

The Langley Activities Association will sponsor the 1983 Carnival August 26 and 27 on the picnic grounds.

Special activities are being planned, including the crowning of the 1983 Carnival Monarch. The LAA is looking for candidates for the Monarch Contest. Anyone interested in running should submit their name, mail stop and telephone number to Robert Huffman, Mail Stop 104. Deadline for nominations is June 8. Picutres will be published in the July 1 *Researcher*.

Tickets will go on sale at the Activities Office July 1.

National Aeronautics and
Space Administration

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Happenings

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

AIAA FOURTH ANNUAL SPRING PICNIC will be held Wednesday, June 22, on the Activities Picnic Grounds. Hotdogs, hamburgers and trimmings will be the menu. Members $4, students $3 and non-members $5. Reservations should be made by June 21. Contact Richard Wallson, ext. 2891.

FISH FRY -- ALL YOU CAN EAT. Friday, June 10, Fox Hill Community Center, Grundland Park Road, across from the water tower in Fox Hill. The cost will be $5 for an adult and $2.50 for those 12 and under. Ticket also includes a FREE PASS to a double-header fast pitch softball game between Manley's Service Fast Pitch Softball Team and the 49'er Clippers from Washington, D.C., that same night. The games will be played in Francis Asbury Park. In case of rain, the fish fry will take place inside the Community Center and the FREE PASS will be valid for the double-header on Saturday night, June 11 at 7:30 p.m.

THE VIRGINIA PHILHARMONIC/THE VIRGINIA POPS. Specially-priced tickets are available until June 15 for the 1983-84 season. Hear and see some of the most exciting guest performers of the musical world, such as Henry Mancini, Mitch Miller, Peter Nero, Jorge Bolet, Ida Kavafian, Alvin McCall and Ilan Rogoff. For answers to questions, charge orders or a brochure, call 380-0040 or 623-2310.

SAILING LESSONS will be provided by the Langley Yacht Club this summer. Adult classes begin June 7, July 5 and August 2. The cost for LYC members is $50, non-members if $60. Junior classes (10-17 years old) begin June 20 and July 18. The fee for LYC members is $70, non-members $85. Students must demonstrate proficiency in swimming. Tests will be conducted June 4 at 9 a.m. at the LAFB Recreation Center pool. For more information, call the marina, 764-7220, between 10 a.m. and 5 p.m. Wednesday through Sunday, or the LYC, 764-2590, from 5 to 6 p.m. each weekday.

NAGS. The National Association of Government Secretaries will meet June 21 at the Hampton Holiday Inn at 6:30 p.m. The program, "Nutrition and Slim Plan," will follow the dinner. For reservations or more information, call Reachie Hall, ext. 4156, or Betty Joyner, ext. 3285.

swap and shop

FOR SALE

Articles

Pollenex Pure Air Super Power "99" Air Cleaner/Deodorizer with Fragrance Control, Model 699 exc. cond. Like new $15; Ladies luggage; Samsonite Molded; gray; 2 pieces (21 x 7¼ x 15½ and 16 x 8 x 15) $25 each; TV, portable, Bohsei black & white 10"; VHF, UHF loop antennas $50. Call Sally A. O'Neice, ext. 2939 or 722-1853 after 8 p.m. Monday through Friday.

Vehicles

1973 Mercedes, 450 SLC, sports model, limited edition, sunroof, fully loaded, $16,000. Call 826-7627.

1976 Flybridge Cruiser, 26 ft., 233 h.p., outriggers, depth finders, compasses, cb. vhf, am/fm cassett stereo. $13,500 OBRO. Call 826-7627.

Sailboat: Cape Dory Typhoon, 19 ft., 4 hp Evinrude, safety gear, extras. $7,800. Call 723-3711.

Bicycle, women's three speeds, 26 inches, good condition, $30. Call 838-4227.

Real Estate

Two cemetary lots, Garden of the Prophets section, Parklawn. Call 723-3115.

FOUND

Lunch box found on Walcott Road. Call Jim Anderson, ext. 3141, to identify.

WANTED

Persons to car pool from Virginia Beach near Pacific Avenue starting June 13. For more information, call Jim Keller, 588-3173.

To join car pool from Ghent (Norfolk) to West Area on 8 a.m. shift. Call Valerie, ext. 3849 or 460-4725.

FOR RENT

Lake One Townhouse conv. to LRC, shopping; 3 BR, 2½ BA, new floor and window coverings, C/A, util rm, deck, on lake. No pets, smokers. Avail 7/1. $550/mo + dep. Call 826-8916 after 6 p.m. wkdys, anytime wknds.

cafeteria menu

WEEK OF JUNE 6 — 10

MONDAY: Beef & Vegetable Soup; Beef Enchiladas; Quiche Lorraine; Ham Steak. Snack Bar: Ham & Cheese Club; Beef & Cheese Burrito.

TUESDAY: Cream of Broccoli Soup; Chicken Chow Mein Dinner; Beef Liver & Onions; Baked Filet of Fish. Snack Bar: Rib BQ; French Bread Pizza.

WEDNESDAY: Fresh Vegetable Soup; Fried or Baked Chicken Dinner; Beef Burgundy; Macaroni, Franks & Cheese. Snack Bar: Chicken NASA; Polish Sausage; ¼ lb. Cheeseburger.

THURSDAY: Ham & Lima Bean Soup; Baked New England Scrod; Pork Cutlet Parmigian; Braised Chicken Livers. Snack Bar: NASA Sub; Hot Smoked Sausage.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Spaghetti; Baked Stuffed Chicken Breast. Snack Bar: Knockwurst; Taco.

WEEK OF JUNE 13 — 17

MONDAY: Chicken Noodle Soup; Baked Lasagna; Diet Platter; Baked Fish; Chuckwagon Steak. Snack Bar: Roast Beef & Cheese Club; BLT.

TUESDAY: Wisconsin Cheddar Cheese Soup; Chopped Steak Dinner; Chicken Parmigiana; Shrimp Fried Rice. Snack Bar: Chicken NASA; ¼ lb. Cheeseburger.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Braised Beef & Vegetables; Western Omelet. Snack Bar: Hot Italian Sausage; Rib BQ.

THURSDAY: Chicken Gumbo Soup; Veal Cordon Bleu; Hot Pork Sandwich; Braised Chicken Livers. Snack Bar: Turkey Club Sandwich; Grilled Cheese Sandwich.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chicken Teriyaki. Snack Bar: Sloppy Joe; Taco.

Darnell, Tomlinson Win

Wayne L. Darnell, Atmospheric Sciences Division, and **L. Frederick Tomlinson**, Fabrication Division, won the April and May drawings for $20 offered to registered car pool participants.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 12 June 17, 1983

Blankenship Named Director for Structures

Charles P. Blankenship, Chief of the Materials Division, has been selected as Director for Structures at Langley. His appointment will become effective July 1.

He will replace Robert C. Goetz, who has been named Deputy Director of the Johnson Space Center.

Blankenship will manage all research work in materials, structural mechanics, aeroelasticity and acoustics and noise reduction. He will direct the work of approximately 260 people.

Langley's Director, Donald P. Hearth, said "Charlie Blankenship has done an excellent job in the Materials Division. He will make a fine program director. I am sorry Bob Goetz is leaving Langley, but the JSC job is a fine opportunity for him. We wish him the very best."

Blankenship began his NASA career at the Lewis Research Center in 1961. He was a U.S. Air Force officer, assigned to Lewis, until 1964. From then until 1968 he was a materials engineer conducting fabrication development projects for nuclear propulsion system components.

He was appointed Head of the Materials Processing Section in 1968, Head of Materials Projects Section in 1972, Chief of the Materials Applications Branch in 1977 and Chief of the Materials Applications and Composites Branch in 1979. In these positions at Lewis, Blankenship was involved in management of material technology programs for various power and propulsion systems, including high-temperature super alloys for aircraft turbine engines, structural ceramics for automotive turbine engines and high-temperature iron alloys for automotive stirling engines, and for research in polymer and metal matrix composite materials.

In July 1980 Blankenship transferred to Langley as Chief of the Materials Division.

Blankenship was born in Bluefield, W. Va. He received a bachelor of science degree and a master of science degree in metallurgical engineering from Virginia Polytechnic Institute and State University in 1960 and 1962.

The author of over 20 technical papers on high-temperature materials and their applications, Blankenship is a member of the American Society for Metals.

He and his wife, Gayle, have two sons. They live in Poquoson.

Seventh Flight Features First Woman

STS-7 CREW. These five astronauts represent the Space Transportation System's first five-member crew. They will be aboard the Space Shuttle Challenger for NASA's seventh mission, scheduled for launch tomorrow morning at 7:33 EDT. Astronaut Robert L. Crippen (center, first row) is crew commander. Other crewmembers are Astronauts Frederick H. Hauck (right), pilot; and Sally K. Ride, John M. Fabian and Norman E. Thagard, mission specialists.

Ambitious STS-7 Mission to Feature First Landing at Kennedy

The seventh flight of the Space Shuttle will be the most ambitious to date with orbiter Challenger scheduled to deploy two commercial communications satellites and perform the first landing on the 3-mile long runway located at NASA's Kennedy Space Center in Florida.

Challenger will carry a five-person crew on its second trip into space. Launch of STS-7 is planned for June 18 at 7:33 a.m. EDT from Complex 39's Pad A at Kennedy. Mission duration will be approximately 5 days 23 hours and 20 minutes, which would put the landing on June 24 at about 6:53 a.m. EDT.

Robert L. Crippen will be commander of the six-day mission. Crippen was pilot on the historic 54½ hour maiden flight of the orbiter Columbia in April 1981 and will become the first astronaut to make two flights aboard the Shuttle. The STS-7 pilot is Frederick H. Hauck. Mission specialists on this flight are John M. Fabian, Dr. Norman E. Thagard and Dr. Sally K. Ride, who will become America's first woman in space.

Thagard was not originally a member of the STS-7 crew, but was added in December 1982 to conduct medical tests and collect additional data on several physiological changes that are associated with astronauts' adaptation to space.

Ride, who has been the subject of many press reports in the last few weeks, realizes that she has become a role model for many women. Nevertheless, she insists that being a female astronaut is not significant and would like to be treated no differently than her male counterparts. She said in a recent interview that "I was willing to believe that we might come across some problems, but we didn't. There has been no differences at all because I am a female (as a member of the Space Shuttle crew)."

25th Anniversary
1958-1983

Challenger will haul the Telesat Canada Anik C and the Indonesian Palapa B communications satellites into low earth orbit for deployment and eventual insertion into geosynchronous orbit. The Anik C satellite will be deployed approximately 9½ hours after launch. Palapa B will be ejected from Challenger's cargo bay on the second day of the mission as the Shuttle makes its 19th revolution of the earth.

Challenger will carry the Canadian-built Remote Manipulator System (RMS) or arm back into orbit on STS-7 to perform the first deployment and retrieval exercise with the Shuttle Pallet Satellite (SPAS) — a space platform that can operate either inside or outside the payload bay. On the fourth day of the mission, the robot arm will place the SPAS outside Challenger's cargo bay where it will free-fly for approximately 9½ hours while Challenger performs a variety of grapple and rendezvous activities.

Carried in the cargo bay will be the first U.S./German cooperative materials science payload called OSTA-2 for NASA's Office of Space and Terrestrial Applications, now called Office of Space Science and Applications.

The crew will operate the Continuous Flow Electrophoresis System (CFES) and Monodisperse Latex Reactor (MLR) -- two middeck mounted experiments flown on previous Shuttle missions designed to evaluate the gravity-free space environment for developing materials with potential pharmaceutical and medical uses.

Seven small self-contained payloads, "Getaway Specials," will be flown aboard Challenger.

Landing will be on the 5,180-meter (17,000 foot)-long, 91-m (300-foot)-wide runway at Kennedy Space Center's Shuttle Landing Facility.

Plans currently call for Commander Crippen to use the north-to-south runway 15 for landing. Facilities at Edwards Air Force Base, Calif., will serve as backup sites if weather conditions prevent a landing in Florida.

Configuration of the STA-7 Shuttle is very similar to that of the STS-6 vehicle when Challenger became the second in NASA's fleet of reusable spacecraft.

Crew size will require an additional seat which will be installed down on the middeck. The other four crewmembers will be seated on the flight deck for launch and landing.

STS-7 INSIGNIA. The Orbiter Challenger, making its second flight into space, is featured in the insignia art for the seventh Space Shuttle mission. The remote manipulator arm is positioned such that the number 7 is formed. Likewise, seven stars are visible against the black sky. Within the sun's center are representations for the five crew members, including, for the first time in NASA's space program, a woman -- Dr. Sally K. Ride, mission specialist. The crew members' surnames are listed along the outside edge of the sphere.

The external tank for this mission will be the last of the standard heavyweight tanks. Lighter weight solid rocket booster casings, like those on STS-6, will be used, and Challenger's main engines will perform at 104 percent of rated power level.

Most people are willing to meet each other halfway; trouble is, most people are pretty poor judges of distance.

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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.

Equal Opportunity Council Meets at Langley

NASA Administrator, James Beggs, spoke at a dinner at Strawberry Banks Motor Inn, where he reflected upon NASA's policies on Affirmative Action and Equal Opportunity Employment. The dinner was part of the semi-annual Equal Opportunity Council Meeting that was held at Langley May 26 and 27.

Among topics discussed during the meeting were proposed activities designed to increase the number of women and minorities in supervisory and upper level positions, the results of the scientists and engineering hiring trends for women and minorities, minority and female attrition in the science and engineering category, and NASA activities with historically minority colleges and universities.

Other than Beggs, the Langley Director Donald Hearth, and Deputy Director and Chairman of the Council Richard Petersen were among those who attended the meeting, along with the deputy directors and the equal opportunity officers of each of the nine centers, the NASA director of personnel, deputy associate administrators, the assistant administrator for equal opportunity, other officials from Langley and NASA Headquarters, and the chairman of the Equal Employment Opportunity Commission.

Beggs directed the concerns of the council meeting in his speech at the dinner.

"This agency is very important as a national symbol," he commented. "I think we sometimes loose sight of our image; it's not only for our tourists. Time to time when we do things like we're doing in Europe, taking the Enterprise over, we realize the very high esteem the world holds for our program. There were 350,000 people standing in the rain to see the spacecraft. All this suggests is, that the rest of the world truly believes this agency is one that dedicates itself to do something for high technology that is better than anyone elses in the world. In response to that we bear a special responsibility to see that societal rights, such as equal opportunity and Civil Rights, are exercised. That we in turn can show the world that we can do this above the world, but it's more important that we show this nation."

Beggs also emphasized the importance of our space exploration. He commented that the photographs taken of the Earth by the Apollo astronauts "brought home to the world in a way that nothing else could, that this is one world, we are one people, and we are all brothers -- and it is a very small and very fragile planet that we live on and we should work to live on it in harmony." Therefore, Beggs maintains, NASA has established broad goals for equal opportunity.

He supports the steps toward these goals by pointing out, "We will be making a very visible impact because we will be flying the first woman, the first American woman (Sally Ride), on the STS-7," on June 18. And "In August on the STS-8, we'll be flying the first black astronaut, Guion S. Bluford, Jr."

In closing, Beggs suggested " NASA should hire more women, minorities and a broad spectrum of individuals who can help this agency, and in doing so, it will be reinvigorated. Having a good cross section of our society, I believe, will bring new beginnings to the agency. I think it's important that we do it."

– photo by Dennis Carey

Langley was the site for the semi-annual Equal Opportunity Council Meeting May 26 and 27. Pausing for a picture at a dinner held at the Strawberry Banks Motor Inn, were James Beggs, NASA Administrator; Clarence Thomas, Chairman of the Equal Employment Opportunity Commission; Dr. Harriett Jenkins, Assistant Administrator for Equal Opportunity Programs; and Richard H. Petersen, Deputy Director and Chairman of the EO Council.

Computer Science Seminar Set

Dr. Henry C. Lefkovits will describe the use of Data Dictionary Systems as a tool to manage an organization's information at the Computer Science Seminar June 28 at 3 p.m. in the Activities Center.

In his lecture, "An Overview of Data Dictionary Systems," Lefkovits will discuss the relationships between Data Dictionary Systems and Database Management Systems and the current efforts in Data Dictionary System Standardization.

Lefkovits, principal consultant for Alpha Omega Group, Inc., Harvard, Mass., is the principal investigator on a National Bureau of Standards contract to develop functional specifications on federal standards for data dictionary systems. He is the author of *Data Dictionary Systems*, the first book to be published on the subject.

NASA Studies First Global 'Snapshots' of Ozone

— by Keith Henry

A high-flying satellite experiment is providing NASA researchers with their first instantaneous views of ozone on a global scale.

These large-scale "snapshots" are made possible by modifications to a University of Iowa instrument orbiting the Earth at 20 times the altitude of previous ozone-measuring systems. From this lofty height, scientists can remotely monitor the movement of this environmentally important gas for hours at a time and have, already, detected significant short-term variations in ozone features.

These results were reported recently by Langley's Gerald Keating, a senior scientist, at international scientific meetings in Canada and England. Keating says that "scientists are generally excited when they see these informative, yet beautiful, images of ozone from space."

Most atmospheric ozone (which shields the Earth's surface from harmful solar ultraviolet radiation) resides above the cloud tops in the lower stratosphere. Meteorologists suspect that, in areas of low pressure at these altitudes, the base of the stratosphere drops and ozone-rich stratospheric air fills in the region, causing an increase in the total column of ozone; thus the dynamics of the lower stratosphere will be mirrored by the variations of ozone concentrations.

For example, by viewing the short-term variations of ozone, scientists can detect changes in the location of the jet stream — a high-altitude core of strong winds. Knowledge of these variations in the jet stream, which is often a trigger for severe storms, may improve predictions of tornadoes and other weather phenomena.

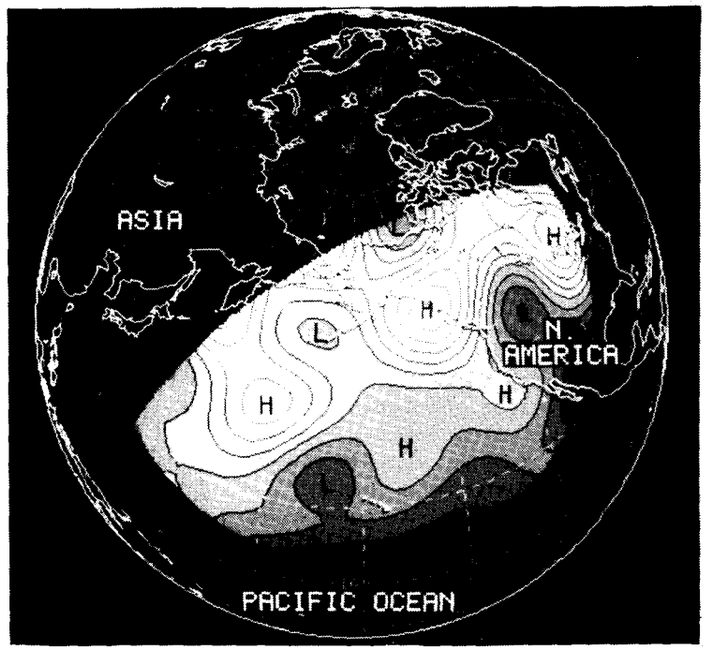
Since jetliners use the jet stream to give them a tailwind boost, knowing the short-term changes in the jet stream could improve aircraft fuel economy. Studies performed by Northwest Airlines, using data from a NASA satellite (the Total Ozone Mapping spectrometer aboard Nimbus 7), demonstrated the value of knowing the ozone distribution to improve airline routing. Detailed information on regions of high ozone could also reduce the hazard of high ozone cabin levels in commercial aircraft.

Images of the instantaneous distribution of ozone over the Pacific Ocean, like those being analyzed at Langley, could also improve estimates of the altitude variations of the base of the stratosphere. This, in turn, has potential for improving weather predictions for North America.

Data for the ozone images are collected for beaming to Earth by an instrument known as the Spin-Scan Ozone Imager. It is part of a larger optical system, built by the University of Iowa, aboard the Goddard Space Flight Center's Dynamics Explorer I spacecraft. The optics were designed principally to view the aurora and airflow in the Earth's extreme upper atmosphere.

In December 1980, the principal investigator of the University of Iowa optical system, Lou Frank, and colleague John Craven, contacted Keating concerning the possible addition of filters to their instrument to study atmospheric ozone. Keating proposed a set of filters to view the ozone distribution using solar radiation scattered by the atmosphere. Within months, these filters were built and launched into orbit in August 1981 aboard Dynamics Explorer I.

Data for an image of the Earth's ozone distribution can be collected in 12 minutes, with resolution ranging from 120 km (75 mi.) to 3 km (1.9 mi.), depending on the altitude of the spacecraft. Its highly elliptical (oval) orbit is as high as 23,296 km (about 14,450 mi.) to as low as 560 km (about 350 mi.).



Shadings indicate varying amounts of ozone in the atmosphere measured over the Pacific Ocean and western North America shortly after the Dynamics Explorer I was launched into Earth orbit. Only 12 minutes of scanning were needed to create this image, making it an essentially instantaneous look at global ozone distribution. Dark shadings represent low (L) ozone concentrations and light shadings represent high (H) ozone concentrations. Highest concentrations are observed over Canada. Jet streams occur near regions of sharp changes in concentrations.

Keating says that major savings in costs and development time have been made by modifying computer software developed for NASA by Systems and Applied Sciences Corp. of Riverdale, Md.

Working with Keating is SASC's David Young, who explains that each ozone image consists of tens of thousands of individual measurements. "In order to generate an ozone image, complex calculations concerning the absorption of sunlight by ozone must be made for each measurement. The resulting image is then displayed on a computer screen from which it is photographed," Young says.

The images bear a striking resemblence to upper atmospheric weather maps. Regions of high and low ozone, similar to high and low pressures on a weather map, are clearly seen moving to the east at mid latitudes. Generally, high ozone concentrations occur in regions of low pressure, near the base of the stratosphere, and low ozone concentrations occur in regions of high pressure. Near the equator the variations in ozone appear to be much smaller and the average concentrations are lower. A sharp change in ozone concentrations is generally evident near the location of jet streams and, from this signature, the jet stream can be clearly observed meandering snakelike across the globe.

Keating, who heads Langley's science team for the experiment, is also studying images for possible ozone signatures

Continued on page 5.

Langley's 'Cleanest Clean Room' Finished

— *by Kathy Edwards*

Center Director Dr. Donald P. Hearth cut the ribbon for the opening of the "cleanest clean room" ever at Langley. Tuesday, May 31, the Langley Research Center activated an ultra-clean room facility which will be used in the assembly and testing of satellite instrumentation. The facility occupies a clean room not used in the last seven years and a new adjoining controlled work area. The Halogen Occultation Experiment (HALOE) Project will be the first to use the facility that was upgraded by Contamination-Cleanliness Control Engineer, Robert P. Faust.

HALOE is a complex eight-channel, remote sensing instrument that "measures these atmospheric trace constituents: ozone, methane, nitrogen dioxide, water, hydrogen chloride, hydrogen floride, nitric oxide, and carbon dioxide," James L. Raper explained. Raper is the project manager for the HALOE Project, conceived by Dr. James M. Russell, III, principally to examine the ozone production and destruction process. It contains 112 optical elements and requires a contamination free environment during its assembly, precision alignment, and testing. All of these components, which include lenses, filters, mirrors, and beam splitters, must be kept clean because dust particles scatter light, and there must be a clean spectral signal in order to study the atmsophere accurately.

Therefore, a "clean" clean room is needed, and the ultra clean room facility serves the purpose. It is a laminar flow "class 100" clean room, designed to allow no more than 100 particles per cubic foot 0.5 microns or larger in diameter. Everything larger than 0.5 microns gets filtered out. This is by far the cleanest clean room at Langley, with the next cleanest being a class 10,000, which allows no more than 10,000 particles per cubic foot. The clean room is humidity and temperature controlled, and measures 21 feet wide, 41 feet long, and 13 feet high.

The contaminant levels in the clean room are monitored for particles and volatile condensible materials (VCM), by several means. Particles are minimized, first of all, through the use of an automatic shoe cleaner, simply called a vacuum-brush shoe cleaner, which dusts the particles off the sides of the shoes, and then there's a tacky mat which removes the particles from the bottom of the shoes. After stepping off the tacky mat, it's into a personnel air shower that's used upon entry to blow away loose particles. Next, special garments which cover the head, face, body, feet, and hands are put on as a further precautionary measure. Then it's back into the air shower for further blowing away of loose particles, and finally entrance into the clean room is allowed. VCM's are minimized by a careful selection of low outgassing materials used in the instrument and in the work area.

The controlled work area, immediately outside the clean room, provides a controlled environment for equipment used during testing of the instrument and for pre-cleaning items before they are taken into the clean room. This area has secure storage areas for flight hardware awaiting assembly and three work stations for small, contamination-critical tasks. Each of the work stations provides a class 100 environment and two of the stations, made entirely of stainless steel and plastic, permit working with toxic or corrosive materials. Primary equipment in this area is an electronics test set for instrument sequencing and data recording, a radiation stimulus test set for visible and infrared optical stimulation, and a heliostat for solar stimulation. Utilities available include gas, electricity, air, vacuum and hot and cold water.

The HALOE Project will occupy the facility through 1985 and again in 1987, prior to its integration into the Upper Atmospheric Research Satellite.

Editor's Note: Kathy Edwards, who is a senior English major at Old Dominion University, is assigned to the Public Affairs Office for the summer. She will be writing articles for the ***Researcher*** *and welcomes story ideas. Call her on ext. 4357.*

Ozone Snapshots Studied

Continued from page 4.

of "folding events." These localized events occur at the boundary between the stratosphere and the lower atmosphere near the location of strong jet streams. During folding events, this boundary lowers in altitude and folds back on itself, creating an area where mixing between these two atmospheric regions is greatly enhanced. Through these folds, ozone may be lost from the stratosphere by escaping into the lower atmosphere, where it is subsequently destroyed. By understanding the formation, evolution, and extent of these folds, researchers are hoping to better understand the natural loss mechanisms of the Earth's ozone.

The satellite ozone measurements are being compared with measurements obtained by approximately 100 ground-based ozone stations around the world. Although coverage from these stations is sparse, the two data sets agree remarkably well. There are plans to compare these data with measurements made by lower orbiting satellites, such as the Total Ozone Mapping Spectrometer, and with measurements made during the November 1981 flight of the Space Shuttle Columbia.

"Perhaps one day," Keating says, "an operational instrument similar to our experimental model could fly on a geosynchronous weather satellite and be used routinely for a number of applications, ranging from improved weather predictions to greater fuel economy for airlines."

Others working in the ozone investigations include Walter Bressett and Alton Mayo of Langley, Kent Ackerson of the University of Iowa, John Nicholson II, P. K. Bhartia and Ken Klenk of Systems and Applied Sciences Corp., Carl Mateer of Atmospheric Environmental Service (Canada), Mel Shapiro of the National Center for Atmospheric Research and Ted Pepin of the University of Wyoming.

Langley to Carry STS-7 Mission

The Activities Center will be open Saturday, June 18, from 6 a.m. to 2:30 p.m. for viewing STS-7 launch and mission activities. Employees may also view landing activities Friday, June 24, from 6 to 8 a.m. in the Activities Center.

The Visitor Center will open to the public at 6:30 a.m. on launch day and at 6:30 a.m. on landing day.

Happenings

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

BINGO is played every Thursday at 7:30 p.m. in the Activities Center.

TIDEWATER DINNER THEATER. "Home" is playing at the Tidewater Dinner Theater in Norfolk through June 25. "Home" is a comedy/drama that tells the story of a young black mans coming of age in a small farm town in North Carolina and his journey to New York City in search of the Promised Land. It is filled with heart warming moments as well as funny observations of small town life, big city blues. The summer production for TDT will be the award-winning musical "ANNIE" which will play from June 29 through September 11. Discount tickets are available at the Activities Office.

The LAA LUNCH COUNTER is open in the bar area of the Activities Center. Hours of operation for the summer are from 11 a.m. to 1 p.m. Monday through Friday. Sandwiches, snack foods and soft drinks are available. Please use side entrance into the building.

THE VOLKSMARCH, sponsored by the Fort Monroe Volksmarch Club, will be held during National Heritage Week, Saturday, July 2, and Sunday, July 3, from 7 a.m. to 1 p.m. on both days. Participants must finish the 10-(6 mile) or 20-(12 mile) kilometer course by 5 p.m. Participants will start and finish at the National Heritage Fairgrounds at Fort Monroe. For information about Volksmarch, the "people's walk," call Maj. John Awtrey, 722-8872, or Barbara O'Brien, 727-4122.

SHAKESPEARE FESTIVAL. The Virginia Shakespeare Festival celebrates its sixth season July 7 to August 20 with professional theatrical productions of "Twelfth Night," "The Winter's Tale" and "Othello." All performances are held in the Phi Beta Kappa Memorial Hall in Williamsburg. Season tickets, ranging from $13.50 to $19, are available by calling 253-4469.

"RETURN OF THE JEDI." Yes, $2.75 tickets are available at the Activities Center for "Return of the Jedi" for Coliseum Mall Cinema I & II.

LAA is sponsoring mini-trips during the coming months. For information on up-coming tours, dates and prices call Frankie or Tess at ext. 3139.

LAA-POCONO MOUNTAIN TOUR. The Activities Association will sponsor a mini-tour to the Pocono Mountains July 29 through 31. The tour includes two nights at the Pocono Inn, five meals -- two dinners, one luncheon and two breakfasts, services of a professional guide, stops at Delaware River Gap, Bushkill Falls, Pocono Indian Village, American Candle Makers, Callie's Candy Kitchen plus much, much more. For more details and reservations call Frankie or Tess at the Activities Center, ext. 3139.

DISCOUNT TICKETS are available at the Activities Center for King's Dominion, at $10 each and Busch Gardens, at $11.25 each. Children under three years old are admitted free.

DISCOVERY, a human relations group for singles, will meet on Saturday, June 25, 1983, at 7:30 p.m. at the Unitarian Fellowship, 415 Young's Mill Lane, Newport News. The topic will be "How to Handle Stress." Please bring snacks or drinks for the social time which precedes and follows the discussion. Attendance fee is $2. If you want more information, call 877-5791.

FOR REDSKINS ENTHUSIASTS. LAA is planning a fun weekend, November 5-6. The package will include transportation, overnight accommodations, tickets to the Redskins vs St. Louis game, and other entertaining events. For further information or reservations, call LAA office, ext. 3139.

MSR Cancelled

The June Monthly Status Review has been cancelled. The next review will be held July 25 in Building 1219, Room 225. A complete agenda will be printed in the July 15 issue of the *Langley Researcher*.

Janet M. McKenzie, Staffing and Special Programs Branch, is congratulated by William L. Williams, Chief of the Personnel Division, upon receiving the second place award for the Peninsula Outstanding Young Leader for 1983. The Hampton Roads Jaycees sponsors the award as a way to honor those who contribute to the well-being of the community through their active involvement. McKenzie was selected as Langley's nominee because of her outstanding contributions to the center's administrative operations and her commitment to serving the citizens of the community. Dr. Dennis M. O'Neill of Yorktown was the winner of the award and Elwood J. Miller of Newport News received the third place award. The awards were presented May 11 at the Hampton Roads Jaycees Awards Banquet.

MOO was the Word May 26

— *photos by Bob Nye*

MOO(N) pies and RCs were presented, as medals, to the Research Information and Applications Division May 26 for winning the Management Operations Olympics (MOO). Shown here are Langley employees and contractors participating in various sports -- volleyball, obstacle relay race, softball and even riding on the see-saw.

Speakers Bureau

Doug Garner conducted a forum on Using Microprocessors in Homebuilt Aircraft Instrumentation at the Experimental Aircraft Association's Sun'n Fun Fly-In at Lakeland, Florida, March 15.

Dennis Fuller gave a National Transonic Facility overview to the Newport News Lions Club on April 4.

Jeff Cleveland spoke about "Computer Science as a Career" on April 12 to Benjamin Syms Junior High School students.

Les Rose gave a presentation on "New Technology from the Space Shuttle" to the Society of Manufacturing Engineers on April 13.

Tom Foughner gave a Space Shuttle overview on April 20 at the Veteran Administration Medical Center.

Les Rose talked about NASA Spinoffs with the Peninsula Area Extension Homemakers on April 21.

Louis Roussos addressed the Industrial Hygiene Association on April 26 about "Noise Control: Pitfalls and Troubleshooting of Existing Systems."

Ray Goodman talked about space exploration with Mathew Whalley School students on April 26.

Lowell E. Hasel, retired, presented a lecture at the University of Tennessee Space Institute April 26. His lecture, "Ground Test Facilities for Aerodynamic Testing," was part of a two-week course on "Aerospace Ground Test Facilities and Flight Testing."

Louis Roussos spoke April 26 at the Fort Monroe Officers' Club on "Noise Control Techniques -- Troubleshooting Existing Systems."

Kelli Willshire gave a talk on "Assessment of Human Response to Community Noise" at the Kirn Memorial Library in Norfolk April 27.

Roger Hathaway discussed NASA careers on April 27 with Tabb Junior High School students.

Ben Smith gave a Space Shuttle overview to the Smithfield Kiwanis Club on April 28.

Doug Garner gave a talk, "Using Microprocessors in Homebuilt Control Systems" at the annual meeting of the Steam Automobile Club of America, May 7, 1983 at Pleasant Garden, N.C.

Ray Goodman spoke May 8 at Grace United Methodist Church and May 27 at the Williamsburg 4-H Club about the Space Shuttle.

Ben Smith gave a Space Shuttle talk to members of the Smithfield Ruritan Club May 10.

Les Rose gave a presentation on future technology May 12 at the Saluda Nursing Home. He also spoke on Spinoffs May 13 and 18 at the Virginia Engineering and Technical Societies and the Mercury/64 Kiwanis Club.

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Retirement Party

A Retirement Social for **Dr. William H. Michael, Jr.** will be held June 24 at the Activities Center at 5 p.m. The cost will be $6.50 per person. Those wishing to attend or contribute to the gift only ($1.00) may send contributions to Mary J. Mesic, Mail Stop 101.

Thanks

"I wish to thank each one who gave blood in my behalf at the Tidewater Bloodmobile visit on March 16, 1983.

"Although I am late thanking you, caused somewhat by my being hospitalized again in April, I am deeply grateful to all who gave the magic fluid which helps save human life."

Faye Powell

Odell Morris writes "I want to thank my friends and co-workers who planned, attended and contributed to my retirement party. I appreciate all the work that went into making my party such an enjoyable occasion.

Thanks again for the great fishing rod and reel outfit. I will think of you whenever I use them this summer at the beach, fishing for those big ones."

Retirees Die

Cecil V. Morris, formerly of Personnel Division (Civil Service Board of Examiners) died June 7. He was 86.

Morris retired from NASA in 1966 after approximately 22 years. He was also an ordained Methodist minister, having served five Peninsula Methodist churches.

Earl R. Smoot Sr., who retired from Langley in 1971, died May 21. He was 79. At the time of his retirement, he was assigned to the Research Aircraft Flight Division.

Recent Retirees

Myrtle W. Yates, Research Information and Applications Division, retired May 27.

Beulah R. Garel, Research Information and Applications Division, retired May 31.

Richard H. Newman, Systems Engineering Division, retired May 31.

Robert F. Mayer, Systems Engineering Division, **A. Ernest Moore**, Operations Support Division, and **Charles E. Jones**, Management Support Division, retired June 3.

cafeteria menu

WEEK OF JUNE 20 — 24

MONDAY: Turkey Noodle Soup; Meat Loaf & Onion Gravy; Knockwurst Reuben; Turkey Nuggets. Snack Bar: Chicken NASA; Grilled Cheese; Polish Sausage.

TUESDAY: Tomato & Rice Soup; Grilled Pork Chops; Hot Beef Sandwich; Fish Almondine. Snack Bar: Rib-BQ; ¼ lb. Cheeseburger.

WEDNESDAY: Vegetable Soup; BBQ Beef Dinner; Chicken & Dumplings; Beef Liver & Onions. Snack Bar: Steak & Cheese Sub; Footlong Hot Dog.

THURSDAY: Old Fashioned Bean Soup; Corned Beef & Cabbage; Eggplant Parmesan; Braised Chicken Livers. Snack Bar: Beef & Cheese Club; Beef & Bean Burrito; Chicken NASA.

FRIDAY: Bull Island Clam Chowder; Salmon Cake Dinner; Broccoli & Cheddar Quiche; Salisbury Steak. Snack Bar: NASA Sub; Crab Cutlet.

WEEK OF JUNE 27 — JULY 1

MONDAY: Seafood Gumbo; Beef Chow Mein; Baked Filet of Fish; Chopped Steak. Snack Bar: Hot Italian Sausage; Chicken NASA.

TUESDAY: Beef & Vegetable Soup; Tuna & Noodle Casserole; Swiss Steak; Franks, Cheese & Bacon. Snack Bar: Steak & Cheese Sub; Turkey Club; Foot Long Hot Dog.

WEDNESDAY: Fresh Vegetable Soup; Spaghetti & Meat Sauce Dinner; Roast Pork & Dressing; Seafood Quiche. Snack Bar: Rib-BQ; BLT; ¼ lb. Cheeseburger.

THURSDAY: Minestrone Soup; Braised Short Ribs; Crab Cutlets & Slaw; Braised Chicken Livers. Snack Bar: Ham & Cheese Club; Polish Sausage; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Pepper Steak & Rice; Chicken Cacciatore. Snack Bar: Chicken NASA; Taco; ¼ lb. Cheeseburger.

Key Position

Dr. John C. Hoppe has been selected Head, Photo-Optical Instrumentation Section, Instrument Application Branch, Instrument Research Division, under Competitive Placement Plan 83-27.

swap and shop

FOR SALE

Articles

Ladies luggage: Samsonite molded, gray, two pieces (21 x 7¼ x 15½ and 16 x 8 x 15), $20 each. TV: Portable Bohsei B/W 12 inch, VHF, UHF, loop antennas, $35. Rugs: Rust short shag, 12 x 12, EC, $95; Gold and brown raised shag, 12 x 15, EC, $120, both with pads. Farberware "Open-Hearth" broiler/rot. (model 455N), indoor broiling, 10 x 15 broiling surface, w/recipe book and instructions, LN, $45. Call 722-1853 after 8 p.m. Monday through Friday.

Trampoline (Trampolking), Heavy duty bumper pads included, 0 x 10-10' Octogon, 72 springs, two years old, EC. Call 877-2210.

Pine bark mulch, any quantity, 865-7899.

Clean wood chips, sugar pine and spruce, cut from kiln-dried material. Suitable for pet bedding, $2 per large grocery bag. Also clean sawdust, coarse or fine, suitable for stuffing pin cushions. Call Devan, 898-9290.

RCA XL 100 console color TV, large screen. Very good condition, $250. Call 898-4824.

FREE! Tomato plants, good for patio. Call Jack Neubauer, ext. 3457 or 599-5425.

Vehicles

1975 Pinto, VGC, newly painted, four speeds, four speakers, AM/FM stereo, looks good, runs well, $1,200. Call 826-0797.

Real Estate

Suffolk: Two-story frame house in nice neighborhood, 3 BR, 1½ BA, DR, LR, eat-in kitchen, den game room, garage, $41,900 or best reasonable offer. Assume 11-3/4 percent loan and owner will finance down payment. Call 898-5113 after 5:30 p.m.

FOR RENT

Lake One Towhhouse conv. to LRC, shopping, 3 BR, 2½ BA, new floor and window coverings, CA, util. rm., deck, on lake. No pets, smokers. Avail. 7/1. $550/mo + dep. Call 826-8916 after 6 p.m., wkdys, anytime wknds.

Sandbridge: Cottage with 3 BR, AC, phone, w/d, LR, kit, DR, 1/2 block from ocean, $450/wk., reservations limited. Call Kent, 420-8391.

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Langley Researcher

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Langley's Payload is Shuttle's Largest

LDEF Completes First Launch and Landing

Langley's Long-Duration Exposure Facility (LDEF) has completed its first launch and landing in its journey toward Earth orbit.

It is still on the ground, however, and this week completed a water trip from Langley to the Kennedy Space Center.

LDEF, its now-empty bays to be filled with nearly 50 separate experiments, is scheduled to be taken into orbit on the Shuttle 13 flight next April. It will be deployed into space with the Orbiter's remote manipulator arm and left for up to one year while its experiments are exposed to the rigors of the space environment.

The facility will be retrieved by another Orbiter and brought back to Earth, where the experiments will be returned to their investigators for analysis. LDEF will then be prepared for a second mission.

Tightly secured inside a special air-conditioned container, LDEF began its journey to Florida Monday morning, June 20, from Building 1250. It was trucked aboard a flatbed trailer to the NCO dock on the Back River at Langley

Continued on page 2

– photo by Bill Salyer

The Long-Duration Exposure Facility (LDEF) is almost dwarfed by a giant ship's crane as the Langley-built Shuttle payload is placed aboard a Landing Craft, Utility (LCU), at Pier C of the Newport News Marine Terminal. LDEF was delivered to the terminal aboard the barge at center by the tug "Antares" (lower right) June 20, and left Hampton Roads the next afternoon. It was due to arrive at the Kennedy Space Center about 6 p.m. June 28.

Challenger's 2nd Flight 'Textbook Exercise,' But Lands at Edwards

What one Shuttle flight director called "a textbook exercise" ended early June 24 as the Challenger completed its second mission by landing at a familiar site -- the high desert at Edwards Air Force Base in California.

That was a disappointing 3,000 miles from the cloud-covered, still unsullied runway at the Kennedy Space Center, but the rest of the seventh Shuttle flight was, in the words of Shuttle Program Administrator James Abrahamson, "the best yet," accomplishing 96 percent of its objectives.

Mission 7 could also be called the clockwork flight because almost all activities were exactly on schedule. The countdown to launch was flawless, Challenger lifted off at exactly 7:33 a.m. June 18 and ascended into orbit with no problems whatsoever.

Commander Robert Crippen, who flew as pilot with John Young on the first Shuttle mission in 1981, said of Challenger just after it reached orbit, "Nice flying machine." Pilot for this seventh mission was Frederick Hauck.

By little more than 24 hours into the flight, Mission Specialists Sally Ride and John Fabian had deployed two

Continued on page 2

LDEF at KSC

Continued from page 1

Air Force Base.

Still aboard the trailer, LDEF was loaded aboard a flat barge. The tug "Antares" then pushed the barge down the river, around Old Point Comfort, through Hampton Roads and up to Pier C at the Newport News Marine Terminal.

Tuesday morning, June 21, despite gray skies and intermittent rain, a huge ship's crane slowly lifted LDEF and its container from the barge and delicately set it aboard a Landing Craft, Utility (LCU) boat.

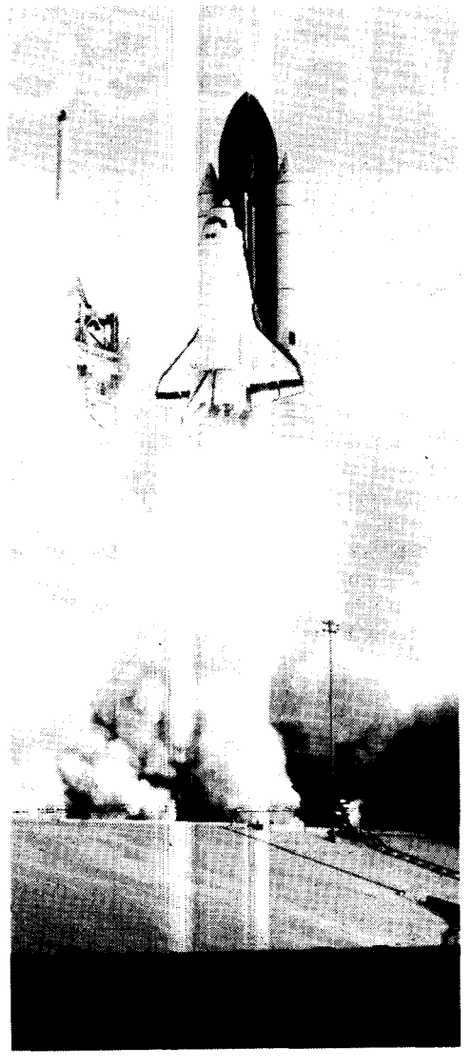
The LCU, looking as if it had been custom-made to hold LDEF, is a World War II-vintage craft leased by NASA-Kennedy from the Air Force. It is generally used for many kinds of utility retrieval work in and around the Cape Canaveral area.

After LDEF was securely tied down, and support equipment was loaded aboard, the LCU left Newport News that afternoon for an eight-day cruise down the intercoastal waterway.

The boat and its cargo were due to reach the Cape Canaveral area last Tuesday, go up to Banana River and into a canal that ends near the giant Vertical Assembly Building.

LDEF was to be unloaded from the LCU on Wednesday and trucked to SAEF-1 (Spacecraft Assembly & Encapsulation Facility) for cleanup and storage. Later this year, LDEF will be moved to another building for final processing and installation of its experiment trays. Just before launch, it will be placed inside the Orbiter's payload bay on the launch pad.

If Shuttle's schedules hold, LDEF will begin its first space mission with a launch from KSC next April 28.



STS-7. The seventh launch of the Space Shuttle and the second lift-off of the Orbiter Challenger occurred at 7:33 a.m. EDT June 18, 1983 from the Complex 39-A launch site.

Challenger 'Minutes'

Continued from page 1

communications satellites into perfect geosynchronous orbits 22,300 miles above the Pacific Ocean. Both Canada's Anik C and Indonesia's Palapa B were placed within .915 degrees of target.

By Wednesday morning, June 22, Ride and Fabian were ready to begin a test series that is important for many future Shuttle missions, including the one that will take Langley's Long-Duration Exposure Facility (LDEF) into orbit next year.

The two Mission Specialists worked together to move the Orbiter's remote manipulator arm to grasp a 3,200-pound satellite, lift it from the payload bay, dangle it over the Orbiter's side, and release and retrieve it over a period of almost 10 hours.

Television cameras recorded what a New York Times reporter called "a stately minute" between Challenger and the Shuttle Pallet Satellite (SPAS) as Ride and Fabian took turns releasing and grappling the practice payload.

The two craft seemed to be drifting idly between the intense blue of Earth and the equally intense black of space, yet both craft were traveling about 17,400 miles an hour.

After all the exactness of flight operations, no one in NASA could do anything about the low cloud mass lying over the KSC landing area. After two wave offs, mission controllers told Crippen and his crew that "the weather at the Cape is getting worse instead of better, so it looks like no-go for KSC."

Crippen replied, "We would have liked to go there very much, but if the weather's bad, that's the right thing to do and we understand -- We're ready to come down whenever and wherever."

At 9:57 a.m., three hours and 3,000 miles off the flight plan, Crippen and Hauck landed Challenger exactly on the centerline at Edwards's runway 15.

PAO Requests Typed Material

'Langley Researcher' Goes Computer

Effective today, all material submitted for inclusion in the *Langley Researcher* should be typed before it is sent to the Public Affairs Office because the office is changing the process in which the paper is published.

The office is converting to a new system, using the NBI 3000 word processing system, prime mini-computers and an Autologic photo composer for typesetting the *Researcher* copy. The new automated equipment that Langley has purchased will be a faster, more efficient process and a cost savings to the center.

In addition, an optical scanner will be used to transfer typed copy into the NBI and onto a terminal screen for editing. Langley employees can assist the PAO by submitting only typed material, which can be fed directly into the scanner.

The *Researcher* staff hopes the changeover to the new system will be a smooth one; however, please bear with us during the transition.

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 115, telephone 3006.

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.

Langley Colloquium

Johnson Discusses Lower Chesapeake Region

Gerald H. Johnson, a professor at the College of William and Mary, will discuss the "Geology of the Lower Chesapeake Region" at a Langley colloquium, Monday, July 11.

The lecture will be held 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 adjoining Langley Room for an informal discussion.

In his lecture Johnson will present the geology of the lower Chesapeake region from the late Paleozoic Era (230 million years ago) to the present.

At the College of William and Mary, Johnson consults with various firms, government agencies and individuals on geologic problems, such as sedimentation, dam construction, foundation stability, mineral exploitation, dredging and sewerage systems.

He is an advisor to the Virginia Division of Mine Land Reclamation, Shoreline Erosion Committee of Virginia Soil and Water Conservation Commission, Virginia Resource Information Committee, United States Geological Survey and the United States Park Service.

Johnson received bachelor and master of science degrees in geology from Purdue University in 1954 and Manchester College in 1959, respectively, and doctorates in paleotology and stratigraphy from Indiana University in 1958 and 1965.

– photo by Ronnie Booth

Pictured above is part of the NATO air chief delegation that visited Langley May 2. Langley Deputy Director Richard H. Petersen (second from right in back) accompanied the group on a tour of the 16-Foot Tunnel and Director Donald Hearth and Paul Holloway, Director for Space, presented an overview of Langley and a Space Shuttle program, respectively.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83-42 -- Supervisory Visual Information Specialist, GS-1084-11 or 12, Research Information and Applications Division, Photo/Graphics Branch, Graphics Section. Closes July 1.

83-43 -- Public Affairs Specialist, GS-1035-9 or 11, Office of Director, Office of External Affairs, Office of Public Services. Closes July 11.

Retirement Parties

Kenneth S. Bates, who retired from the Analysis and Computation Division April 29 after 42 years of government service, will be honored with a party at the Fort Monroe Officers' Club July 13. A dutch treat social will begin at 6:30 p.m. with a beef and burgundy buffet at 7:30 p.m. The cash, including gift, will be $9 per person or $17 per couple. Gift only is $1. Make reservations with Inez Byars, ext. 3074, or Gene Hicks, ext. 3737.

A. Ernest Moore, Operations Support Division, will be honored with a retirement luncheon at the Activities Center July 27 from 11 a.m. to 12:30 p.m. The cost will be $7.50 per person, including gift. Gift donations of $2.50 are welcome. Please make reservations with R. J. Logioco, ext. 2400, by July 15.

Happenings

LAA-POCONO MOUNTAIN TOUR. The Activities Association will sponsor a mini-tour of the Pocono Mountains July 29 through 31. The tour includes two nights at the Pocono Inn, five meals -- two dinners, one luncheon and two breakfasts, services of a professional guide, stops at Delaware River Gap, Bushkill Falls, Pocono Indian Village, American Candle Makers, Callie's Candy Kitchen plus much, much more. For more details and reservations call Frankie or Tess at the Activities Center, ext. 3139.

DISCOUNT TICKETS are available at the Activities Center for King's Dominion, at $10 each and Busch Gardens, at $11.25 each. Children under three years old are admitted free.

FOR REDSKINS ENTHUSIASTS. LAA is planning a fun weekend, November 5-6. The package will include transportation, overnight accommodations, tickets to the Redskins vs St. Louis game, and other entertaining events. For further information or reservations, call LAA office, ext. 3139.

LUNCH COUNTER in the Activities Center bar area is open for the summer. Hours of operation are from 11 a.m. to 1 p.m. Monday through Friday. Sandwiches, snack foods and soft drinks will be available. Please use side entrance into the building.

VISITOR CENTER SOUVENIR COUNTER is selling balloons, frisbees, pens, pencils and key rings displaying NASA's 25th anniversary logo.

COUNTRY-WESTERN DANCE CLUB. If you are interested in dancing the 2-step, Texas Polka, Schoddishe, Cotton-eyed Joe and others once a month and have a great time, join our club. For information, call Sam Sokol, ext. 3581, Betty Bailey, ext. 2641, or Jerry Nichols, ext. 2826.

SHAKESPEARE FESTIVAL. The Virginia Shakespeare Festival celebrates its sixth season July 7 to August 20 with professional theatrical productions of "Twelfth Night," "The Winter's Tale" and "Othello." All performances are held in the Phi Beta Kappa Memorial Hall in Williamsburg. Season tickets, ranging from $13.50 to $19, are available by calling 253-4469.

"RETURN OF THE JEDI." Yes, $2.75 tickets are available at the Activities Center for "Return of the Jedi" for Coliseum Mall Cinema I & II.

HAPPY HOUR. There will be no Happy Hour today. The next one will be July 15.

TENNIS LESSONS. The Tennis Club is offering six weeks of tennis basics for beginners starting the week of July 11. Call Roy Zalameda, ext. 2791, for details.

THE LRC TENNIS CLUB will sponsor its annual Men's 35 and Over Tennis Tournament July 8-11. This tournament will be played on the newly resurfaced courts located behind the Activities Center. Trophies will be awarded for first and second place. For entries and additional information, call Charles Bryant, ext. 3446, Bob Murray, ext. 3550, or Bill Shinn, ext. 4534.

BLOODMOBILE. The American Red Cross will hold a Bloodmobile at the Activities Center Wednesday, July 13, from 9 a.m. to 3 p.m. The Red Cross reports that there is a severe shortage of blood and urges all Langley employees, retirees and contractors to support this effort. For more information or an appointment, call the Health Unit, ext. 3976 or 2246.

SELF PROTECTION BOOK. The book, "Looking Forward to Being Attacked," which was offered at the Self Protection for Women Seminar held at Langley June 10, can be purchased from the Memphis Police Department. Send a check for $6 (includes shipping), payable to Lt. Jim Bullard, MPD, to him at 3624 Cowden Avenue, Memphis, Tenn. 38111.

TIDEWATER DINNER THEATER. The summer production for Tidewater Dinner Theater will be the award-winning musical "ANNIE" which is playing through September 11. Discount tickets are available at the Activities Center.

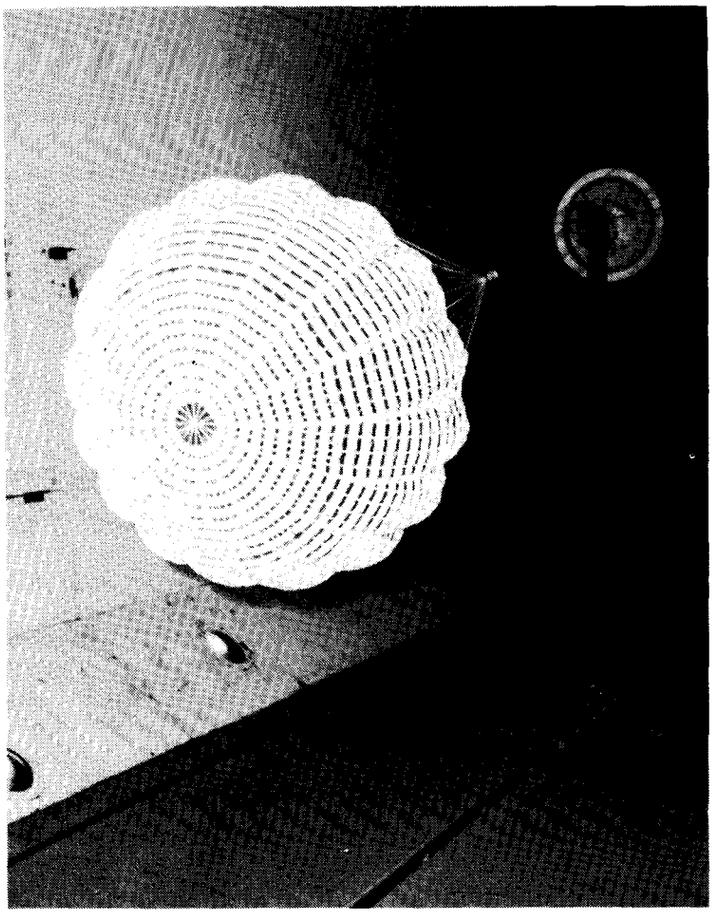
THE LAA LUNCH COUNTER is open in the bar area of the Activities Center. Hours of operation for the summer are from 11 a.m. to 1 p.m. Monday through Friday. Sandwiches, snack foods and soft drinks are available. Please use side entrance into the building.

PATRIOT PASSES to Colonial Williamsburg, are available at reduced rates. For adults $18.50 and $9.50 for children 6-12 you can have unlimited admission for one year to all regular Colonial Williamsburg buildings, colonial homes, craft shops, films and lectures, and the bus system, plus additional admissions to the Royal Governor's Palace, Bassett Hall, Carter's Grove Plantation and the daily escorted walking tours.

– photo by Bill Salyer

These longtime Langley employees were presented 40-year service awards by Director Donald P. Hearth (seated in center) June 10. From left are Jack H. Dysart, Low Speed Aerodynamics Division; Carl G. Baab, Operations Support Division; Moses J. Long, National Transonic Facility Project Office; Thomas E. Ezell, Jr., Facilities Engineering Division; George L. Meidinger and Dean M. Ferris, Operations Support Division; and Dr. Manuel Stein, Structures and Dynamics Division. Absent from the ceremony was Walter J. Felker, Low-Speed Aerodynamics Division.

Jovian Probe Parachute Tested Here



Langley's Transonic Dynamics Tunnel was recently called upon to help test the main parachute for a probe designed to be the first to enter the atmosphere of Jupiter.

The probe is to be carried to the vicinity of Jupiter in 1988 by Galileo, the next U.S. Planetary mission (after launch by Shuttle/Centaur in 1986). After being jettisoned by its mother spacecraft, the probe will travel on its own for five months before entering the upper reaches of the giant planet. Soon after, it will slow its descent by deploying its main parachute, drift downward and transmit measurements to the orbiter passing overhead. The parachute will protect the probe from overheating and extend data taking time to approximately 40 minutes.

In outdoor tests conducted last year in New Mexico, however, the parachute did not open properly. Langley's TDT was selected -- because of its large size, transonic speed range and dynamic pressure range -- to test one-quarter and one-half scale models of the parachute at a cost much less than high altitude drop tests.

In the photo, the one-half scale model successfully opens after adjustments were made in the length of the riser line -- a cable in this case -- that connects the chute to the probe. The probe is simulated by a cone-shaped piece of wood, also visible.

According to TDT's Bob Doggett, JPL project engineers had predicted that increasing the distance between the probe and its parachute would solve the problem but needed more data to verify their suspicions. Motion picture cameras mounted in the TDT test section recorded parachute behavior through a specially-designed winch assembly. Bryce Kepley, CAB, was project engineer for the Langley test series.

A drop test of the redesigned full scale vehicle is planned for this summer.

Explanation of Physics Program Offered

Langley employees who are interested in studying for a bachelor of science degree in applied physics: microelectronics can hear an explanation of a program now being offered by Christopher Newport College.

Dr. George Webb, head of the Physics Department at Christopher Newport, will describe details of the program at 9 a.m. Thursday, July 14, in Building 1194A, Room 203.

The program concentrates on the application of microstructural models, especially microelectronic models, to the design of instrumentation and control systems that occur in research organizations such as Langley.

For more information on the program and the talk, contact Dr. John Buckley at ext. 3131.

– photo by Hubert Lloyd

The Second Annual Graduate Student Workshop, sponsored by the office of the chief scientist, was held June 10 at Langley. Thirty-two students presented papers on research they conducted for their graduate degrees. On the front row from left are Dr. Samuel Massenberg, Langley's university affairs officer, Dr. Sidney Roberts, an Old Dominion University professor, Dr. James Ortega, a University of Virginia professor, and Robert Tolson, chief scientist at Langley. Also viewing the presentations are other professors and graduate students who attended the workshop.

Employees' Sons Take the Silver in 'Olympics of the Mind'

— by Allan Hanrahan

At the international finals of the Olympics of the Mind, held at Central Michigan University May 26-28, the sons of four center employees made their parents proud indeed.

David Felty and Jonathan Brumfield -- along with four of their classmates at Tabb Intermediate School -- finished second in Division I, which takes in grades nine through eleven, against world competition from as near as Canada and as far away as South Africa.

Place was determined by a composite judging in three categories: the entry itself (in this case a Leonardo da Vinci inspired spring-driven car, which was adjudged first), the styling and presentation of the entry, and the spontaneous answering of various questions.

David Felty is the son of Dolores Felty of the Passenger Transportation Branch of the Financial Management Division and her husband, William E. (Bill) Felty, of Technical Support Section C of the Operations Support Division. Jonathan Brumfield is the son of Marcus L. Brumfield of the Structural Dynamics Branch of the Structures and Dynamics Division.

Michael L. Fripp and his Williamsburg area classmates took second in Division II, which is the level of competition for students in grades six through eight. (Michael is only a sixth grader, by the way.) They competed in the category called "Miners Helper," a class of competition that called for a type of robot.

Michael is the son of Dr. Archibald L. Fripp, Jr. of the Physical and Optical Electronics Branch of the Instrument Research Division.

The boys in both divisions reached the finals by winning their level of competition at the regional contest held in Chesapeake in March, and at the state contest held at Randolph-Macon College in Ashland in April.

The Olympics of the Mind is a program of competition instituted and developed to challenge as well as recognize the intellectual and creative talents of young students, and these boys and their center parents are to be congratulated on their success.

— photo by Bill Salyer

Thomas E. Pinelli, Head of the Photo/Graphics Branch; Virginia M. Cordle, Technical Editing Branch; and Dr. Raymond F. Vondran (not pictured) of the Catholic University of America, Washington, DC, were recipients of the Distinguished Paper Award which was presented May 4 at the International Technical Communication Conference in St. Louis. The paper, "Survey of Usage of Technical Report Components to Establish Their Most Effective Organization" was selected for the award based on its contribution to new knowledge and usefulness in terms of practical application. The paper was based on a survey of user preferences concerning the format of NASA Technical Reports. The results of the completed study are available in NASA Technical Memorandum 84502.

103rd Scout Launched

The Scout S-205-C marks the 103rd Scout launch since 1960. It was a routine launch at Vandenburg Air Force Base, with one brief hold at T-minus six seconds, while engineers studied the drift rates of the gyroscope. After it was found to be in acceptable limits, the countdown was resumed with an approximate seven minute hold. At 11:37.87 seconds the Scout lifted off with the HILAT satellite as its payload.

Howard Wright, director for projects explained, "The earth's magnetic poles cause upper atmospheric disturbances such as the aurora borealis — or northern lights — and these same disturbances can cause disturbances in radio signals. Because the phenomenon is concentrated at the poles, this spacecraft is designed to fly through very high latitudes and has been named HILAT for that reason."

Wright continued, "The data transmitted by the spacecraft in both UHF and VHF frequencies as well as L-band frequencies will enable scientists to study the effects of upper atmospheric anomalies on radio signals at various frequencies as they pass through these upper atmospheres."

The satellite will remain operational at least until 1984.

MSR Changed

The Monthly Status Review has been changed to July 18. A complete agenda will be printed in the July 15 issue of the *Langley Researcher.*

NASA Tenpin Bowling League Closes Forty-seventh Season

THUNDERBOLTS. The first place team in the NASA Tenpin Bowling League is the Thunderbolts, with 93 wins and 43 losses. From left are Bill Goad, Harry Davis, Al Bell, Walt Weller and George Adamowski.

The 1982-83 NASA Tenpin Bowling League has ended with the Thunderbolts winning first place.

The 47th season closed May 14 with an awards banquet and dance at the Activities Center.

Awards were presented as follows:

First Place Team. . . . . Thunderbolts
Second Place Team . . . . . Sparemakers
Third Place Team . . . . . ACD
Fourth Place Team . . . . . Mixed Nuts
High Team Series . . . . . Hot Shots
High Team Game . . . . . Short Circuits
High Series – Women . . . Marg Mikula
High Series – Men . . . . . Dale Rodman
High Game – Women . . . Faye Boninu
High Game – Men . . Aubrey Fitzgerald
High Average – Women . . Ruth Frizzell
High Average – Men . . . . . Bob Booth
Most Improved – Women . .Faye Boninu
Most Improved – Men . . .Earl Gerringer
Sportsperson of the Year . . . . Pat Ancel
Last Place Team. . . . . Etchers

– photo by Bill Salyer

These children from Cooks Day Nursery in Hampton are learning about travel on the Space Shuttle at the NASA Visitor Center. They are participating in "Exploration 83," a special summer program which introduces 4-7 year olds to flight, space travel and survival in a space environment. Another special program, "Space on the Shuttle," is being offered for 8-12 year olds and allows participants to experience a typical Shuttle mission through film taken by astronauts. The program will be given at 9 a.m. weekdays throughout July. Reservations are required and may be made by calling ext. 2855.

Visitor Center Offers Bus Trip to Kitty Hawk

The NASA Visitor Center is offering a bus trip to Kitty Hawk, N.C., Friday, July 22.

Participants will tour the Wright Brothers' Memorial at Kill Devil Hills and see the site of the Wright Brothers' historic first flight. After the tour, they will be taken to nearby Jockey Ridge for an unscheduled afternoon, which will allow opportunities for hang gliding, dune climbing or time at the beach.

Cost of the trip is $20. The bus departs the NASA Visitor Center at 8 a.m. and returns at 9:30 p.m. Participants may wish to bring a picnic lunch or they can purchase one in the area. A dutch-treat dinner stop is planned on the return trip.

Seating is limited and reservations are required. For reservations and information, contact the Visitor Center, ext. 2855.

Retirees Die

Percy T. (P.T.) Howerton, who retired from Langley in 1956, died June 4. At the time of his retirement, he was an engineering technician in the Operations Support Division.

Elizabeth P. Tillery, a former Langley mathematician, died May 26. She retired from the center in 1957.

National Aeronautics and
Space Administration

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The Red Cross Needs Blood and Money

The American Red Cross needs more than blood; it needs money. Its disaster relief fund has dwindled since last June because "unusual weather patterns have brought storms, floods, mud slides and tornados to wide areas of the country, and Hawaii was hit by a major hurricane, while California had a serious earthquake," Donald J. Devine, Director of Personnel Management in Washington, D.C., wrote to government department heads and agencies.

The American Red Cross has spent more than $33 million dollars in helping more than one million disaster victims since June 1982, by providing emergency disaster relief funds for food, clothing, shelter and medical attention. The fund is now empty, and in order to replenish it, the American Red Cross has begun a campaign, that will last until July 15, to raise $12 million.

NASA Langley will not donate as a group, but employees are encouraged to give to the fund individually when contacted by the American Red Cross.

Al Buchanan, a spokesman for the Tidewater American Red Cross, said that in addition to the need for money there is also a need for blood. "We are projecting a shortage of 3,000 units of blood for the months of July and August and would appreciate your supporting a Bloodmobile in your area."

Langley's next Bloodmobile will be held July 13 in the Activities Center.

Your support of the American Red Cross would be greatly appreciated because disaster can strike anytime, anywhere and anyone.

25th Anniversary
1958-1983

swap and shop

FOR SALE

Vehicles

TR-7, 1980, soft-top conv., 25,000 mi., immaculate cond., 5 speed, a/c, AM/FM tape player, Call 898-8160 after 7/3.

Chrysler, New Yorker, Fifth Ave. 1983, fully loaded, just like new, four-door blue sedan, priced near wholesale for quick sale. Call 826-0619.

1973 Mercedes sports coupe, 450 SLC, fully loaded, sun roof, $16,000 OBRO.

1976 Flybridge cruiser, 26', 233 hp, outriggers, depth finders, compasses, CB, VHF, AM/FM cassette stereo, $13,500 OBRO. Call 827-1916.

Real Estate

Veterans Memorial Garden: Two land spaces and two crypts, priced for quick sale. Call 826-0619.

Denbigh Beechwood: Rancher, 2,400 square foot, double L brick rancher, custom built, 4 BR, study with bookcase wall, 2-1/2 baths, lg. kit., laundry room, dinette with bay, Andersen Thermopane windows, intercom., lots of storage, on cul-de-sac, 1/2 acres, $110,000. Call 872-8289.

Animals

Pekingese pup, male, eight weeks old, $150. Call 898-8119.

FOR RENT

"Buzzards Roost" on Hatteras Island at Frisco: Oceanside, 50' house trailer, furnished, including dishes, etc., 2 BR, full bath, sun porch, outdoor shower, AM/FM stereo, walking distance to beach and fishing pier, 5 min. drive to Sport Fishing Center and charter boats, $160/wk., some weekends available. Call 826-6177.

WANTED

Townhouse apartment or house to rent, 2 BR, between $200/$250 per month. Call 253-0385 or 898-8280.

FREE

Garden space available near Roanoke Avenue and Briarfield Road, Newport News, 90' x 150'. Call 826-0619.

Recent Retirees

Tazewell O. Reed, Systems Engineering Division, retired June 30.

Joseph S. Denn, Operations Support Division, and **Edward G. Fink**, Systems Engineering Division, retired June 30.

James T. Winn, Operations Support Division, retired July 1.

cafeteria menu

WEEK OF JULY 4 — 8

MONDAY: *HAPPY INDEPENDENCE DAY!!*

TUESDAY: Ham & Lima Bean Soup; Corned Beef Reuben; New England Scrod; Veal Parmigiana. Snack Bar: Steak & Cheese Sub; Footlong Hot Dog.

WEDNESDAY: Fresh Vegetable Soup; Fried or Baked Chicken Dinner; Quiche Lorraine; Beef Stew. Snack Bar: Chicken NASA; Rib BQ.

THURSDAY: Chicken & Rice Soup; Stuffed Pepper; Monte Cristo Sandwich; Braised Chicken Livers. Snack Bar: Beef & Cheese Club; Hot Italian Sausage.

FRIDAY: Bull Island Clam Chowder; Fish Cake Dinner; Baked Stuffed Chicken Breast; Grilled Ham Steak. Snack Bar: Crab Cutlet Sandwich; NASA Sub.

WEEK OF JULY 11 — 15

MONDAY: Old Fashioned Bean Soup; Hot Beef Sandwich; Turkey Croquettes; Beef, Macaroni & Tomatoes. Snack Bar: Chicken NASA; Footlong Hot Dog.

TUESDAY: Beef & Vegetable Soup; Baked Lasagna; Sweet & Sour Pork; Chopped Steak. Snack Bar: Ham & Cheese Club. French Bread Pizza; Knockwurst.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Beef Stroganoff; Crab Cutlets. Snack Bar: Chicken NASA; ¼ lb. Cheeseburger; Hot Italian Sausage.

THURSDAY: Turkey Noodle Soup; Beef Enchiladas; Seafood Quiche; Braised Chicken Livers. Snack Bar: Turkey & Cheese Club; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Beef Tips & Rice; Franks & Baked Beans. Snack Bar: Steak & Cheese Sub; Polish Sausage.

A second-class effort is a first-class mistake.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 14

July 15, 1983

Garrett Receives Interagency Committee Award

A Langley researcher has been presented an award by the Interagency Committee on Automatic Data Processing for outstanding achievement and contribution to the federal information resources management community.

Dr. L. Bernard Garrett, a systems analyst in the Systems and Experiments Branch, Space Systems Division, was one of nine federal employees selected to receive an award for 1983.

Recognized for his technical excellence in automatic data processing, Garrett's award citation read, "Dr. Garrett is recognized for developing an interactive computer-aided design system whereby aerospace engineers can use large amounts of technical data to design and analyze advanced space systems such as large antennas for communications. This system allows development of a rapid, efficient, and cost-effective technology for future U.S. civilian, commercial, and military space missions."

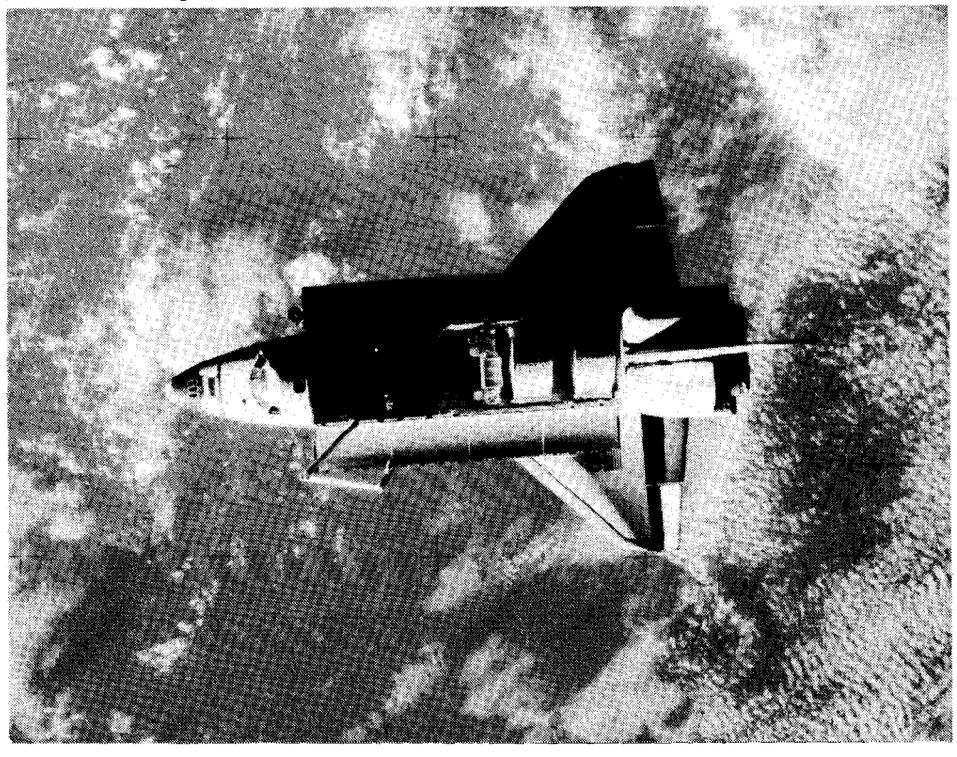
Garrett began his NASA career in June 1962 as an aerospace engineer. For the last several years, he has concentrated his research on the development and use of interactive computer-aided design capabilities for the design and analysis of large Earth-orbiting spacecraft. He conducted research in the thermal and fluid mechanics areas for high-speed reentry spacecraft from 1962 to 1970, and managed the development and operations of several science analysis processing systems for the Viking Project Mission to Mars from 1971 to 1976.

Garrett received bachelor and master of science degrees in mechanical engineering from Virginia Polytechnic Institute and State University in 1962 and 1968, respectively. He earned a doctorate degree in mechanical and aerospace engineering from North Carolina State University in 1971.

The recipient of several NASA awards, including the NASA Exceptional Service Medal for his contributions to the Viking Project, Garrett is a member of the American Institute of Aeronautics and Astronautics. He is the author or co-author of over 30 technical publications.

Garrett and his wife, Judy, live in Yorktown. They have three children.

STS-7 SATELLITE VIEW OF ORBITER -- A number of cloud-types form the backdrop for this scene of the Earth-orbiting Space Shuttle Challenger captured by a 70mm camera aboard the temporarily free-flying Shuttle pallet satellite (SPAS-01) during busy Day 5 on STS-7. Visible in the cargo bay are the protective cradles for the Palapa B and Telesat F communications satellites, the pallet for the NASA Office of Space and Terrestrial Applications (OSTA-2), the remote manipulator system (RMS) arm in the shape of the numeral seven and the Ku-band antenna. A number of STS-7 getaway special (GAS) canisters are also visible along the port side. After a busy day of proximity operations with the Shuttle, the SPAS spacecraft was returned to a stowed position in the cargo bay for the trip back to Earth.



– photo by Hubert Lloyd

EEO AWARD. Robert C. Goetz (left), former Director for Structures, receives an Equal Employment Opportunity Award from Deputy Director Richard H. Petersen on June 30. Goetz was recognized for his personal leadership in applying affirmative action techniques and accomplishments in improving the representations of minorities and women in mainstream activities of the Langley Research Center. On July 1, Goetz became Deputy Director of the Johnson Space Center in Houston.

Student from Langley's Region Wins SSIP Award

Rachel M. Safman, a student at Montgomery Village Junior High School in Gaithersburg, Md., is one of 10 science students to be named national winners in the 1983 Space Shuttle Student Involvement Project, conducted by the National Science Teachers Association and NASA.

Safman was one of 20 students from region three, which includes Virginia, North Carolina, South Carolina, West Virginia, Maryland and Washington, D.C., who met at Langley this past spring to compete for the opportunity to have her experiment fly aboard the Space Shuttle. Her experiment is titled "Argon Injection in Gallium as an Alternative to Honeycombing."

The 10 winners and their teacher/advisor will attend a three-day conference in Washington, D.C., July 26–29. Receptions, meetings with NASA officials and Shuttle mission reports will be highlights of the conference.

During the conference, the national winners will present their projects to NASA and NSTA officials and the press Wednesday, July 27, at NASA Headquarters. (Winning projects become the property of NASA and will be considered for flight aboard future space shuttles.)

NSTA's involvement in the Shuttle student experiment program -- now in it's third year -- includes mailing of entry materials to secondary schools and coordinating the science education aspects of the project. Each entrant has a teacher/advisor for his or her project. A NASA technical person works with them in cases where a winner's project is chosen to be flown on the spacecraft.

NSTA appoints regional directors (leading science educators) who receive entries and determine the submitted proposals' acceptability in accordance with the official project rules. Regional and national judging is done by panels of educators, scientists and engineers from agencies such as NASA, NSTA, the National Science Foundation, the National Institute of Health, Department of Education, the American Association for the Advancement of Science, and several universities and consulting firms.

Area Maps Developed

Many NASA personnel have noticed the grey area outlines on our telephone directory map and the alpha prefixes on our building signs and street markers. These alpha prefixes are an attempt to integrate the traditional numbering system for our buildings with an alpha disignator system determined by location. This new system will help our visitors and others (such as public safety and health officials) to more easily locate buildings in our expanding West Area. Most of our personnel will still refer to and use the old building numbering system for most day-to-day activities, while the hybrid system slowly becomes the standard reference.

Viking on View

The Smithsonian National Air and Space Museum in Washington D.C., recently opened a new exhibit, "The Viking View of Mars."

The displayed images were specially developed by the University of Washington (state) from data received at the Jet Propulsion Laboratory during the historic Viking mission. The university collected the Lander 1 data through a communications link with JPL during the Lander's tour of duty on the Martian surface.

"The Viking View of Mars," in the Exploring the Planets gallery, is on display indefinitely. A full-scale Viking Lander model is also on exhibit in the museum's Milestones of Flight gallery.

Retirement Party

Russell Garel, Research Information and Applications Division, will be honored at a retirement social August 10, at 4:30 p.m. in the Activities Center. The cost of the hors d'oeuvres social will be $6, including gift contributions. Gift contributions are welcome. A cash bar will be provided. Send reservations to S. Watson, Mail Stop 426, by August 3.

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 115, telephone 3006.

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 following technical sessions are planned for Monday, July 18, in Room 225, Building 1219. The morning session will begin at 8:30 and include presentations by the Chief Scientist Office and Management Operations.

STRUCTURES

Analysis of Aerothermal Loads on Spherical Dome Protuberances

Thermal Management Concepts for High-Speed Engines

SPACE

Spin-Scan Ozone Images from 23,000 Km

Full Windward Surface Solution for Orbiter Using HALIS Code

ELECTRONICS

Grid Generation Research

Computer Science Research in Software Engineering

The afternoon session will begin at 1:30.

SE&O

Summary

NTF Update

Conversion of 8' x 15' Thermal Vacuum Chamber to an Ultra-Clean Test Facility -- Lessons Learned

PROJECTS

ACEE L1011 Relaxed Static Stability Program Overview

L1011 Ground Simulations

L1011 Flight Test Results

AERONAUTICS

Impact of Thrust Vectoring on High-α Maneuverability

Supporting Research on Advanced Turboprops

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.

Congress Passes NASA's Bills

Both the authorization and appropriations bills for NASA's FY 1984 budget have been passed by the Congress, sent to the President and were expected to be signed into law this week.

The appropriation bill totals $7.177 billion and the authorization totals $7.267 billion. The appropriation bill grants the money approved by the authorization bill, but not necessarily to the full amount authorized.

Details of the final bill have not yet been announced, but two items of interest at Langley were approved. Construction funds of $5.1 million for modifications to the Composites & Materials Laboratory and $4.4 million for modification of the 30 x 60-Foot Wind Tunnel are in the two bills.

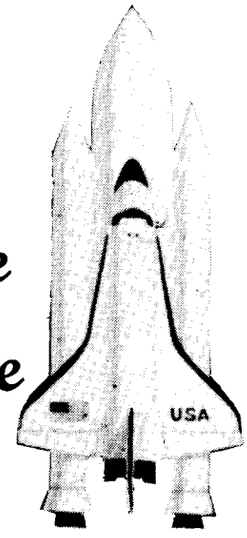
Refurbishment Facility to Stay at Kennedy

The Space Shuttle Solid Rocket Booster refurbishment facility operation will remain at or near Kennedy Space Center. NASA recently examined the possible merit of relocating the facility from Florida to Marshall Space Flight Center. The review was undertaken as part of the overall plan for increasing Shuttle flight rate to 24 missions per year. The study showed no sound basis for such a location change. Final details for this facility and its operation are still under review.

Thanks

Bob Goetz writes, "I want to thank all my friends and co-workers who attended and contributed to my GTT (Gone to Texas) Party. I appreciate all the efforts that went into making it a memorable and enjoyable occasion. The briefcase will be quite useful and will be a constant reminder of my many friends at Langley. Again thanks.

Space Shuttle Update



Each flight of the Space Shuttle system continues to exhibit a number of "firsts" associated with its mission -- and STS-8 is no exception.

The third flight of Challenger, tentatively set to begin in mid-to-late August, will feature the first night launch and first night landing, as now planned. Turnaround time -- if recycling of orbiter systems continues at its present rapid pace -- will be the shortest ever. And, by now, it is widely known that next month Air Force Lt. Col. Guion S. Bluford, Jr. will become this country's first black astronaut to fly in space.

The next shuttle mission will also be the first to communicate with the Tracking and Data Relay Satellite, now in its correct orbit after the last of a series of rocket firings that successfully carried the satellite to its operational altitude. Challenger will not use the TDRS-1 for normal communications but will help "wring out" the system through a series of in-orbit tests.

A KSC spokesman told the Researcher that, in general, the Challenger came back from space looking "pretty clean" after its June flight, although not quite as clean as after its first flight. About 75 to 100 inculating tiles are being replaced, and there are scorch marks on some of the blanket insulating material above the wing glove area. He added that after two flights the vehicle looks good but does look a little more "space travelled."

Orbiter systems are testing out satisfactorily. Meanwhile, the boosters and tank are stacked and waiting for Challenger's end-of-the-month move from the Orbiter Processing Facility to the Vehicle Assembly Building.

LAA Anounces Carnival Plans

Candidates

Plans are now underway for the 1983 LAA Carnival and LAA promises that this year's event will be better than ever.

There are special activities scheduled throughout the Carnival beginning with the crowning of the 1983 Carnival Monarch Friday night and ending with the grand prize drawing for $1500 Saturday night.

Candidates for Carnival Monarch are Yvonne Armstrong, High - Speed Aerodynamics Division; Sharon Hassell, Programs and Resources Division; Debra Subowicz, System Development Corporation; Beverly Thomas, Acquisition Division; and Jeanine Venable, Kelsey Seybold Clinic.

The winner will preside over the Carnival scheduled for August 26 and 27 and will assist in the drawing for prizes and in other planned events. The Carnival Monarch will receive $100, first runner up will receive $50 and second runner up $25. You can vote for your favorite candidate when you purchase a Carnival ticket. Tickets, at $1 each, are available from contestants, members of LAA Clubs or the Activities office.

LAA has added new games and more activities to this year's carnival, hoping to draw a larger crowd and entice people to participate in the events. Other LAA events include a casino with many exciting games, an arts & crafts exhibit, children's rides, food and drinks, and pony rides.

Raffle prizes are $100, $500 and $1200 Friday night; $100, $500 and $1500 Saturday night. Both nights will feature $25 drawings on the half-hour and $50 on the hour.

Meeting for On-Site Day Care Set

One of the study tipics selected by this year's EEO Employee Subcommittee, was establishing an on-site day-care center for Langley employees and contractors.

Last February, all permanent, full-time Langley employees were sent a questionnaire on this subject and significant interest was indicated. Because of this interest, the subcommittee, which reports to the EEO Steering Committee, developed an outline for establishing a day-care center and presented its findings and recommendations to the Steering Committee. The concept of having a parent-supported, on-site day-care center was approved by both Director Donald Hearth and the EEO Steering Committee, chaired by Richard Petersen, Langley Deputy Director.

In addition, the charter for an interim Day-Care Association, to operate as a separate branch of the NASA Langley Exchange, was approved. This interim association will develop a detailed implementation plan for the day-care center and, upon management approval of the plan, will take the necessary actions to establish the center. The association will also develop a plan for a summer engineering/scientific theme camp for the elementary school-aged children of Langley employees and on-site contractors; Hearth and the committee agreed to consider having such a theme camp after they review the plan. The interim Day-Care Association will function until a constitution and bylaws for a permanent association are approved.

The kickoff meeting of the interim Day-Care Association will be held Thursday, July 28, 1983, at 10 a.m. at the Activities Center. All interested employees and on-site contractors are encouraged to attend. Whether you plan to attend the meeting, or are interested in the Day-Care Association but are unable to attend, send your name, mail stop, and phone number to Day Care Mail Stop 126 so that the subcommittee can forward you a copy of their final report prior to the meeting.

NASA employees are to charge their time to Job Order A1980.

Propulsion Trivia

At 149 feet, 1.6 inches tall, the Solid Rocket Booster is only two feet shorter than the Statue of Liberty. But, each 700-ton loaded Solid Rocket Booster weighs more than three times as much as the famous statue.

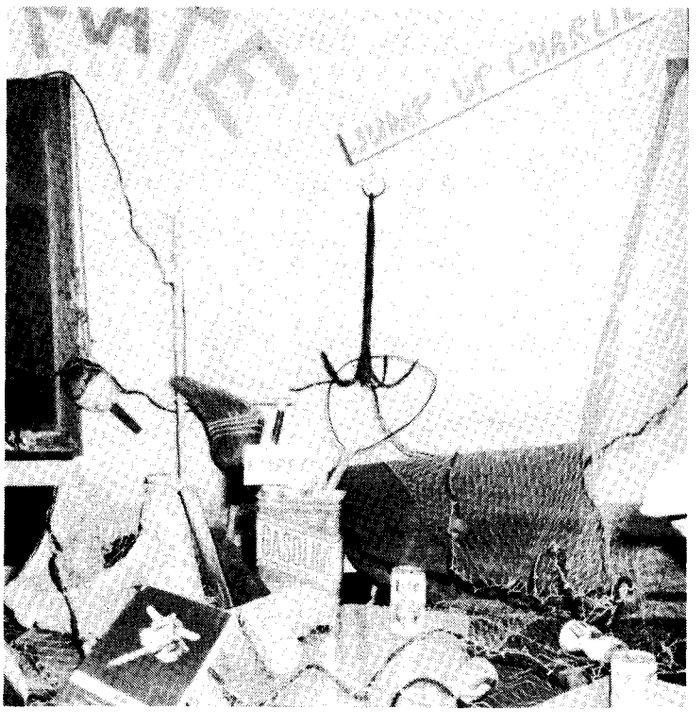
Stahl Gives Award

Earl Stahl, Chief of the Operations Support Division, implemented the idea of a "Nice Place Award," with the intention of improving morale and safety by motivating employees of OSD to maintain a "nice place to work."

The three walnut plaques will be awarded every six months to different OSD facilities and support groups depending on how much pride the workers have taken in their work site "to make and keep a safe, efficient and pleasant work place."

The recipients, until September, are the Central Heating and Steam Generation Facility, the Hypersonic Propulsion Facility support group and the Continuous Flow Hypersonic Tunnel.

On the Lighter Side



Chaos reigned in Richard Boykin's office in the Systems Engineering Division area of Building 1209 recently. Boykin's co-workers decorated his office to commemorate his return from a much plagued cruise from the Virgin Islands to Hampton. Some of Boykin's unfortunate experiences included his boat leaking throughout the trip and his crew "deserting" in Palm Beach, Florida.

It's not a sting mount for this primitive model, but a Moore-mount. With a model in hand and his muffler blowing in the breeze, Joseph Moore, Operations Support Division, demonstrates a great aerodynamic stance. Moore's comic pose was caught in a picture snapped several months ago in the then unfinished National Transonic Facility.

Expanded Payload Policy

Australian To Fly Aboard 1985 Shuttle

An Australian payload specialist will fly on one of two 1985 Shuttle flights carrying an Australian communication satellite. Australia is the first country to formally announce it will accept NASA Administrator James M. Beggs' recent offer for Shuttle payload sponsors to fly their own personnel.

Beggs' offer was based on NASA's newly enhanced Shuttle payload policy. Under the revised policy, major payload sponsors will have the opportunity to nominate payload specialists to accompany their payloads into space.

The Australian payload specialist will fly on a 1985 Shuttle with space reserved by AUSSAT Pty., Ltd., operator of Australia's national satellite system. AUSSAT has reserved space on two Shuttle flights for the launch of two Australian satellites to be used for direct television broadcast, voice, data and public telephone services to continental Australia and off-shore territories.

Under NASA's expanded policy, flight opportunities for payload specialists are available not only for foreign commercial customers but also for domestic commercial customers, international cooperative partners, the scientific and applications community and the Department of Defense.

Payload specialists will most often be scientists, with special skills to operate a scientific experiment, or a specialist proposed by a Shuttle customer who is trained in the critical aspects of deploying and operating a satellite from the Shuttle or in the operations of a unique and critical processing experiment.

Proposed payload specialists will undergo a short training program in preparation for space flight. Training and flight of these payload specialists will normally be on a reimbursable basis, although other arrangements may be made in the case of cooperative flight projects.

NASA will retain final selection authority to insure that payload specialists are fully qualified and can function as part of the flight crew.

PAO Requests Typed Material

In the last issue of the *Langley Researcher*, employees were notified that all material submitted to the Public Affairs Office for inclusion in the paper should be typed.

It has been brought to our attention that the optical scanner that PAO will use to transfer typed copy into the NBI word processing system, will only read four type styles at the present time.

Therefore, all material should be typed using either Prestige Elite, Letter Gothic, Courier 12 or Courier 10 typing elements.

LAA Plans Alaskan Adventure

The following is a day-to-day itinerary for the Alaska trip, sponsored by the Langley Activities Association, September 18-28.

Sunday, September 18: Depart Norfolk for Vancouver, British Columbia. Upon arrival proceed directly to the port and board your elegant cruise ship – The Nieuw Amsterdam.

Monday, September 19: The delightful shipboard lifestyle fills your day aboard your floating resort. Your ship moves into Alaskan waters as you pass Seymour Narrows, Johnstone Strait and the lovely Charlotte Sound.

Tuesday, September 20: Your first port of call is the city of Ketchikan. A full day here. Plenty of time for optional shore excursions. Mid-afternoon you depart. You will see your first sight of fjords and glaciers as you resume your northward journey.

Wednesday, September 21: Morning arrival at Juneau, the Alaskan state capital. Afternoon cruise on the M.V. Fairweather for your conducted cruise of the amazing Mendenhall Glacier. Alaskan wildlife are literally at your fingertips. This unusual 100 mile cruise ends in Skaway. Overnight in this historic Klondike mining town.

Thursday, September 22: A brief time to explore and relive gold rush history before boarding your overland motorcruiser for the trip over the Chilkoot Pass to Lake Bennet and arrive in the heart of the Yukon and its rip-roarin capital Whitehorse. Overnight here.

Friday, September 23: Moving ever northward you enjoy the scenery and the frequent nature and camera stops. At the end of the day you are at Beaver Creek where you overnight at the Alas/Kon Border Lodge.

Saturday, September 24: The final leg of your journey into the Alaskan interior takes you to Fairbanks where you overnight.

Sunday, September 25: A full day here in Fairbanks gives you a chance to get your land-legs back. A special city tour gives you the opportunity to evaluate the many contrasts of Alaskan life. One more night in Fairbanks.

Monday, September 26: Back aboard your "land cruiser." Here in the heart of the Alaskan interior you enjoy a special luncheon stop at Denali (McKinley) National Park. Your day ends in Anchorage where you overnight.

Tuesday, Septebmer 27: A unique city tour and then on to Porterage Glacier. A forest naturalist is there to brief you on the many natural wonders. Return to Anchorage for your last night in Alaska.

Wednesday, September 28: Your Alaskan Adventure ends today, but not the wonderful memories. Early morning flight back to Seattle. Plane connections have been made for you. However, depending upon schedules, it may be necessary for you to overnight in Seattle. (You will be advised in ample time before departure.

Call the LAA office, ext. 3139, or Ernie Greene, ext. 2312 or 838-0567, for brochure and details.

– photo by Don Ward

The Alchemist did it again. For two consecutive years the Alchemist have won the NASA Basketball Association Tournament. Pictured kneeling are Ricky "Clutch" Clark, Lloyd "Playmaker" Marks, Brian "Jumper" Jensen and Phil "Rebound" Robinson. Standing are Rodney "Fast Break" Russell, Steve "Jolting" Johnson, Scott "Killer" Kjelgaard, Terry "Sinker" St. Clair. Not pictured: John "Bullet" Barrick and Charles "Preposterous" Poupard.

Reminder

The Public Mail Office, in Building 1153-T, is open for walk-in requests on Wednesdays only from 1 to 4 p.m.

Since the Public Mail workload is very heavy with approximately 15,000 letters annually, employees are asked to help Mrs. Edith Watts by adhering to the 1 to 4 p.m. walk-in hours.

In Memoriam

Nolan I. Jones, Assistant to the Chief, Acquisition Division, died June 13 in Williamsburg Community Hospital. He was 60.

Jones joined the Langley staff in August 1967 and served as a contract specialist, procurement analyst, Head of the Viking Contract Section and Head of the Projects and Services Contracting Branch, in addition to his present job. He was involved in the negotiation of research contracts and made significant contributions in the field of contract management.

"A measure of Nolan's contribution was the high regard in which he was held by his working associates," said a co-worker in the Acquisition Division. "He was a person of high integrity and was thus an inspiration to all of those with whom he came in contact. He will be missed by all of us."

Jones earned a bachelor of general education degree in 1964 from Omaha University. He retired from the U.S. Air Force in 1965 after 21 years of service.

Happenings

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

LAA LUNCH COUNTER will close July 15 to make preparations for the upcoming Carnival.

ATLANTIC CITY TRIP. The last bus trip to Atlantic City was so successful that LAA has a three-day, two-night trip planned for August 5-6. For more details and reservations, call the Activities Office, ext. 3139. Deadline for reservations is July 21.

NAGS. The National Association of Government Secretaries will meet July 19 at 6:30 p.m. in the Hampton Holiday Inn. Vivian Merritt, an Equal Opportunity Specialist at Langley, will present an overview of the Federal Women's Program and the EEO Program. The cost of the roast beef or pork tenderloin dinner will be $7.50. For reservations call Reachie Hall, ext. 2150, by 12 p.m. July 18.

NASA DOG TRAINING. The NASA Dog Training School is registering a novice obedience class Tuesday, July 19. This class is structured for owner and dog or puppy who have completed a puppy or basic control obedience class and will offer off-lead control (with distractions) for use at home or for obedience competition, retrieving and hand signals. Personnel interested in scheduling a tracking class or enrolling in the novice class should contact Doris Bryan at 898-6273 after 5 p.m.

FOOTBALL TICKETS. William and Mary 1983 season passes to William and Mary football games will be offered again this year by LAA. Reservation sheets are now available in the Activities Office to sign up for football season passes. For $20 each you, your family and friends can enjoy four Saturday afternoons of exciting college football **PLUS** receive an exclusive coupon booklet from Tidewater area businesses valued at $100 for **every** ticket purchased. For more information call the Activities Office, ext. 3139.

TENNIS COURTS are now secured with a card lock system. Persons wishing to use courts during the workday may obtain a card in the Activities office with a returnable $5 deposit. Those who wish to use courts over the weekend may make arrangements with office and pick up card, with returnable deposit, on Friday afternoon. These cards are to be returned to the office the first working day following use.

– photo by Hubert Lloyd

Rep. Harold L. Volkmer (third from left), Chairman of the House Subcommittee on Space Science and Application, and seven other committee members, including (from left) Rep. Manuel Lujan and Rep. Herbert Bateman, were at Langley July 27 to preview the National Transonic Facility. In this photograph, the congressional delegation is briefed by Ed Bruce prior to climbing into the slotted-wall test section of the NTF, where some of the world's advanced research on aircraft and space vehicle equipment will be studied and tested. Richard Petersen (second from right) also briefed the delegation on a variety of space and aviation research projects underway at the center.

CARNIVAL RAFFLE TICKETS are now on sale in the LAA office. Raffle prizes are $100, $500 and $1200 Friday night; $100, $500 and $1500 Saturday night. You meed **not** be present to win these prizes. Both nights will feature $25 drawings on the half hour and $50 on the hour. Winners must be present for these drawings.

ACTIVITIES CENTER will be closed on weekends when no activities are scheduled. LAA has provided a soft drink machine in the picnic area. Bathroom facilities are available on the grounds as well as shower facilities in the building.

CHRISTIAN SINGLES. Bradford Wayne Huffman, Attorney at Law, will speak to the Peninsula Christian Singles July 28. The meeting begins at 7:30 p.m. at the Family Life Center behind Liberty Baptist Church. Huffman will talk on "Wills, Pre-Nuptial Agreements." Visitors are welcome and free babysitting is provided.

HONEY BUNCH. The NASA-Langley Apicultural Club will meet Monday, July 18, from 7 to 9 p.m., in Building 1209, Room 180. After a brief business meeting, honey from the club hive will be extracted.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83–44 -- Engineering Technician (2 Positions), GS-0802-5 or 6, Office of Director for Systems Engineering and Operations, Facilities Engineering Division, Construction Branch, Closes July 18, 1983.

83–45 -- Aerospace Engineer, AST, Materials and Structures, GS-0861-7, Office of Director for Structures, Materials Division, Advanced Materials Branch, Closes July 18, 1983.

83–46 -- Aerospace Engineer, AST, Materials and Structures, GS-0861-7, Instrument Research Division, General Research Instrumentation Branch, Materials Characterization Instrumentation Section, Closes July 18, 1983.

83–47 -- Program Analyst, GS-0345-11 or 12 or Computer Systems Analyst, GS-0334-11 or 12, Office of Director for Systems Engineering and Operations, Facilities Engineering Division, Engineering Administration and Scheduling Branch, Closes July 18, 1983.

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Key Positions

Wayne D. Goff has been selected Head, Fabrication Support Group, Electronics Packaging Development Section, Electronics Technology Branch, under Competitive Placement Plan 82-34.

Earl S. Knight has been selected Supervisory Quality Assurance Specialist, Quality Assurance and Inspection Office, Fabrication Division under Competitive Placement Plan 83-35.

Used Car Rates Reduced

The Langley Federal Credit Union is sponsoring an Avis Used Car Sale July 15 and 16 for members only. One and two year old, fully equipped Avis used rental cars will be sold at up to $400 off sticker prices. A list of cars is available in the credit union office.

In addition, the Board of Directors has reduced used car loan rates for cars sold during the sale and the following week, meaning more savings for LFCU members.

Loan rates will be as follows: 36 months - 13 percent APR, 42 months - 13.5 percent APR, 60 months - 14 percent APR. If you already have a Loanliner on file at LFCU, you will not have to fill in an application. You can pick up the car at the lot if you have insurance.

The sale will be held on the Avis car lot located at 3555 Military Highway in Norfolk. LFCU will provide free shuttle service from the Riverdale Branch. Sale hours will be 9 a.m. - 6 p.m. Friday and Saturday. LFCU loan officers will be available Friday, 9:30 a.m. - 6 p.m., and Saturday, 9 a.m. - 6 p.m. Refreshments will be served and tickets will be given for prize drawings after the sale.

25th Anniversary
1958-1983

swap and shop

FOR RENT

Sandbridge: cottage, 3BR, LR, DR, Kit, AC, phone ½ block from ocean, $450 per week, reservations limited. Call Kent, 420-8391, Virginia Beach.

WANTED

Someone on the 7:30 a.m. shift to car pool from Dutch Village Apartments on Logan Place or from the Harpersville Rd./Warwick Blvd. area of Newport News. Call Greg Buck, ext. 3984, or 599-3139;

Driver for car pool from Macon Road, Roberta Drive, Whealton Road area to West area on 8 a.m. shift. Call A. Schy, ext. 4591.

Apprentice male desires to rent room near ODU starting in September. Chris Edwards, ext. 2592 or 596-9650.

Recent Retiree

Marguerite C. Williams, Financial Management Division, retired June 30.

LAA Sponsors Contest

Enter the Carnival Poster Contest!

The winning poster will be used to advertise the Carnival. Prizes will be awarded for the most original poster to three age groups: adults, children under 16 and children under 12.

Submit your entry to Fran Sabo, Mail Stop 286, Building 1212, by 8 a.m. August 2.

cafeteria menu

WEEK OF JULY 18—22

MONDAY: Old Fashioned Bean Soup; Chuckwagon Steak; Sliced Pork BBQ; Ham & Cheese Omelet. Snack Bar: Beef & Cheese Club; Chicken NASA.

TUESDAY: Beef & Barley Soup; Baked Filet of Fish; Chicken Chow Mein; Veal Cordon Bleu. Snack Bar: NASA Sub; Knockwurst on Bun.

WEDNESDAY: Fresh Vegetable Soup; Fried Scallops & Cole Slaw; Grilled Chopped Steak; Hot Pork Sandwich. Snack Bar: Rib BBQ; ¼ lb. Cheeseburger.

THURSDAY: Corn Chowder; Meat Loaf; Polish Sausage & Sauerkraut; Braised Chicken Livers. Snack Bar: Chicken NASA; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Cowder; Fish Dinner; BBQ Breast of Chicken; Macaroni, Franks & Cheese. Snack Bar: Crab Cutlet Sandwich; Foot Long Hot Dog.

WEEK OF JULY 25—29

MONDAY: Minestrone Soup; Grilled Pork Chops; Seafood Quiche; Chicken Parmigiana. Snack Bar: Ham & Cheese Club; French Bread Pizza.

TUESDAY: Seafood Gumbo; Fried Filet of Fish; Hamburger & Eggplant Casserole; Beef Liver & Onions. Snack Bar: Chicken NASA; Grilled Cheese Sandwich; Steak & Cheese Sub.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; BBQ Beef & Rice; Ham & Macaroni Au Gratin. Snack Bar. Hot Italian Sausage; Beef & Bean Burrito.

THURSDAY: Turkey Noodle Soup; Salmon Cakes; Tamale Pie; Braised Chicken Livers. Snack Bar: Turkey Club; ¼ lb. Cheeseburger.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Braised Beef; Baked Chicken & Spanish Rice. Snack Bar: Polish Sausage on Bun; Tacos.

Retirees Die

Charles Watkins, a mathematician who retired in 1966, died Monday, June 20, at the age of 76. Upon his retirement he was assigned to the Dynamic Loads Division.

Alvin T. Verell, 73, died June 23. He retired from the Fabrication Division in June 1972.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 15

July 29, 1983

Largest Shuttle Payload Now At Launch Site

The largest payload yet planned for the Space Shuttle is now at the Kennedy Space Center, awaiting preparation for its scheduled launch in April 1984.

Called the Long-Duration Exposure Facility (LDEF), the payload will be filled with almost 50 passive experiments when it is deployed from the Shuttle Orbiter's payload bay by the remote manipulator arm.

Once deployed, LDEF and its scientific and technical experiments will be left in Earth orbit for about one year. At the end of that time, the facility will be retrieved by another Orbiter and returned to Earth.

All experiments will then be returned to their investigators for analysis, and the LDEF structure will be refurbished for use on a second Shuttle mission.

The LDEF structure, a 12-sided, open-work cannister, is made of aluminum rings and longerons (fore-and-aft framing members). LDEF is 9.14 meters (30 feet) long and 4.27 meters (14 feet) in diameter.

Nestled inside a special air-conditioned container, LDEF was shipped by boat from Langley, where it was built, to the Florida launch center. The trip down the Intercoastal Waterway took nine days to complete.

LDEF will spend the next several months in a Spacecraft Assembly & Encapsulation Facility. Late this year, it is scheduled to be moved to a preparation facility for final processing and installation of its trays and their experiments. Just before launch, it will be placed inside the Orbiter's payload bay on the launch pad.

The structure will hold 76 separate experiment trays, 72 around its circumference and two on each end. The trays measure 1.27 x 0.97 m (50 x 38 in.), and they come in three depths: 0.08, 0.15 and 0.3 m (3, 6 and 12 in.).

If Shuttle schedules hold firm, LDEF will begin its first mission into space from KSC next April 28.

– photo courtesy of KSC

NASA's Long-Duration Exposure Facility (LDEF) arrived at the Vehicle Assembly Building turning basin at the Kennedy Space Center in Florida June 30. Snug inside its special air-conditioned container (white structure at top center), LDEF made a nine-day journey from Langley, where the Shuttle payload was built, down the Intercoastal Waterway aboard a Landing Craft, Utility. LDEF is scheduled to be left in Earth orbit for about a year after its delivery to space aboard a Space Shuttle mission scheduled for next spring.

Nominations Open For Fellowships

NASA is beginning its review and selection process for candidates for the following Career Development Fellowship Programs:

- Stanford and MIT Sloan
- MIT Advanced Study Program
- Dryden Memorial Fellowship
- Harvard Management Development, Advanced Management, Senior Executive Fellows, and Senior Managers in Government Programs
- Carnegie Mellon University Senior Executive Seminar
- Maxwell Mid-career Development Program, Syracuse University
- Simmons Program for Women
- Industrial College of the Armed Forces

NASA's preferred grade level for most of these programs is GS-14 and above, except for the Simmons which is 12 and above.

Employees who are interested in being considered should call Joyce Wright, Training and Educational Services Branch, ext. 2611, for program information and specific eligibility requirements. Nominations close August 29, 1983.

Wickens To Discuss Advanced Passenger Trains

In recent years high speed trains have successfully revitalized railway services in many countries. One approach, which has been followed by British Railways, has been to develop advanced trains that can run on existing tracks, according to Dr. Alan H. Wickens of the Railway Technical Centre in Derby, England.

Wickens will discuss "Creating the Advanced Passenger Train" at a Langley colloquium Monday, August 8. The lecture will be held in the Activities Center at 2 p.m., followed by a question and answer session and an informal discussion in the Langley Room.

In his lecture, Wickens will examine the technical problems of high speed train operation, particularly in the field of vehicle dynamics and will show how the scientific approach, familiar to aerospace engineers and scientists, has led to significant progress.

Wickens joined British Railways Research Department in 1962 as Head of the Dynamics Section, where he initiated a fundamental research program into the dynamics of railway vehicles. The success of this research resulted in the 1968 approval for the advanced passenger train and Wickens was appointed Director of Advanced Projects to lead the development team. In 1976 he was appointed Director of Laboratories responsible for mechanical, electrical and civil engineering and scientific research. He was chairman of a committee on research into interaction between vehicle and track at the Office of Research and Experiment of the International Union of Railways from 1970-78.

Wickens was awarded honorary degrees of Doctor of Technology by the Council for National Academic Awards and a Doctor of Science at Loughborough University of Technology in 1978.

He has worked with Sir W. G. Armstrong, Whitworth Aircraft Lts.; Canadair Lts.; and A. V. Roe and Co., Ltd., on structural dynamics and aeroelasticity of aircraft and missiles.

Langley Staff Donates Blood

Langley employees, contractors and retirees donated 339 pints of blood during the July 13 visit of the American Red Cross Bloodmobile.

Achieving gallon status were:

11 gallons — Paul Culotta and C. M. Hudson.

10 gallons — Robert P. Davis.

8 gallons — Engene Bunting and Carleton Holleman.

7 gallons — Joseph Powers.

6 gallons — John Kortum.

5 gallons — Jarrell Elliott, Joseph Hickman and Mary Saylor.

4 gallons — Robert Bryant, Bryce Kepley and Marvin Rhodes.

3 gallons — Carl Larsen, Fred Beissner, James Williams and Paul Kidder.

2 gallons — Kim Schroeder and Kelli Willshire.

Donating blood for the first time were John Barthelemy, Sandy Webb, Sally Watson, Bart Newland, Bruce Ballai, Ronald Deans, Carey Buttrill, John Rodgers, Kathi Porter, Ronald McCandless, Robert Hall, Robert Kudlinski, Randy Simons, Diane Nortness, Bernard Lobracco, Lise Crowe and Karin Cornils.

The Red Cross Coordinator was Marge Turner and the NASA Coordinator was Virginia Jones. Typists were Octavia Judge and Judy Wainwright. Coffee and doughnuts were furnished by the Langley Federal Credit Union.

The next opportunity to give blood at Langley will be September 14.

Retirement Party

Russell Garel, Research Information and Applications Division, will be honored at a retirement social August 10, at 4:30 p.m. in the Activities Center. The cost of the hors d'oeuvres social will be $6, including gift contributions. Gift contributions are welcome. A cash bar will be provided. Send reservations to S. Watson, Mail Stop 426, by August 3.

Recent Retirees

Ernest Dennis, Jr. and **Jesse Pittman,** Research Information and Applications Division, retired July 29.

Joseph Briggs, Operations Support Division, retired July 29.

Retiree Dies

Arthur K. Grow, who retired from Langley in 1969 after 28 years of service, died July 9. He was 74. At the time of his retirement, he was assigned to the Research Equipment Mechanical Section, Research Support Dividion.

Key Position

Leonard V. Clark has been selected Technical Assistant to the Director for Electronics under Competitive Placement Plan 83-29.

Upcoming Workshops

Advanced Materials/Structures Technology for Rotorcraft, August 17—19, 1983, Langley Activities Center, Building 1222. Contact Robert Huston, ext. 2283.

Optical Data Processing, August 30—31, 1983, Langley Activities Center, Building 1222. Contact Robert Stermer, ext. 3777.

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 115, telephone 3006.

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.

Langley Has Second Highest Percentage of Applicants

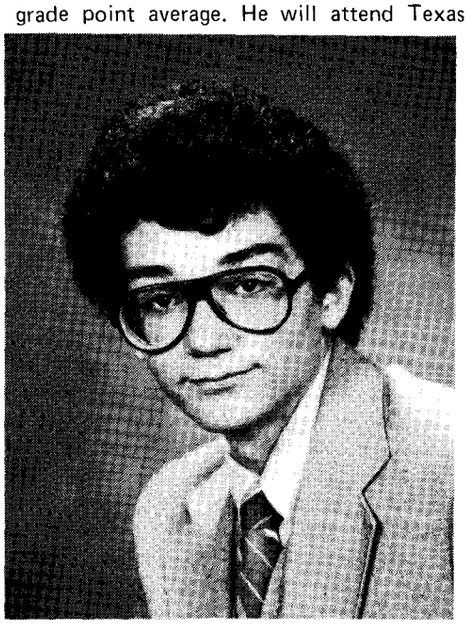
NASA Dependents Receive College Scholarships

James Odis Pendergraft, son of Mr. and Mrs. Odis C. Pendergraft of Newport News, is one of two NASA dependents to receive scholarship awards from The NASA College Scholarship Fund, Inc. The $1,500 renewable college scholarships were made possible by an endowment from Pulitzer Prize winning author, James Michener.

This past spring The NASA College Scholarship Fund, Inc., a Texas non-profit organization, was established to award scholarships to qualified dependents of NASA and former NASA employees. Three hundred ninety-seven applications were received and the top 20 candidates were recommended to the Board for selection. The other recipient is Paul A. Schliesing, son of Mr. and Mrs. John A. Schliesing of Houston, Texas.

Michener gave two reasons for his generous gift to NASA employees -- The first, he holds the people of NASA in high esteem for their good work through the years and, the second, he thinks it is important for education to go forward in this country.

The two NASA dependents will use their scholarships to further their education in the fall. Schliesing, whost father is assigned to the Structures Division at the Johnson Space Center, graduated first in his class with a 4.0 grade point average. He will attend Texas A&M where he will study science and mathematics. Pendergraft, whose father is an aerospace engineer in Langley's Transonic Aerodynamics Division, graduated second in his class with a grade point average of 3.95 and will study computer engineering at Virginia Polytechnic Institute.



Pendergraft has won highest honor awards in history, French, English, religious studies, advanced biology and advanced calculus. He received and award from the Engineers' Club of the Virginia Peninsula as the most promising engineering student from Peninsula Catholic High School. He was editor-in-chief of the school yearbook, president of the National Honor Society, city treasurer and Boys Nation nominee in the 1982 Boys State and is included in "Who's Who Among American High School Students" and "America's Outstanding Names and Faces." He also is an Explorer Scout, a National Merit Scholarship finalist and recipient of two merit scholarships.

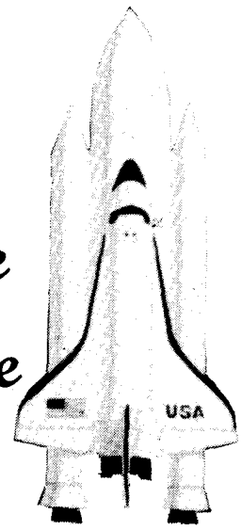
The Board and the Scholarship Committee were extremely impressed with the quality of the applicants. For example, many were in the top 5 percent of their classes; most scored about 1300 (out of a maximum of 1600) on the Scholastic Aptitude Test; many had grade point averages above 4.0 on a 4.0 scale - due to having taken honors courses; and most were heavily involved in outside activities. Pendergraft scored 1580 on his SAT and Schliesing scored 1410.

The Board was also pleased with the response of 397 applicants by location. Applicants were generally proportionately representative of the NASA centers as the following table shows:

Center	Percent
Johnson	18.89
Langley	18.64
Lewis	16.12
Kennedy	12.85
Goddard	10.33
Marshall	7.81
Ames	4.79
Unidentified	4.53
Dryden	2.02
Headquarters	1.26
Vandenburg	1.26
NSTL	1.00
White Sands	.50

The two scholarships are renewable each academic year to a maximum of $6,000 over six calendar years. Additional scholarships are expected in future years.

Space Shuttle Update



Preparations for the eighth Space Shuttle launch are proceeding at a record-setting pace this week at the Kennedy Space Center.

The Orbiter Challenger was processed a full week ahead of schedule and was moved into the Vehicle Assembly Building Tuesday, July 26. It's trip between buildings, in fact, took only 15 minutes.

Challenger was to be mounted to the External Tank and the Solid Rocket Boosters Tuesday, and then subjected to the two-day interface test to make certain the propellant tanks are firmly attached.

A meeting scheduled for yesterday, July 28, was to decide on firm launch dates for the eighth and ninth missions. Assuming that the August 20 launch date remains firm for STS-8, Challenger will be moved to the launch pad Monday, August 1.

The Tracking and Data Relay Satellite, deployed from STS-6, achieved its proper orbit June 27, but it is not yet operating as well as it should be. The satellite is required by Spacelab, major payload of the STS-9 mission, and that launch, now scheduled for September 30, could be delayed until October 30.

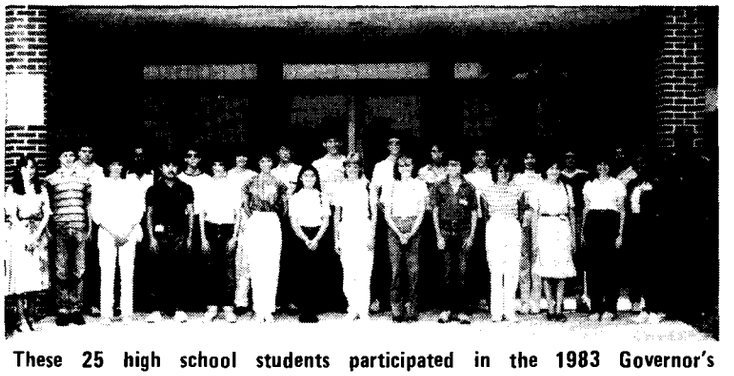
Summer Programs Flourish At Langley

– photos by Ronnie Booth, Hubert Lloyd and Fred Jones

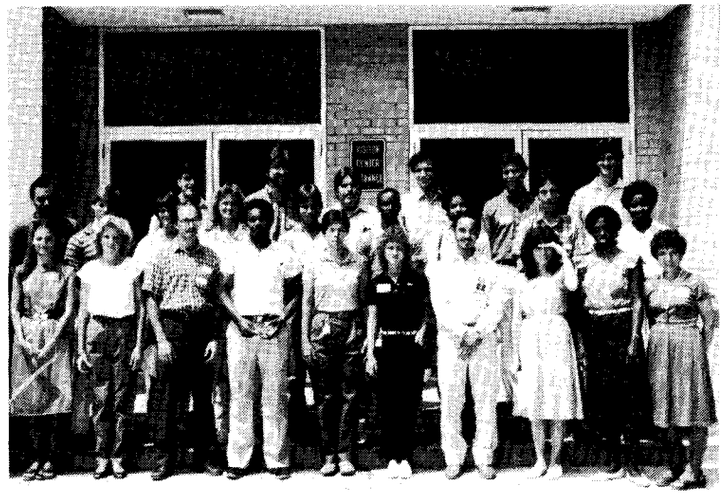
These William and Mary Law School students are part of the 12-week Summer Law Student Program at Langley in which the students are given practical experience in the public practice of law. The experience is in the general legal-procurement area, and the patent, data and copyright areas. From left to right are: (front row) Mary Mastrobattista, Bruce Callai, (second row) Barbara Spotz, Bart Newland, Kitty Devoid, and Kathleen Crotty.

These students were part of Hampton Institute's Summer Training Program from Dual/Degree Engineering Program and from selected departments of the Natural Sciences. The purpose of their nine week training program was to acquire hands-on experience in their fields of study, to obtain exposure to the wide array of technical expertise and modern facilities at the center and to broaden their educational experiences and career choices. From left to right are: (front row) Marion Boone, Carmela Edmunds, Catherine Henderson, Claude Braxton, (back row) Charles Boyd, Eric Byrd, and Charles Gray. Students not pictured are Karen Frazier, Julie Williams and Keith Dixon (who is found in the Regular Summer Program picture).

These 15 high school students will have been at Langley for eight weeks at the end of their stay. They are participating in the Summer High School Apprenticeship Research Program (SHARP), which allows juniors and seniors with exceptional academic achievement and strong career objectives in science, mathematics or engineering the chance to work with an engineer or scientist in the student's career interest area, to see the applications of many concepts studied in the classroom and to allow opportunities to gather information about related career areas which might reinforce or broaden a student's career objectives. From left to right are: Sharon Cummins, Melissa St. John, Teresa Fishburn, Katherine Khoshaba, Mark Williams, Rose Porter, (second row) Stanley Smeltzer William Allison, Charles Chase, Vaughn Walston, (third row) Thomas Estok, Joe Kenyon, James Bradshaw, Soloman Ashby and James Watson.



These 25 high school students participated in the 1983 Governor's School for the Gifted Program which ran for six weeks. This is the second year Langley has participated in the program which provides 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. It included curriculum particularly in engineering, mathematics and computer science. From left to right are: (front row) Nancy Kent, counselor, Brian Freer, Tina Messner, Jong-June Kim, Michael Freel, Melissa Chapman, Janet Soong, Kelli Bullard, Susan Stewart, Kenneth Mayer, Denise Winfield, Emily Scott, Karen Brown, Dorothy Byrd, Roger Hathaway, Director, (back row), Michael Jackson, Jerome Fowlkes, George Palmer, Elizabeth Camp, Jeffrey Rothman, Edward Strasser, Kevin Kinzie, Matthew Le Tourneau, Andrew Kronzer, Kathryn Reyburn, Samuel Wallace, and Mark Holmes.

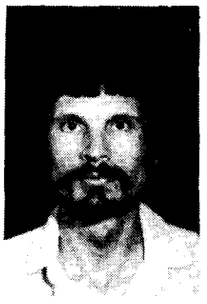


The Regular Summer Program, under the direction of the Staffing and Special Programs Branch, Personnel Division, consists of 50 engineering, professional administrative and clerical positions which are staffed by undergraduate and graduate students. In the left photo, from left to right are: (front row) Laura Class, Therese East, Keith Dixon (Hampton Institute), Catherine Maksymiuk, Jackie Schaede, Gayle Allen, Kimberly Richards, Donna-Lyn Mears, Vivian Parrous, (second row) Brian Von Kleeck, Cheryl Drak, Therese Van Petten, Steven Moses, Bret Marks, Katherine Edwards, Shelly Smith, John Wilson, (third row) Meechye Windom and Dwayne Wesley. In the right photo from left to right are: (front row) Sandra Whitworth, Debra Sarrett, Keith Foster, Alvin Cross, Gail Guynn, Lori Weaver, Patrick Gerdes, Kezi Shevket, Kim Parker, Linda Pennington, (second row) Stuart Baldwin, Michael Powell, Anne Hunt, Justine Lotkowictz, Bret Marks, Jerry Cuffee, Arenetha Charles, Patrick Dearie, Sharon Joyner, (third row) Robert Rhyder, Joe Dody, Ramon Sager, Steven Moses, Kurt Neitzke and Ted Vidourek. Not pictured are: Denise Rohlf, Linn Svensson, Jay Kniffen, Molly Loving, Sandra Poleksy, Myra Rogerson and Nancy Kent.

The Summer Youth Employment Program includes 20 clerical aids referred to the center by the Virginia Employment Commission. The program's objectives are to give the students insight into full-time government opportunities after graduation, help supplement the center's staffing needs during the summer months, help students enrich their career goals with specialized training and genuine work opportunities and earn money for further education. From left to right are: (front row) Tracey Ridley, Paula Kiser, Melanie Northam, Susan Daniels, Cathy Whitley, Aveen Brown, (second row) Anita Owens, Leila Holt, Lisa Younger, Sinita Carter, Kelli Hicks, Anthony Clarke, Beverly Mason, and Angela Pittman. Not pictured are: Angelia Debrew, Annette Debrew, Sonya Saunders, Mary Sheridan, Ronda Tilley and Kim Wooten.

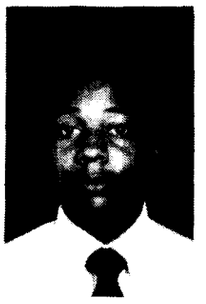
These college and university faculty members were appointed as Fellows, in the NASA/ASEE Summer Faculty Fellowship Program, to spend ten weeks in cooperative research and study with professional peers at Langley. The program, supervised by the American Society for Engineering Education (ASEE), will enhance the competence for research and teaching in their subject area. From left to right are: (front row) Dr. Shantilal Shah, Dr. Robert Melton, Dr. Moti Rustgi, Dr. Barbara Graham, Dr. Moonis Ali, Ms. Thelma Taylor, Dr. Jason Gilchrist, Dr. Yogendra Kakad, Dr. Jeffrey Kelly, Dr. Alfred Loos, Dr. Willard Stanback, Dr. Gene Goglia (Co-Director of ASEE Program), (second row) Dr. R. Schowengerdt, Dr. Kenneth Demarest, Dr. Duc Nguyen, Dr. Michael Sims, Dr. Randolph Coleman, Dr. Kyra Stephanoff, Dr. William Rasdorf, Dr. Daniel Collins, Dr. Donald Shillady, Dr. Ahmed Hassan, Dr. Samuel Massenberg (University Affairs Officer; Coordinator for ASEE Program), (third row) Capt. Thomas McKnight, Ms. Jacquelyn Long, Dr. Patrick Barber, Dr. Finis Schneider, Dr. Marc Williams, Dr. Dennis Wilson, Dr. John Ogg, (fourth row) Dr. Michael Doria, Dr. Larry Wilson, Dr. John Reissner, Dr. Luke Burke, and Dr. Ronald Welch.

Welcome New Employees

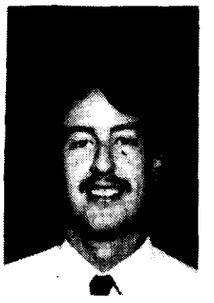


Thomas P. Charlock

Peter G. Coen



Francis A. Greene



Ronald S. McCandless

Leigh A. Smith

Lujza Receives A Warm Welcome To Langley

— by Kathy Edwards

With fluency in French, English and her native Spanish, 17-year-old Lujza (Luke-sa) Marielle Ollivier Toledo is an intelligent, interesting and personable young lady. She left her home in Mexico on June 18 to take another step toward her goals which include working and "a good personal life at the same time. I want a job that I like and enjoy working in," she said.

She enjoys math, her chosen field, and does well in it and her other classes at the Lycee Franco Mexicain School in Mexico City. At this private French school, she has been continuously working hard, and this hard work is reflected by her excellent grades, especially in math and the physical sciences.

Her professors feel she is an excellent student and wrote in their letters of recommendation that "she is a very serious student, very brilliant and obtains excellent written results in all fields, particularly in the scientific disciplines."

Lujza was chosen as part of the International Summer Student Program, which is in its first year, after an invitation from NASA Headquarters was sent to the Mexican Foreign Ministry. The Foreign Ministry then forwarded the invitation to the Education Organization, who requested candidates be selected from different schools in the system. Lujza was selected as her school's representative. Her paperwork was then submitted to NASA Headquarters where she was chosen from among five others on the basis of her academic achievements, letters of recommendation, ability to speak English, and field of interest. In addition to Lujza, there is a student in the program from Germany who is assigned to the Goddard Space Flight Center.

The daughter of Maurice Ollivier of French decent but born in Mexico, and Marcia Toledo of Mexican decent, she has a brother, 14, and a sister, 11. Her father is a buyer for department stores and her mother is the director of the Foreign Press Center in Mexico. It is her mother who has encouraged her to attend college in the United States when she graduates and who is currently looking for a scholarship for Lujza. And Lujza doesn't seem to mind the idea of coming to the United States.

"I like the United States. The thing I like most is the people. They are very friendly."

She also commented that she likes the people at the center because "when you walk past someone they look at you and say hello; in Mexico they look straight ahead."

Dr. John Raney, head of the Flight Systems Branch, has taken her to Busch Gardens and water skiing and she says everyone has done something to make her feel happy and comfortable while she's been here. "I'm having a very good time." She smiled. She hardly stopped smiling the whole time we talked, now that I think about it. Although one would picture someone of her intelligence as being "stuffy," she maintains a light-heartedness and doesn't seem to take herself too seriously.

She does take her work seriously, however. If she didn't she wouldn't be at Langley today. Working under Raney and closely with Sharon Padula, an aerospace technologist-mathematician. Lujza has been learning graphics and how to operate computers and run programs, and studying the Fortran language.

During her stay in the United States, she has been staying with Rosa Webster, a staff assistant in the Office of the Director for Structures.

When Lujza returns to Mexico City August 6, perhaps she'll take more knowledge home with her than she had when she left, but one thing is certain, each person that she came into contact with will not soon forget that serious 17-year-old Mexican student with the warm personality.

Winners Announced

Ronnie Henk. Facilities Engineering Division and **Leonard Kopia,** Flight Electronics Division, are the June and July winners of $20 given to car pool participants by the Langley Exchange Council.

Happenings

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

VOLUNTEERS are needed to sell raffle tickets and to work at the LAA Carnival August 26 and 27. Call Fran Sabo, ext. 3611; Gene Hicks, ext. 3737; Bob Huffman, ext. 2127; or Ernie Green, ext. 2312, if interested in helping. Call Betty Farmer, ext. 2062, if interested in displaying arts and crafts.

CARNIVAL TICKETS are available for $1 each from all Monarch contestants, LAA Board Members, members of LAA sponsored clubs and activities and the Activities Center. Each ticket allows the purchaser to cast one vote for the Carnival Monarch. Please fill in your choice on the ticket stub when purchasing your ticket.

NASA NIGHT AT THE BALL GAME. LAA again is sponsoring a free evening at the ball game for you and your family and friends. The August 10 game between the Peninsula Pilots and Kinston Blue Jays has been designated as NASA Employees/Contractors Night at the War Memorial Stadium. The game begins at 7 p.m. Prizes will be given away during the evening. Tickets are free at the Activities Office or at the gate upon presentation of NASA or contractor badge. Rain date is Aug. 11.

SPECIAL LUNCHEON FOR "ANNIE" is being planned for parents who would like to save on costs of taking children to see the performance. The luncheon will be held Saturday, August 6, at 12 p.m. The meal will consist of salads and sandwich makings at a cost of $13.50 for adults and $9.50 for children (3-12). Since this is a special reduced price, tickets can only be purchased at the box office. If you need any further information, please call the Activities Office, ext. 3139.

DISCOVERY, a human relations goup for single people will meet at 7:30 p.m. Friday, August 12, at the Unitarian Fellowship of the Peninsula, 415 Young's Mill Lane, Newport News. The topic for discussion will be: "Jealousy: mine and/or yours. How do you deal with it? Are you the jealous type?" Bring snacks or beverage to share during the social time which precedes and follows the discussion. Attendance fee is $2. If you want more information, call 877-5791.

CAR PASSES for viewing the eighth launch of the Space Shuttle, STS-8, now scheduled for August 20 at 2:20 a.m. from the Kennedy Space Center, are available from Ann Suit, ext. 3967.

THE GEORGE WASHINGTON UNIVERSITY (GWU) School of Engineering and Applied Science at NASA Langley Research Center plans to offer a new set of courses leading to the master of engineering administration degree beginning in the fall semester 1983. Interviews for prospective students will be arranged Wednesday, August 10, and Thursday, August 11, at Langley. If you are interested in entering this program, or desire further information on the GWU programs, call the GWU-NASA Office at ext. 3124.

BOWLING NEWS. The NASA Tenpin Bowling Conference will hold its annual organizational meeting in the Activities Center Hampton Room at 4:30 p.m. August 16. All teams wanting to bowl in the league for the 1983—1984 season must be represented. There are some vacancies for new teams and individual bowlers for next season. If you want to bowl in the league next season you should attend the meeting or contact Bill Good, ext. 3234, or Marge Mikula, ext. 4145, before the meeting day. Teams bowling in the conference next season will be determined on a first come, first served basis. Business to be conducted at the meeting will include starting time, schedule, fees and rule changes.

CARNIVAL RAFFLE TICKETS are now on sale in the LAA office. Raffle prizes are $100, $500 and $1200 Friday night; $100, $500 and $1500 Saturday night. You need **not** be present to win these prizes. Both nights will feature $25 drawings on the half hour and $50 on the hour. Winners must be present for these drawings.

Clark Receives Cooperative Education Award

Cooperative education at NASA Langley isn't new. It's been around since 1952, and for 21 of those 33 years Malcolm Pat Clark, supervisory employee development specialist, has been involved with it.

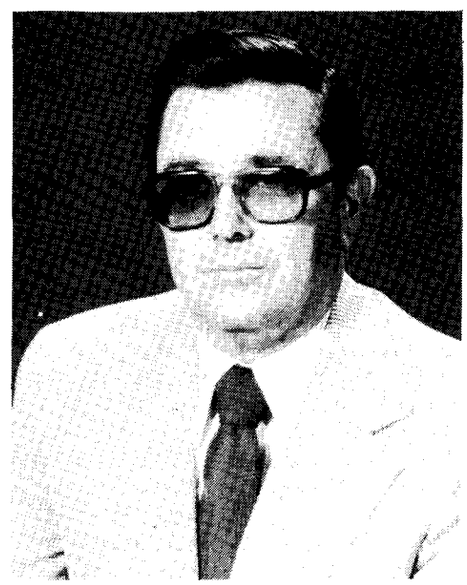
Last month, Clark, who is responsible for developing and administering the center's training programs, was recognized for his dedication to and promotion of the cooperative education program when he was awarded the prestigious Alvah K. Borman Award for cooperative education.

Clark said the award, presented by the American Society for Engineering Education, "really represents the center's contribution to cooperative education in the last 30 years." He commented that he gets the co-op students here, but "the supervisors of the students are the ones that make the program a success."

Clark is the first federal employee to receive the award that is named for the late Dean of Cooperative Education at Northwestern University and is presented to those who have made significant contributions to cooperative education.

In the past, for its contributions to cooperative education, Langley Research Center has received the Employer of the Year Award from Florida State University (1975) and Embry-Riddle Aeronautical University (1978), a Certificate of Appreciation from Auburn University (1981), and the John L. Chase Service Award from the Virginia Association for Cooperative Education (1981).

Under the continued leadership of Pat Clark, Langley's cooperative education program should remain one of the most outstanding in the nation.



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Thanks

Joyce Wright wishes to express her gratitude to those special people who sent cards, called, visited and made other expressions of sympathy at the time of her mother's death. "It may not cure the ache of loss, but the support of friends makes it more bearable," Wright said.

Nancy S. Johnson writes, "To each of you that gave blood on behalf of my mother, Ruth G. Smith, at the Bloodmobile visit July 13, thank you very much."

Aubrey Raiford thanks everyone at NASA who gave blood for his son, Randy Raiford.

Janet D. Mayo would like to thank all the Langley employees who donated blood for her husband, Robert F. Mayo.

Kenneth S. Bates writes, "I want to thank my friends, co-workers and family members who made my retirement dinner party at Fort Monroe Officers' Club an occasion so enjoyable, with the memories of the 42 years with NASC–NASA, looking forward to the retirement years. I was especially pleased that my youngest son, CWO-3 Keith, stationed in Korea, was able to attend. I would like to specially thank my co-workers who planned the evening, for the gifts, well wishes and fellowship."

swap and shop

FOR SALE

Vehicles

1972 Fury Station Wagon, AT, AC, PS, PB, Luggage rack, AM-FM radio, new tires, new insp. 122,000 miles, $550. Call Davis, 898-6834.

1982 Olds Omega, two door, AT, PS, PB, AC, AM-FM, V6 engine, wire wheels,

Real Estate

Lovely duplex with waterview in ODU/Larchmont area of Norfolk, maintenance free, two bedrooms each side, 11 percent loan, $82,000. Call 489-8315.

Highland Pk. Hampton: one mile from LAFB, from owner, 3 BR, OR, DR, KIT, 1½ B., FR w/FP, + extras, Cent. A/C, HT. DBL. GAR. Garden, Trees, Flowers, $69,900. Call Jesse L. Kent 851-1678.

FOR RENT

Sandbridge cottage 3 BR, AC, PH, WID, Liv, Kit, Din. 1/2 block from Ocean & Backbay $450 wk. reserv. limited contact G. O. Kent, Va. Beach 420-8391.

WANTED

Driver for car pool from Norfolk to West area on 7:30 a.m. shift. Call Hudgins, ext. 3072.

Townhouse, apartment or house to rent, 2 BR, between $200/$250 per month. Call 898-8280 Tuesday thru Saturday.

To join car pool to NASA from Norfolk - Ghent area 7:30 or 8:00 shifts, ext. 2246, ask for Suzanne.

cafeteria menu

WEEK OF AUGUST 1 — 5

MONDAY: Cream of Broccoli Soup; Veal Pramigiana; Tuna Noodle Casserole; Franks & Baked Beans. Snack Bar: Ham & Cheese Club; Grilled Cheese.

TUESDAY: Old Fashioned Bean Soup; Beef Back Ribs; Crab Cutlets; Chicken Pot Pie. Snack Bar: Rib BBQ; French Bread Pizza; Hot Italian Sausage.

WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; Pork Chow Mein; Chopped Steak. Snack Bar: Steak & Cheese Sub; ¼ Lb. Cheeseburger; Polish Sausage.

THURSDAY: Chicken Noodle Soup; Stuffed Bell Pepper; Fried Oysters; Braised Chicken Livers. Snack Bar: Chicken NASA; Beef & Bean Burrito; B.L.T..

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chicken Teriyaki; Grilled Ham Steak. Snack Bar: NASA Sub; Taco.

WEEK OF AUGUST 8 — 12

MONDAY: Chicken Gumbo Soup; Beef Stew; Knockwurst & German Potato Salad; Roast Pork & Dressing. Snack Bar: Grilled Cheese; Beef & Cheese Club.

TUESDAY: Beef & Vegetable Soup; Baked Lasagna; New England Scrod; Beef Liver & Onions. Snack Bar: Chicken NASA ¼ Lb. Cheeseburger; NASA Sub.

WEDNESDAY: Fresh Vegetable Soup; Pepper Steak; Mediterranean Vegetable Casserole; Chuckwagon Steak. Snack Bar: Rib BBQ; Turkey Club; Knockwurst on Bun.

THURSDAY: Ham & Lima Bean Soup; Swedish Meatballs W/Noodles; Broccoli & Cheddar Quiche; Braised Chicken Livers. Snack Bar: Steak & Cheese Sub; Foot Long Hot Dog; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Burrito & Spanish Rice; Salisbury Steak. Snack Bar: Crab Cutlet; Hot Italian Sausage.

High Quality Spruce Loaned to Ames

Langley recently loaned the Ames Research Center 5000 board feet of Sitka spruce to repair some stator blades (airflow stabilizers), in their 40′ x 80′ x 120′ wind tunnel.

In December 1982, a major incident seriously damaged all 90 fan drive system blades with less serious damage occurring to the stator blades. The fan blades are under contract for repair by a company in England, whereas the stator blades will be repaired with the spruce that was borrowed from Langley. Sitka spruce is a very high quality, close-grained, knot-free wood commonly used for fan blades and propellers and is grown only in northwestern Canada and Alaska.

Director for Systems Engineering, Robert Swain, said this exchange of materials "brings out the excellent working relationship between the centers. If we need something we can call on them, and if they need something they can call on us."

Chief of the Fabrication Division, Morris Phillips, said, "It took us three days to get it (the spruce) on the truck and ready to go. If they had to order it from someone, it would have taken approximately nine months to a year to get it. We had it in storage so we let them borrow it."

25th Anniversary
1958-1983

Ames will replace the borrowed wood whenever it is able because Langley still has 13,400 board feet left in storage, ample to meet all anticipated needs.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 16

August 12, 1983

Lamar Receives AIAA Aerodynamics Award

Dr. John E. Lamar, an aerospace engineer in the Transonic Aerodynamics Division at Langley, has received the Aerodynamics Award for 1983. The American Institute of Aeronautics and Astronautics presents the award "for meritorious achievement in the field of applied aerodynamics recognizing notable contributions in the development, application and evaluation of aerodynamic concepts and methods."

The certificate of citation presented to Lamar reads, "for developing aerodynamic analysis and design methods for wings having strong leading-edge-vortex flow and for developing and experimentally verifying favorable shaping of wings and strakes to exploit vortex flow for performance improvement." Given to Lamar at the AIAA's first Applied Aerodynamics Conference in Danvers, Mass., July 13, the award also consists of a medal and rosette pin.

A member of the Langley staff since 1963, Lamar leads the Vortex Flow Aerodynamics Group in the NTF Aerodynamics Branch. He is an international expert on the leading-edge suction analogy and its applications to configurations with leading-edge separation-induced vortex flows. In 1977 he developed the first design method in the United States for slender wings with leading-edge vortex flow, and produced a breakthrough in applying the vortex flow design to a tactical supercruiser.

A transonic experiment in 1978 verified his design to control the vortex-induced suction pressures which act on the forward facing wing surface to produce thrust, and hence substantially reduce drag and increase aerodynamic performance.

In 1978 Lamar developed practical analysis methods to estimate the forces and moments on wings and strakes which have leading-edge vortex flows at high angle-of-attack conditions and directed the experimental studies which validated the methods. These vortex techniques are widely used by NASA, military, industry and university aerodynamicists, and consequently Lamar is a frequent consultant.

From 1979–81 Lamar pioneered the development of a design method for obtaining optimum strake shapes to exploit vortex flow for favorable performance improvements, and carried out water and wind tunnel tests to verify the design techniques.

Lamar received bachelor of science degrees in aeronautical and mechanical engineering from the University of Alabama in 1962 and a master of science degree in aeronautical engineering form Alabama in 1963. He earned a doctorate degree in aeronautical

Continued on page 2.

– photo by Tom Foughner

Dr. John E. Lamar (center), an aerospace engineer in the Transonic Aerodynamics Division at NASA's Langley Research Center, has received the Aerodynamics Award for 1983. The award was presented in July by the American Institute of Aeronautics and Astronautics. Pictured with Lamar are Dr. Richard Bradley (left) of the General Dynamics Corporation and chairman of the AIAA Award Selection Committee, and Dr. James Campbell (right) of Langley and Chairman of the Applied Aerodynamics Technical Committee.

25th Anniversary
1958-1983

Langley Scientists Fly Advanced Remote Sensing Device

The most advanced laser atmospheric remote sensor in the world is now being flown onboard a NASA Electra aircraft, according to scientists at Langley. The system, which has the unique capability to remotely measure gas and airborne particle concentrations in the lower atmosphere, is an important part of an evolutionary program aimed at developing a space borne atmospheric monitoring system.

Scientists believe that only a space borne platform can offer the necessary global coverage to effectively monitor the Earth's continually changing atmosphere. These changes, which are caused by interplay between the Sun, atmospheric gases and airborne particles, chemistry, and dynamic motions require continual observation for complete understanding.

Langley's system, the Differential Abosrption Lidar (DIAL), is the most viable lidar – light detection and ranging system – technique for a space borne atmospheric monitoring system, which could be Shuttle- or satellite-based.

DIAL, which can transmit high intensity pulses of light in the ultraviolet, visible and near infrared areas, can remotely measure either ozone, sulfur dioxide, nitrogen dioxide, water vapor, temperature or pressure. Particle backscattering measurements are taken simultaneously with the measurements for a specific gas.

The DIAL system currently flying is not fully automated. Since a Shuttle- or satellite-based lidar system would have to be fully automated, two French scientific research agencies, CNES and CNRS, are working with Langley to develop an intermediate step between the present DIAL system and a Shuttle-based lidar system.

Their cooperative effort, which is unofficially referred to as ER-2 DIAL, will lighten DIAL instrumentation from its current 4,000 pounds to a lean 1,100 pounds. And most importantly, the new system will be fully automated. While this system is now in the engineering phase, once finished it will be flown on an ER-2 (advanced U-2) aircraft.

– *photo by Bill Salyer*

Dr. Joseph S. Heyman (left), Head of the Material Characterization Instrumentation Section, Instrument Research Division, is presented a Space Act Award by Richard H. Petersen, Langley Deputy Director. Heyman's monetary award was for his scientific contribution titled, "Pulsed Phase Locked Loop Strain Monitor," for which he was named NASA Inventor of the Year for 1983.

Key Position

Clayton James has been selected Supervisory Engineering Technician, Technical Support Section D, Tunnels Operations Branch, Operations Support Division, under Competitive Placement Plan 83-40.

Retirement Party

Mary J. Mesic, Management Support Division, will be honored at a retirement social September 14 at 4:45 p.m. in the Activities Center. The cost of the hors d'oeuvres social will be $6, including gift contributions. Gift contributions are welcome. A cash bar will be provided. Send reservations to Barbara Newton, Mail Stop 101 by September 8.

Lamar

Continued from page 1.

engineering from Virginia Polytechnic Institute and State University in 1973.

The author or co-author of over 50 technical reports and presentations, Lamar presented a paper last April at the AGARD Symposium on Vortical Type Flows in Three Dimensions held in The Netherlands, where he reviewed NASA Langley research in vortex flow aerodynamics. He holds a patent for a "Vortex-Lift Roll Control Device" and is an Associate Fellow of the AIAA.

Lamar and his wife, Joyce, live in Newport News. They have two children.

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 115, telephone 3006.

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 August 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, August 22; the morning session will begin at 8:30 and will include a presentation by the Public Affairs Office.

ELECTRONICS

A System for Intelligent Teleoperation Research Software Development Laboratory Network Systems Research Program

AERONAUTICS

Full-Potential Solutions for Supersonic and Hypersonic Configurations
Wing Leading-Edge Vortices at Supersonic Speeds
Supersonic Fighter Wing-Design Study

SE&O

Summary
NTF Update
Laser Velocimeter Seeding

PROJECTS

LDEF STATUS
LDEF Follow-On Mission

The afternoon session will begin at 1:30 and will include a presentation by Management Operations.

STRUCTURES

Duct Liner Design
Effects of Microcracking on Dimensional Stability of Resin-Matrix Composites

SPACE

Modeling the Growth of Thin Semiconducting Crystals
Inter-Comparison of GOES and Meteosat Visible and IR Data

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

Robert F. Mayo, 51, of the Loads and Aerolasticity Division, died Friday, August 5, in Riverside Hospital. He began his Langley career in March 1958 in the Pilotless Aircraft Research Division. He developed the original technology of the water-cooled copper electrodes that was used nationally to design electric arc powered heaters for reentry simulation.

Ronald D. Brown, a co-worker, said, "His contribution to the development of facilities evaluating materials for thermal protection systems for manned reentry was high-lighted by innovative engineering that developed configurations which could provide the necessary test conditions for certification of the Space Shuttle Thermal Protection System. His resourceful development and operation of facilities, along with his expertise in many fields, will be difficult to replace."

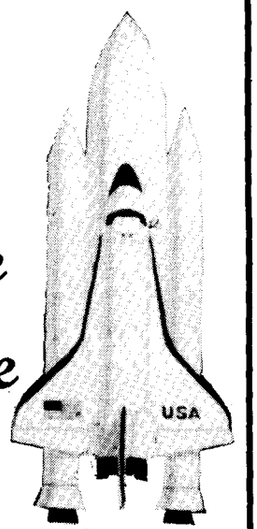
Speakers Bureau

George Hastings spoke to members of the Peninsula Kiwanis Club about planetary exploration July 1.

Ray Goodman gave a presentation on space exploration at the Hampton Public Library July 14 and "Our Future in Space -- What its Worth" at the Outdoor World Campground in Toano July 16.

The following Langley employees gave presentations on the Space Shuttle: **Bill Woods** spoke July 21 to members of the Society of American Military Engineers. **George Ware** spoke July 23 at the WWII Anti-aircraft Battalion Reunion and July 28 to members of Southside Lions Club in Chesapeake. **Roy Insley** spoke July 25 at the Richmond Day Camp Center.

Space Shuttle Update



The ground team at KSC continues to prepare Challenger for the eighth Shuttle flight in record time, despite a ten-day delay in launch date to August 30.

The delay is indirectly due to the payload problem of STS-6. On that mission, the Tracking and Data Relay Satellite upper stage failed to boost TDRSS to its planned orbit. Now that the satellite is in the proper orbit (several months later), activity has shifted to establishing communications links between the White Sands ground station in New Mexico and the tracking satellite. That activity, in turn, has fallen several weeks behind due to problems with some of the ground computer software used in the communications checks and with a couple power outages.

Because Spacelab, flying on STS-9, is to transmit its data to Earth through the Tracking and Data Relay Satellite, a "dress rehearsal" of the system during STS-8 is highly desirable and, therefore, the next mission was delayed.

As a result, STS-9 was also delayed, from September 30 to October 28. A Spacelab experiment requires that the mission be conducted during sky conditions of a new moon, so the STS-9 delay was more substantial.

Meanwhile, for the August launch, Challenger sits on the launch pad. Earlier this week, the INSAT 1-B (Indian) communications satellite was installed into the payload bay. That will be followed by the usual cargo interface tests, connecting ordinance devices at the pad and the loading of hypergolic propellants. Countdown operations will begin mid-afternoon, August 27.

Launch times and landings have changed slightly for the next mission. Launch is projected for 2:15 a.m. EDT with landing set for 3:39 a.m. EDT.

NASA Evaluating Atmospheric Measurement Techniques

—by Maurice Parker

NASA has begun a new phase of research in its continuing study of the global troposphere's chemistry and interaction with the stratosphere and with the Earth's land and oceans.

Approximately 20 scientists from 16 research organizations recently gathered atmospheric measurement instruments in a cluster of trailer-housed laboratories at the Wallops Flight Facility, on Virginia's Eastern Shore. They installed and operated these high-technology instruments for the first time in a coastal, nonurban environment.

Called the Global Tropospheric Experiment, the three-phase program is expected to expand through the next decade to learn more about the troposphere and, particularly, how human activities are affecting that portion of the total atmosphere that is closest to Earth.

The first phase of the experiment is developing and validating ground-based measurement techniques for identifying trace species (gases and aerosols) in the troposphere's chemical cycles. Later phases will lead to the implementation of a long-range cooperative research program between scientists from NASA, the National Science Foundation, the National Oceanic and Atmospheric Administration, other government agencies and foreign research institutions.

The experiment is managed by the Langley Research Center as part of the Tropospheric Chemistry Program of the NASA Office of Space Science and Applications in Washington, D.C.

The immediate task of the scientists is to develop, test and evaluate techniques that will achieve, under field conditions, the extreme sensitivity required to measure concentrations of key chemical species in the lower atmosphere. These trace species can have extremely low concentrations, yet still exert great influence on the composition of the troposphere.

The tests are called intercomparisons because different techniques are used to measure a particular trace specie. Special attention is given to the measurement of hydroxyl and nitric oxide. Other meteorological and chemical data will be analyzed to help interpret any differences between the techniques being tested.

Human activities have a strong effect on the global atmosphere. Prime examples are the increasing level of carbon dioxide, caused mainly by the widespread burning of fossil fuels, and the probable depletion of ozone in the stratosphere through photochemistry based on nitrogen and halogen compounds. Other gases, such as methane and nitrous oxide, are also believed to be increasing.

The Global Tropospheric Experiment reflects growing concern about the atmosphere's lower region. While measurements have been made of specific urban pollution areas, no global study has yet been initiated.

The Wallops-based instrument intercomparisons will last about one month. The instruments will then be evaluated and, when judged to be field-ready, will be installed aboard an aircraft for a series of airborne intercomparisons. Flights are planned from the island of Barbados in the West Indies, flying in the tropical boundary layer over the ocean and over tropical forests. The tropical climate will expose the instruments to a wide range of water vapor, marine and continental aerosol, and natural hydrocarbon concentrations.

A third series of instrument and technique intercomparisons will be conducted over the mid-continental United States. Again installed aboard an aircraft, the instruments will be flown in the upper troposphere, where irregularities in the boundary between the troposphere and the stratosphere provide a wide range of concentrations of ozone and other key species.

At the end of the three series of intercomparisons, NASA scientists will carefully analyze the results, which will provide guidance as to what techniques to select for later phases of the total experiment.

Long-range plans call for global aircraft sampling in the late 1980's, followed by space-based measurements in the early 1990's. Both of these phases of the experiment will focus on widespread and systematic investigations of the principal processes that govern the key chemical cycles in the global troposphere.

NASA Editors Hold Conference

– photo by Bob Nye

The NASA center publication editors held their second annual conference at Langley August 2 and 3. Center publications represent one of NASA's largest continuous source of information on agency programs and plans. The purpose of the conference was to discuss problems commonly shared by editors, such as news and photo exchange and dessemination and publishing procedures. Coordinator of the conference was Jean Saunders (second from left). Editors attending were (front row) Dick House, Jet Propulsion Laboratory; Leslie Vock, Kennedy Space Center; Margie Glazer, Ames Research Center; Lisa Monti, National Space Technology Laboratories; (back row) Carl Jones, Marshall Space Flight Center; Brian Welch, Johnson Space Center; Dave Thomas, Goddard Space Flight Center; and Paul Farace, Lewis Research Center.

Air Force Cadet Enjoys Summer at Langley

— by Kathy Edwards

Amy Swett, a 20 year-old Air Force Cadet, came to Langley June 26 from the U.S. Air Force Academy in Colorado Springs, Colo.

The daughter of Barbara and Roland Swett of Anaheim, Calif., with a brother and sister who are 19 year-old twins, Amy is a mechanical engineering student at the Academy and was sent, from that department, to NASA-Langley. She is part of the Academy's summer program which sends outstanding cadets to organizations, such as NASA, to integrate what they learn at the Academy with "real" on-the-job experiences.

She had been working, until her departure August 5, in the Impact Dynamics Branch under Robert Thomson, branch head, and closely with aerospace engineer Karen Jackson. They were studying the abrasion and wear behavior of composite aircraft skin (the outer covering) and the crash worthiness of these composite materials. Amy found the job interesting and said she chose NASA over several other places because "it seemed like an interesting place and you hear a lot about NASA and the space program."

She found her perceptions of NASA to be true after her stay and found the people "interesting and very helpful."

She also said, the job "enhances the things you learn at school, such as how theories work. It makes you want to go back and study more."

She has to do plenty of that (studying) in order to remain in the Academy because it is a challenging school. Known as a training ground for officers, the cadets do the equivalent of five years of study in four years. The congressionally-appointed cadets are enrolled in technical subjects, military training classes and athletics. "It's definitely hard," Amy said.

When she graduates in May 1984, she will owe the Air Force five additional years and six if she chooses to go through undergraduate pilot training and become a transport and cargo plane pilot. In any case, after graduation, she will be a second lieutenant with a bachelor's degree in mechanical drawing.

With her intelligence and enthusiasm, along with this title and degree, she certainly should have no trouble attaining her goals.

NASA Holds Workshop on Advanced Technology for Rotorcraft

The Langley Research Center will host a Workshop on Advanced Materials/Structures Technology for Rotorcraft August 17–19. The three-day conference is being held at the request of the Informal Subcommittee on Rotorcraft Technology of the NASA Advisory Council -- Aeronautics Advisory Committee.

Approximately 35 specialists from five helicopter companies, the Army Applied Technology and Structures Laboratories and NASA will meet in the Langley Activities Center, Building 1222, to discuss potential improvements for the next generation rotorcraft (1990s), defining key technology areas necessary to obtain the improvements and mechanisms to develop the key technology. The objective of the workshop is to obtain recommendations from the rotorcraft industry and the Army that can be used to guide future planning of NASA rotorcraft programs.

Robert J. Huston, Acoustics and Noise Reduction Division, and Benson Dexter, Materials Division, will be co-chairpersons for the workshop.

NASA Art Displayed

Selected works from the NASA Art Collection will be featured at the NASA Langley Visitor Center August 5 – September 30.

The artworks capture moments in our nation's history of space exploration and are done in a variety of media.

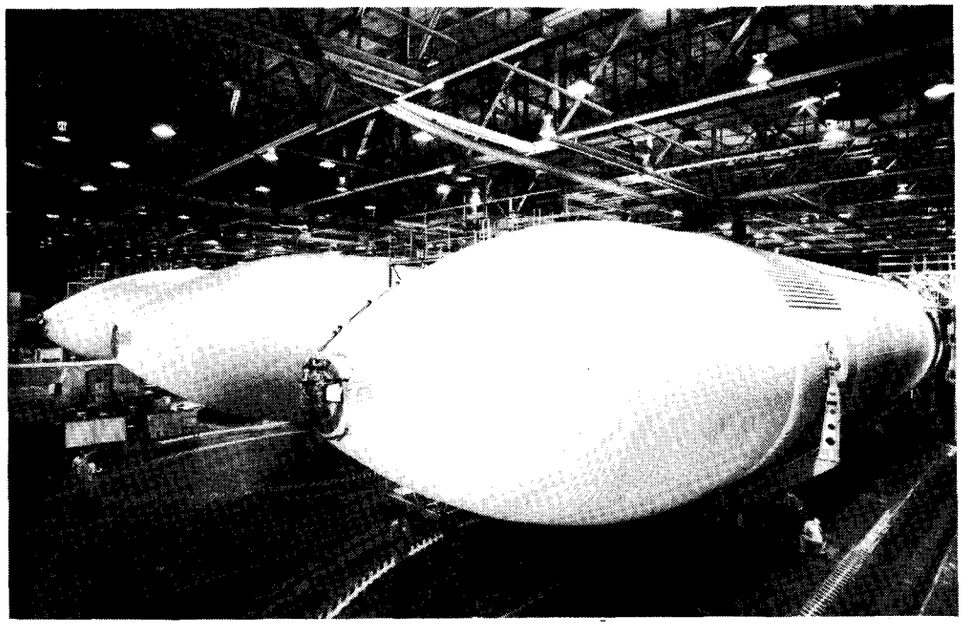
Works to be displayed include "Capsule Communicator" by Franklin McMahon, "Apollo Over the Moon" by John Rummelhoff, "First Steps" by Mitchell Jamieson, "Zero Hour Minus Five" by Chesley Bonestell, and "Simulator" by Lowell Nesbitt.

One of the highlights of the exhibition is the master study done by Robert McCall for his famous mural at the entrance of the National Air and Space Museum in Washington, DC. The 4 x 10-foot detail study depicts an astronaut standing on the lunar surface.

Works by artists Ted Wilbur, James Hendricks, Rolf Klep, Fred Freeman and Hereward Cooke will also be featured.

Retiree Dies

Alvin T. Verell, who retired as a model maker in 1972 after 29 years of service, died June 23 at the age of 73.



SHUTTLE TANKS IN FINAL ASSEMBLY. Shown here are the Space Shuttle external tanks that will fly on missions 11, 12 and 13. This is the first time that as many as three tanks have been in final assembly at the same time, a prelude to future increases in yearly production goals. The tanks are built by the Michoud Division of Martin Marietta Aerospace at NASA's Michoud Assembly Facility near New Orleans under the direction of Marshall. External tanks, 154.2 feet long and 27.5 feet in diameter, carry a combined total of over 526,000 gallons of liquid hydrogen and oxygen that fuel the Space Shuttle's three main engines.

NASA Sponsors Conference on Optical Information Processing

The second biannual conference on Optical Information Processing for Aerospace Applications will be held at the Langley Research Center August 30–31. The conference is sponsored by NASA's Office of Aeronautics and Space Technology in Washington, D.C., and Langley.

Over 100 engineers and scientists from government, industry and the academic community are expected to attend the sessions on optical data processing circuits, and optical data processing functions and processors.

Conference objectives are to bring optical data processing and aerospace systems engineers and scientists together to discuss current optical data processing technology and its continued potential in future aerospace applications, and to identify new research directions and potential applications to enhance the national position in advanced aerospace data system technology.

More than 25 papers will be presented during the conference, covering topics that include optical matrix operations, optical pattern recognition, incoherent optical processing, acousto-optical signal processors, integrated active optical devices, light valves and recognition of statistical patterns.

This is a photograph of an Integrated Optic Circuit for Data Processing. It performs complex mathematical functions, such as fournier transform. Similar circuits could perform matrix multiplication and inversion. Circuits such as this will be discussed at the conference. The photograph has been retouched to illustrate circuit functions.

Dr. Donald P. Hearth, Langley Director, will welcome attendees at 8:30 a.m. in the Activities Center. The keynote address, "Future Directions of Optical Processing," will be given by Dr. John A. Neff, formerly with the Air Force Office of Scientific Research and now with the Defense Advanced Research Projects Agency in Alexandria, Va.

The conference is open to anyone interested in optical processing. Registration will begin at 8 a.m. August 30 in the Activities Center lobby. The registration fee is $5. Reservations are being handled by Arlene Mitchell, ext. 3777.

The conference chairman is Robert L. Stermer and program chairman is Carl J. Magee, both of the Instrument Research Division.

Kerr Foundation Honors NASA Pioneer Webb

The Kerr Foundation has announced a $500,000 grant to the National Academy of Public Administration honoring retired NASA pioneer and Academy founder James E. Webb. Academy officials responded by establishing the Fund for Excellence in Government, with an immediate goal of $2.5 million. Contributions to the Fund will be invested to provide income in support of specific Academy initiatives to increase the effectiveness of state, local and national government.

The non-profit Academy was created in 1967 in Washington, D.C., as an impartial and trusted source of advice and counsel to governments and public officials on problems of public administration. Its objective is to serve in the field of public administration in much the same way the National Academy of Sciences and the National Academy of Engineering serve in the areas of science and engineering. Phillip S. Hughes, Chairman of the Board of the Academy said, "There could be no more appropriate tribute to James E. Webb than this grant by the Kerr Foundation to establish a Fund for Excellence in Government. Jim Webb has devoted much of his life to public service, as Director of the U.S. Bureau of the Budget, Undersecretary of State and, most notable, as Administrator of the National Aeronautics and Space Administration under Presidents Kennedy and Johnson. In all of these capacities he demonstrated not only his understanding of government, but also his deep interest in establishing institutions outside the government that are dedicated to improvement of government organization, management and operations."

Academy President J. Jackson Walter stated that "Income from the Fund will be used by the Academy to provide, among other things, for an annual lecture honoring Mr. Webb, to which will be invited outstanding leaders of the nation concerned with the improvement of government at all levels."

A sponsoring committee, now in formation, will be responsible for raising the balance of the Fund from corporations, foundations and individuals.

Webb is 76 and lives in Washington, D.C.

Retirement Party

William W. "Bill" Metz is planning to retire from NASA with 40 years of service on Friday, August 26. There will be an informal reception in the private dining room at the Cafeteria from 11 a.m. to 1:30 p.m. Gift donations may be sent to Sharon Hassell, Mail Stop 104, by Friday, August 19.

—photo by Larry Green

James F. Campbell, Assistant Head, NTF Aerodynamics Branch, TAD, and Nancy F. Dempsey who were married August 7, were recently honored with a party at the Activities Center. They are making their home in Williamsburg.

Happenings

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

VOLUNTEERS are needed to sell raffle tickets and to work at the LAA Carnival August 26 and 27. Call Fran Sabo, ext. 3611; Gene Hicks, ext. 3737; Bob Huffman, ext. 2127; or Ernie Green, ext. 2312, if interested in helping. Call Betty Farmer, ext. 2062, if interested in displaying arts and crafts.

CARNIVAL TICKETS are available for $1 each from all Monarch contestants, LAA Board Members, members of LAA sponsored clubs and activities and the Activities Center. Each ticket allows the purchaser to cast one vote for the Carnival Monarch. Please fill in your choice on the ticket stub when purchasing your ticket. Raffle prizes are $100, $500 and $1200 Friday night; $100, $500 and $1500 Saturday night. You need not be present to win these prizes. Both nights will feature $25 drawings on the half hour and $50 on the hour. Winners must be present for these drawings.

VIRGINIA MOTORCYCLE SUPPLY AND THE GOLD WING ROAD RIDERS ASSOCIATION present the 1st annual Dice Run Sunday, September 25, featuring tour pins, trophies, door prizes, 50/50 Drawing. The schedule is as follows:
8–11 a.m. -- Sign In, 8:30 a.m. -- First Bike Out, 11 a.m. -- Last Bike Out, 3 p.m. -- Deadline for Checkpoint Slips and 4 p.m. -- Awards Presentations.

Pre-registration is $5 per person/$7.50 per couple before Sept. 18; $6/$9 at gate. For more information contact Dennis McMillan, ext. 3421.

HONEY BUNCH. The NASA-Langley Apicultural Club Meet Monday, August 15, from 7 to 9 p.m. in Room 180, Building 1209. After a brief business meeting, a program on insecticide damage to bees and preventative measures, and fall requeening will be given. Arrangements for participation in the carnival will be made.

COUNTRY-WESTERN DANCE CLUB. If you are interested in dancing the Two-Step, Texas Polka, Cotton-Eyed Joe and others, once a month, join the NASA Country Club. See our demonstration at the NASA Carnival August 27 at 5 p.m. For information, contact Sam Sokol, Mail Stop 488, Jerry Nichols, Mail Stop 171, Claude Watts, Mail Stop 381.

THE LANGLEY KARATE CLUB is forming a beginning class in Cuong Nhu Karate starting Monday, August 22, at 5 p.m. Those interested please meet at the picnic area next to the Activities Center. For more information call Roy Albang, ext. 3737.

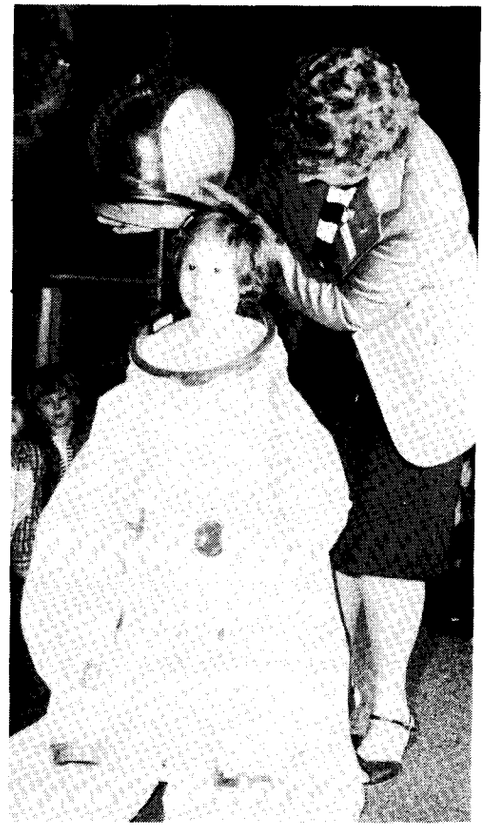
MUSEUM EXHIBIT. A "50th Anniversary of the Great Hurricane" exhibit will be featured at the Syms-Eaton Museum on Mercury Boulevard in Hampton from August 20–28. The hours are from 10 a.m. to 4 p.m. Monday through Saturday and 12 to 5 p.m. Sunday.

BOWLING NEWS. The NASA Tenpin Bowling Conference will hold its annual organizational meeting in the Activities Center Hampton Room at 4:30 p.m. August 16. All teams wanting to bowl in the league for the 1983–84 season must be represented. There are some vacancies for new teams and individual bowlers for next season. If you want to bowl in the league next season you should attend the meeting or contact Bill Goad, ext. 3234, or Marge Milula, ext. 4145, before the meeting day. Teams bowling in the conference next season will be determined on a first come, first served basis. Business to be conducted at the meeting will include starting time, schedule, fees and rule changes.

FOOTBALL TICKETS. Season passes to William and Mary football games will be offered again this year by LAA. Reservation sheets are now available in the Activities Office to sign up for football season passes. For $20 each you, your family and friends can enjoy four Saturday afternoons of exciting college football **PLUS** receive an exclusive coupon booklet from Tidewater area businesses valued at $100 for **every** ticket purchased. For more information call the Activities Office, ext. 3139.

THE FLU SHOTS. The Occupational Medical Center is giving influenza vaccine innoculations August 22 through August 26 during regular Clinic hours. Employees desiring these innoculations will be asked to sign an informed consent form.

ACTIVITIES CENTER will be closed on weekends when no activities are scheduled. LAA has provided a soft drink machine in the picnic area. Bathroom facilities are available on the grounds as well as shower facilities in the building.



Laura Tanner from Cooks Day Care Center in Hampton is trying on a space suit, one activity in the Visitor Center program, "Exploration 83." In the program, which is geared for 4 – 7 year olds, she'll also meet a robot, learn about travel in outer space and how an airplane really flies. Laura's father is John A. Tanner of the Impact Dynamics Branch.

OPTICAL DEMONSTRATION. The QMI long distance microscope will be demonstrated August 18 from 9:30 a.m. to 3:30 p.m. in Building 1230, Room 270. This system has a working distance from 22 to 77 inches and a magnification range from 3x to over 150x.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

LAA ALASKAN ADVENTURE UPDATE. This is the last call for the Alaska Tour. The tour has now been extended by two days (September 18-30) at no extra cost. Their are only six spaces available to LAA. If interested, please call the Activities Office, ext. 3139, or Ernie Greene, ext. 2312 or 838-0567, for details.

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OUR HERO. The prominant coach, manager, trainer and player of the Bar Phyles Softball Team, Robert Rhinehart, Atmospheric Sciences Division, is shown leading his charges in a post-game strategy session.

swap and shop

FOR SALE

Articles

Trampoline, 10 x 10' octagon shape, bumper pads, EC, $450. Call 877-2210.

Honey: new crop, locally extracted from Langley apiary, $4.50/quart. Call Harvey 723-7148.

Atari 2600 cartridges, $15 each: Defender, Pac Man, Missile Command, Raiders of the Lost Ark. Air rifles: Crosman Powermaster, $10; Daisy 700 Shot, $6; Bushnell 4X Riflescope, $4. Call Mathis, 722-7629.

Pr. Weinemann 27" alloy rims w/Campy hi-flange hubs. Regina 13-21 freewheel. $45 front, $50 rear, $80 both. Youngblood, 877-1224. 2

Vehicles

Schwinn Dirt Bike, EC, $85. Call 877-2210.

1976 MGB, spoked wheels, O/drive, lug. rack, AM/FM/CASS, $2,200 OBO. Call 827-8314.

1973 Audi, 100LS, 4 speed, new steel radial tires, battery under waranty, radio, good transportation, leaving area and must sell, $1,250 OBO. Call 489-8315.

WANTED

Driver for car pool from Norfolk to West Area on 7:30 a.m. shift. Call Hudgins, ext. 3072.

Ten-speed men's bike, in good condition, needed for college student. Call 723-0818.

cafeteria menu

WEEK OF AUGUST 15 — 19

MONDAY: Old Fashioned Bean Soup; Chuckwagon Steak; Sliced Pork BBQ; Ham & Cheese Omelet. Snack Bar: Beef & Cheese Club; Chicken NASA.

TUESDAY: Beef & Barley Soup; Baked Filet of Fish; Chicken Chow Mein; Veal Cordon Bleu. Snack Bar: NASA Sub; Knockwurst on Bun.

WEDNESDAY: Fresh Vegetable Soup; Fried Scallops & Cole Slaw; Grilled Chopped Steak; Hot Pork Sandwich. Snack Bar: Rib-B-Q; ¼ Lb. Cheeseburger.

THURSDAY: Corn Chowder; Meat Loaf & Onion Gravy; Polish Sausage & Sauerkraut; Braised Chicken Livers. Snack Bar: Chicken NASA; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; BBQ Breast of Chicken; Macaroni, Franks & Cheese. Snack Bar: Crab Cutlet Sandwich; Foot Long Hot Dog.

WEEK OF AUGUST 22 — 26

MONDAY: Seafood Gumbo; Beef Chow Mein; Baked Filet of Fish; Chopped Steak. Snack Bar: Hot Italian Sausage; Chicken NASA.

TUESDAY: Beef & Vegetable Soup; Tuna Noodle Casserole; Swiss Steak; Franks, Cheese & Bacon. Snack Bar: Steak & Cheese Sub; Turkey Club Sandwich; Foot Long Hot Dog.

WEDNESDAY: Fresh Vegetable Soup; Spaghetti and Meat Sauce Dinner; Roast Pork & Dressing; Seafood Quiche. Snack Bar: Rib-B-Q; B.L.T.; ¼ Lb. Cheeseburger.

THURSDAY: Minestrone Soup; Braised Short Ribs; Crab Cutlets & Cole Slaw; Braised Chicken Livers. Snack Bar: Ham & Cheese Club; Polish Sausage on Bun; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Pepper Steak & Rice; Chicken Cacciatore. Snack Bar: Chicken NASA; Taco; ¼ Lb. Cheeseburger.

Visitor Center Features "To Worlds Unknown"

Throughout August, the NASA Visitor Center is offering an incredible journey through our solar system. The unique video program, "To Worlds Unknown," lets you rediscover the planets and moons of our solar system as newly revealed by astronomers and NASA spaceprobes.

On your imaginary journey, you'll penetrate the intensely corrosive atmosphere of seething Venus, travel through Saturn's icy rings, and explore the mysterious canyons of Mars, considering the possibilities of life on the red planet. Your travels will take you to the Sun, with its surface temperatures of 10,000° F, and to the remote frozen planets of Neptune and Pluto, billions of miles distant from the earth.

You'll also learn about the Space Shuttle and future plans for manned space exploration.

"To Worlds Unknown" was designed and produced by the Hansen Planetarium in Salt Lake City with assistance from NASA. The 45-minute presentation will be offered each day in August at 2 p.m.

Thanks

William H. Michael, Jr. sends a note of appreciation to friends and co-workers who attended and participated in his retirement party. He sends special thanks to those who did the planning and took care of the arrangements. "The remarks and reminiscences invoked many fond thoughts of exciting research endeavors and good times during a most enjoyable career at NACA/NASA. Thanks for the memories," Michael said.

Retirement Party

Edward G. Fink, Richard H. Newman, Tazewell O. Reed, and **Carl H. Stafford,** who retired from Systems Development Support Section, will be honored with a party at the Langley Activities Center September 16. A cash bar will begin at 6:30 p.m. with a steamship round buffet at 7:30 p.m. The cost, including gift, will be $12 per person or $21 per couple. Gift only is $1 per person. Make reservation with Gayle Seigler, Rodney Smith, Dick Mills, or Scobie Johnson, ext. 2156, by September 8.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 17

August 26, 1983

-photo by Hubert Lloyd

Langley's 1983-84 Combined Federal Campaign committee was recently selected by Director Donald P. Hearth. From left are Frances B. Hartman, Financial Management Division, this year's Financial Chairman; Maurice K. Morin, Chief of the Analysis and Computation Division, Chairman; Robert L. James Jr., Manager of the Aircraft Energy Efficiency Project Office, Co-Chairman; and Donna Speller, ACD, Secretary. Absent from the picture are Jean Saunders, Publicity Chairman, and Gary Price, Langley's representative to the Peninsula CFC; both are from the Office of External Affairs.

Langley's CFC Goal is $195,000

Langley Director Donald P. Hearth has set a challenging goal of $195,000 for the 1983-84 Combined Federal Campaign and has appointed Maurice K. Morin, Chief of the Analysis and Computation Division, as Chairman.

Others appointed to the campaign committee are Robert L. James Jr., Manager of the Aircraft Energy Efficiency Project Office, Co-Chairman; Frances B. Hartman, Financial Management Division, Financial Chairman; Jean W. Saunders, Office of External Affairs, Publicity Chairman; Donna M. Speller, Analysis and Computation Division, Secretary; and Gary Price, Office of External Affairs, Langley's representative to the Peninsula CFC.

A one-day center-wide solicitation will be held Thursday, October 6, preceded by a kickoff meeting for division chairmen and key solicitors Monday, October 3, at 2 p.m. in the Activities Center.

Hearth asks all employees to maintain the center's tradition of being a leader in local CFC fund drives. As you consider your contribution, think about all the people that your dollars will help. Remember that most of the CFC gifts are used directly to make the Peninsula a better place to live and raise our families. Set the highest standards of citizenship and community support - Give generously to the campaign.

Carnival Events

FRIDAY

5:00 p.m. - Carnival opens
6:00 p.m. - $100 drawing
6:00 p.m. - Monarch crowning (to begin after drawing is completed)
7:30 p.m. - "Caravan East," dancers
9:00 p.m. - $500 drawing
10:00 p.m. - $1,200 drawing, grand prize
10:00 p.m. - Midway closes

SATURDAY

11:00 A.M. - Langley runners club, five mile race
12:00 noon - Carnival opens
12:00 noon - Softball game, NASA "Suds" vs Poquoson "Mr. C's" Field #1
1:30 p.m. - Directorate 4 x 440 relay race
2:00 p.m. - "Langley Lanciers," square dance club
5:00 p.m. - "Two-Step Panhandlers," western round dancers
6:00 p.m. - $100 drawing
7:30 p.m. - "Mystic Harem," dancers
9:00 p.m. - $500 drawing
10:00 p.m. - $1,500 drawing, grand prize
10:00 p.m. - Midway closes •

Employees can watch the launch of STS-8 at the Langley Visitor Center Aug. 30. The Visitor Center will open at 1 a.m. for countdown activities leading to the planned launch at 2:15 a.m.

The Visitor Center will also be open for the STS-8 landing scheduled at 3:35 a.m. Labor Day, Sept. 5.

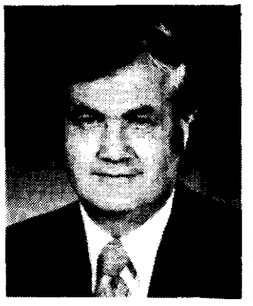
Williams to Teach at HI, Pauls Temporary Personnel Chief

-by Kathy Edwards

NASA Langley Research Center chief of personnel, William L. Williams, will leave his present job at the end of this month to teach at Hampton Institute for the next academic year.

Williams will be working under the Intergovernmental Personnel Act (IPA) which permits the assignment of federal employees to state and local colleges and universities, as well as certain other organizations and vice-versa.

Hampton Institute has received the services of loaned executives over the past few years from IBM, DuPont, Dow Chemical and other companies for a one- to two-year period. Williams will serve as NASA's visiting professor of personnel management.



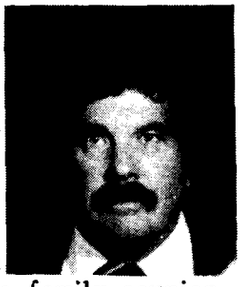
Williams **Pauls**

Having taught in George Washington University's graduate program in management studies since 1966, Williams will teach a full course load of personnel administration and general management courses. He will also assist in such areas as career days, inviting seminar speakers, developing additional cooperative efforts with community organizations, counseling business school students on possible career and specific course options and working with graduating seniors to assist them in their placement with the private and public sectors.

Sidney F. Pauls, staff assistant to the Langley director since 1980, will take Williams' place. Pauls began his career at Langley in 1963 working on various space related projects before becoming head, Analysis and Planning Group, Programs and Resources Division; head, Analysis and Programming Branch, Business Data Systems Division; then assistant chief of that division. He was assistant chief of the Programs and Resources Division from 1976 to 1980. In August 1980, upon his return from a special assignment at NASA Headquarters, he was named to his present position.

At the end of May 1984, Williams will resume his position as Chief of the Personnel Division.

In Memoriam



Ronald B. Amole, a program analyst in the Facilities Engineering Division, died from a heart attack August 13 in Lexington while attending a family reunion. He was 48.

A 1962 graduate of the NASA Apprentice School, Amole had worked at Langley since 1954. "Ron was in the Schedule Analysis and Control Office and had been assigned to project ACEE for the past several years," Raoul'd Price, a co-worker, stated. "He also served as an analyst for the modification of the Transonic Dynamics Tunnel."

Co-workers stated that Amole's congeniality and fabrication background enhanced his ability to plan the various center projects that he was assigned to during his years as a program analyst.

The ACEE Project Manager, Robert L. James Jr., said "Ron was a key member of the ACEE management team and his contributions will be missed. Ron was a joy to work with because of his outstanding personality and wit."

Amole graduated from Hampton High School in 1953 and served in the U.S. Army from 1959 to 1960.

Training Notice

If you will complete the requirements for your graduate degree program during Fiscal Year 1983, and **HAVE NOT** notified the Training Office, please call either Susan Little or George Allison, ext. 2611.

FAILURE TO CATCH fish can be from lack of knowledge as to where to fish, what to fish with, and the presence of obstacles which can harm the hook and line. Patience is also a necessary characteristic for a good fisherman. Likewise, most of life's failures can be traced to lack of knowledge, inability to avoid obstacles, and impatience.

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 115, telephone 3006.

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.

First Married Co-ops Contribute to Oshkosh '83

-by Kathy Edwards

Chris and George Rice were pleased in January 1981 when both of them came to Langley as part of the cooperative education program because they were planning to be married in August of the same year and didn't want to be separated. They weren't.

Majoring in electrical engineering at Mississippi State University, both were working in the Flight Control Systems Division as engineering student trainees until their final co-op period ended August 12. George worked in the Cockpit Systems Branch under Jack Hatfield, branch head, and Chris worked in the Applied Controls Branch in the Experimental Flight Systems Section under Gilbert Haynes, section head.

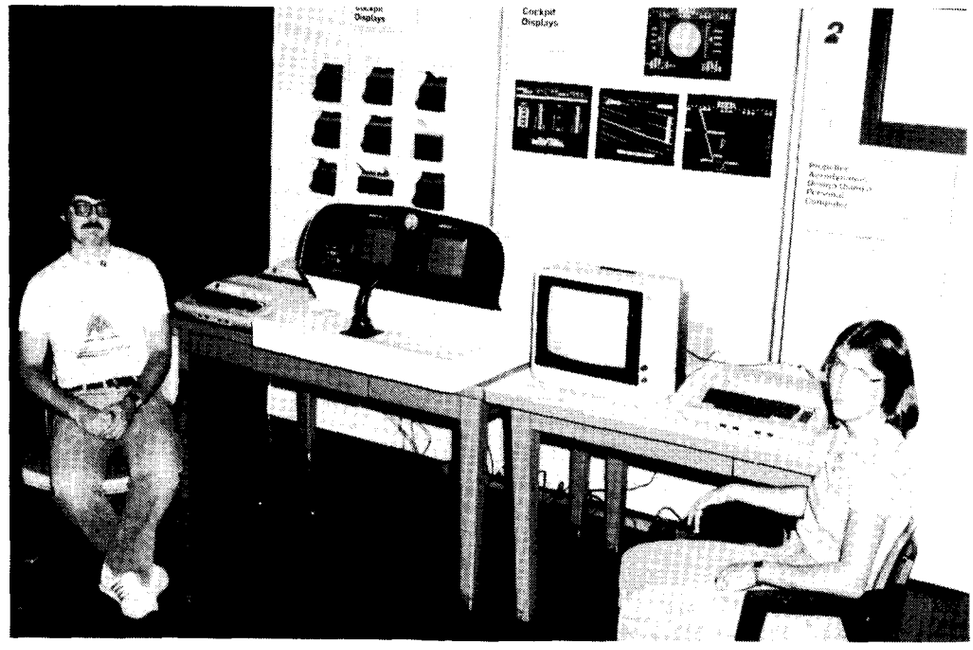
They agreed that being married to someone who is in the same field of work as you is good because it helps the relationship.

"It helps us because we know what the other is talking about, we can share our ideas and solutions, discuss what we're doing and get some help from each other," George said.

Chris, 19, and George, 22, will graduate in May 1984. Chris was allowed to skip first grade, and took a correspondence course instead of attending high school. As a result, she was able to finish in two and a half years, and therefore will finish college at a younger age than most.

Chris and George contributed to the Electronics and Flight Management Exhibit at the 31st Annual International EAA Convention and Sport Aviation Exhibition at Oshkosh '83, that ran from July 30 through August 6.

George created a series of flight displays and integrated them into a simulator to take to Oshkosh. These microcomputer graphic displays are seen in the cockpit and pictorially integrate information for the pilot in real-time.



-photo by Hubert Lloyd

George and Chris Rice contributed to the Electronics and Flight Management exhibit at the 31st Annual International EAA Convention and Sport Aviation Exhibition at Oshkosh '83, which ran from July 30 through August 6. Co-op students at Langley since January 1981, they just completed their final tour here August 12. They are seniors at Mississippi State University where they will receive electrical engineering degrees next May.

Hatfield explained, "George did some experiments to determine if a high level computer language could be used to program these displays, but determined the speed of the display when programmed with high level language wasn't adequate. Therefore, he decided to implement the displays in a computer language called assembly language."

Hatfield continued, "When programming with this language a high level of skill and expertise is required, which George had. Under a considerable amount of pressure because the time for Oshkosh was nearing, he put in a lot of extra time and came through. He developed four of the five displays exhibited at Oshkosh and worked with NASA engineers to help create a Benchtop Simulator/Demonstrator which is an airplane simulator that people at Oshkosh could 'fly.'"

Chris also was responsible for a major development. She converted a propeller design program that was in a large VAX-11/780 computer to run on an Atari 800 microcomputer and added graphic output to the program.

The purpose of "stuffing" all the data from the VAX-11/780 into a small personal computer is so people who build airplanes at home can have access to propeller designs. All they have to do is buy a small personal computer and the appropriate software and they have information that they couldn't get as easily otherwise. Chris did all this work in the Applied Controls Branch under

Continued on page 7.

Night Launch and Landing Set for STS-8

A spectacular pre-dawn liftoff from NASA's Kennedy Space Center, Fla., will herald the start of the eighth Space Shuttle mission. Orbiter Challenger will conclude its six-day mission with the first ever landing in darkness at Edwards Air Force Base, Calif.

STS-8 will be commanded by Richard H. Truly, who was the pilot on the second Shuttle mission conducted in November 1981. Joining Truly will be pilot Daniel C. Brandenstein and three mission specialists: Dale A. Gardner, Dr. Guion S. Bluford Jr., who will become America's first black astronaut in space, and Dr. William E. Thornton.

Commander Truly is the only member of the STS-8 crew who has previously flown in space.

Launch of STS-8 is scheduled for August 30 at 2:15 a.m. EDT from Complex 39's Pad A. The launch opportunity on that day extends 34 minutes from 2:15 a.m. EDT until 2:49 a.m. EDT. Challenger will be launched into a circular 277.6 kilometer (172.5-statute mile) orbit with an inclination to the equator of 28.45 degrees.

Challenger is scheduled to end its 6-day, 1-hour, 10-minute flight with a landing at approximately 3:25 a.m. EDT on September 5, Labor Day, at Edwards Air Force Base. High intensity xenon-arc lamps will illuminate the runway for Challenger's first pre-dawn landing.

Mission specialists Bluford and Gardner will deploy the Indian National Satellite, INSAT-1B, from Challenger's cargo bay on the second day of the mission. A Payload Assist Module (PAM) will boost the satellite to a geosynchronous transfer orbit.

STS-8 CREW PORTRAIT. These five astronauts will be the crewmembers for STS-8, scheduled for launch August 30 at 2:15 a.m. EDT from Complex 39's Pad A at the Kennedy Space Center. STS-8 will be commanded by Richard H. Truly (center), who the pilot on the second Shuttle mission conducted in November 1981. Joining Truly will be pilot Daniel C. Brandenstein (left) and three mission specialists: Dale A. Gardner, William E. Thornton (both on back row) and Guion S. Bluford, who will become America's first black astronaut in space. The backdrop is a Challenger launch and the American flag.

Thornton will conduct medical tests to collect additional data on several physiological changes that are associated with the space adaptation syndrome.

Flight days three and four are scheduled for operations with the Payload Flight Test Article (PFTA) using the Canadian-built Remote Manipulator System (RMS). The 3,855.6-kilogram (8,500-pound) test article (3,383.8-kg -- 7,460 lb. test weight in flight) will be used to evaluate the robot arm while handling its largest payload to date, and simulate procedures to be used on a future Shuttle mission.

The dumbbell-shaped object will be used to simulate operations required to deploy Langley's 9,752.2 kg (21,500-lb.) Long Duration Exposure Facility (LDEF) and for the Solar Maximum Repair Mission, both currently slated for STS-13.

The test article, originally planned to be carried aboard Challenger on STDS-11, was substituted for the second Tracking and Data Relay satellite.

The aluminum and stainless steel structure is a passive payload, having no power or command interfaces with the orbiter. It is approximately 4.6 meters (15 feet) long and 3.96 m (13 feet) high and is equipped with two grapple fixtures to accommodate the arm. It will not be deployed.

Testing of the Tracking and Data Relay Satellite System (TDRSS) also will be conducted during the mission. The mission was extended a day to allow for more extensive checkout of the TDRSS.

Experiments mounted on a U-shaped pallet fixed in the

STS-8 INSIGNIA. The night launch of Challenger heading toward its third earth-orbital mission is featured in the official insignia for STS-8. The eighth flight is represented by eight stars of the constellation of Aquila, "The Eagle." The astronauts' surnames border the insignia.

cargo bay will record the effects on various Shuttle materials of oxygen atoms which bombard the vehicle in orbit, and the first living cells will be separated on the fourth flight of the Continuous Flow Electrophoresis System (CFES).

Of the 12 Getaway Special (GAS) canisters that will fly inside Challenger's cargo bay, eight GAS cans will contain specially-stamped postal covers. Experiments contained in the other four canisters will study making snow in space, gather contamination data, record exposure levels from Challenger's cargo bay on ultraviolet sensitive film, and determine if high energy particles encountered in space can cause errors in memory-type integrated circuits.

A Shuttle Student Involvement Project to evaluate whether or not biofeedback training learned on earth can be successfully implemented in the zero gravity of space will also be conducted on this mission.

Challenger will touchdown on the hard surface runway at Edwards Air Force Base very early on the morning of the sixth day of the mission marking the Shuttle's first landing in darkness.

High-intensity xenon-arc lamps will light the runway. In the event of cloudless skies over the airfield, the 800-million candlepower beams produced by each of the searchlights will be seen by the flight crew well before the orbiter enters the landing pattern.

Champine Detailed To EOP

Behind the doors of the Equal Opportunity Programs Office is a new equal opportunity specialist, Gloria R. Champine. She has been detailed to that office for the next six months, replacing Mary Jackson, who is Acting Federal Women's Program Manager at NASA Headquarters.

Champine is manager of the Federal Women's Program where she is involved in statistical studies on women in the workforce at Langley. "I firmly believe in advancement, both educational and job related, and preparing women for 'when the door opens,'" Champine explained. She is working to identify problem areas that impede the advancement of women and will recommend solutions to those problems. She plans to reactivate the Federal Women's Program Advisory Committee and develop an FWP-sponsored program in the fall. She is also assisting in the formation, execution and monitoring of the Langley Affirmative Action Plan with specific responsibility for action items relating to women.

Champine has worked at Langley since October 1959 and has seen many women move up to administrative and management positions. She is one who has been promoted from secretary, to administrative operations specialist, to program analyst, the position she held before her detail.

As program analyst in the Space Systems Division, she was responsible for planning, evaluating, analyzing and controling major elements of operating programs to assure that all research division objectives were met, particularly in the area of resources, both R&D and other fund sources.

As part of Champine's advancement, she was competitively selected to participate in the Civil Service Commission's Specialty Training for Entry Professionals (STEP) Program, a contract with the CSC to receive specialized training for a position that required a bachelor's degree. She graduated from that program in 1974.

The author or co-author of six technical publications, Champine received an award for establishing the NASA Implementation Plan for Office Management Procedures in 1974, an Outstanding Performance Award in 1977 and a Special Act Award in 1981. She is on the Board of Directors of the Virginia Aeronautical Historical Society.

Champine is married to Robert A. Champine, NASA's senior test pilot who is now retired. They live in Newport News.

-photo by Paul Bagby

NACA WOMEN CONSULTED ON LANGLEY HISTORY. These former NACA Langley women were interviewed July 26 by James Hansen concerning the changing role of women at the center from 1935 to 1958. Hansen, a contractor hired to write the history of Langley, plans to incorporate the interview into his chapter on World War II. Subjects the group discussed included backgrounds and education, life at Langley during World War II, diversity of jobs performed by women during the war and NACA promotion policies for women. Hansen observed that the women present at the meeting felt NACA's treatment of women was better than treatment of women by many other contemporary organizations. Pictured on the lawn at Langley's Technical Library are (from left) Helen Johnson, Kitty O'Brien-Joyner, Hane Moore, Marie Bird Allen-Burcher, Vera Huckel, Betty Toll, Helen Willey and Catherine Turner. Also attending the informal conference was Jane Hess, Head of the Technical Library. INTERESTING NOTE: Joyner was the first woman engineering graduate of the University of Virginia (1939).

Women's Equality Day, 1983

By the President of the United States of America

A Proclamation

The 19th Amendment to the Constitution, which gave women the right to vote, became law sixty-three years ago on August 26, 1920.

Since that important milestone in the history of the United States, women have used the ballot just as they have always used their energies and talents-to affect and improve our national life.

When the great philosopher and historian Alexis DeToqueville visited America, he took a long look at our way of life and wrote, "If I were asked . . . to what the singular prosperity and growing strength of that people ought mainly to be attributed, I should reply: To the superiority of their women."

Women have every reason to be proud of their contributions to every aspect of our society-science, space, government, business, medicine, education, health, and the family. And their contributions are growing.

We continue, as a Nation, to pursue equal opportunity and rights for all of our citizens, granting each person the chance to reach his or her goals.

On this occasion, it is appropriate that we recognize the accomplishments of the women of America and renew our efforts to ensure equal opportunity for all people in this great land.

NOW, THEREFORE, I, RONALD REAGAN, President of the United States of America, do hereby proclaim August 26, 1983, as Women's Equality Day. I call upon all Americans and interested organizations to mark this occasion with appropriate observances.

IN WITNESS WHEREOF, I have hereunto set my hand this 4th day of August, in the year of our Lord nineteen hundred and eighty-three, and of the Independence of the United States of America the two hundred and eighth.

Ronald Reagan

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83-57 -- AST, Technical Management; GS-0801-13 or 14; Office of Director for Systems Engineering and Operations; Facilities Program Development Office; Closes today.

83-58 -- Mathematician; GS-1520-11 or 12; Facilities Engineering Division; Structural Design Branch; Structural Engineering Section; Closes today.

83-59 -- AST, Earth Sciences Utilization GM-1301-14 or 15; Office of Director of Space; Atmospheric Sciences Division; Aerosol Research Branch; Closes September 2.

83-60 -- Supervisory Aerospace Engineer; AST, Aerostructural Dynamics; GM-0861-14; Office of Director for Structures; Structures and Dynamics Division Structural Dynamics Branch; Closes September 2.

83-61 -- Secretary (Stenography) GS-0318-6 or 7; Office of Director for Space; Atmospheric Sciences Division; Office of the Chief; Closes September 2.

Happenings

HAPPY HOUR has been cancelled for today.

VIRGINIA MOTORCYCLE SUPPLY AND THE GOLD WING ROAD RIDERS ASSOCIATION present the 1st annual Dice Run Sunday, September 25, featuring tour pins, trophies, door prizes, 50/50 Drawing. The schedule is as follows:

8-11 a.m. -- Sign In, 8:30 a.m. -- First Bike Out, 11 a.m. -- Last Bike Out, 3 p.m. -- Deadline for Checkpoint Slips and 4 p.m. -- Awards Presentations.

Pre-registration is $5 per person/$7.50 per couple before September 18; $6/$9 at gate. For more information contact Dennis McMillian, ext. 3421.

COUNTRY-WESTERN DANCE CLUB. If you are interested in dancing the Two-Step, Texas Polka, Cotton-Eyed Joe and others, once a month, join the NASA Country Club. See our demonstration at the NASA Carnival August 27 at 5 p.m. For information, contact Sam Sokol, Mail Stop 488, Jerry Nichols, Mail Stop 171, Claude Watts, Mail Stop 381.

MUSEUM EXHIBIT. A "50th Anniversary of the Great Hurricane" exhibit will be featured at the Syms-Eaton Museum on Mercury Boulevard in Hampton through August 28. The hours are from 10 a.m. to 4 p.m. Saturday and 12 to 5 p.m. Sunday.

AA meetings are held weekly. For further information, call ext. 3600 or 2605.

SCOTTISH FESTIVAL. Williamsburg will provide the perfect setting for the Scottish Festival September 24, a day-long celebration from 9 a.m. to 5 p.m. with authentic Highland music, food, games and competitive events. Families can enjoy a wide variety of colorful and exciting entertainment on the campus of the College of William and Mary. Adult tickets are $4, student tickets #3, and children's (6-12) tickets $2.50.

TENNIS COURTS are now secured with a card lock system. Persons wishing to use courts during the workday may obtain a card in the Activities office with a returnable $5 deposit. Those who wish to use courts over the weekend may make arrangements with office and pick up card, with returnable deposit, on Friday afternoon. These cards are to be returned to the office the first working day following use.

DISCOVERY, a human relations group for single people, will meet Friday, September 9, at 7:30 p.m. at the Unitarian Fellowship of the Peninsula, 415 Young's Mill Lane, Newport News. A social time precedes and follows a discussion period. Bring snacks or beverage to share. Attendance fee is $2. If you want more information, call 877-5791.

LAA TRIPS are planned as follows: Reading, Pa. shopping trip, October 28-30, cost $89; Washington, D.C., Redskins game, November 5-6, cost $119; and Atlantic City, N.J., November 18-20, cost $129. All costs are based on double occupancy.

TNCC. in cooperation with NASA Dog Training School, is accepting registrations for 8-week puppy and Basic control obedience classes in the College for the Young (starting with sixth grade) and adult Mini Course Program to be held Saturday mornings starting Sept. 24. These classes are an introduction to dog training and control and are structured for all breeds and mixed breeds (starting at 3 months). Instructor will be Doris Bryan. For more information, contact Jo Horvath, TNCC, 825-2936. The NASA Dog Training School is registering a novice obedience class Saturday, Sept. 24, immediately following the TNCC class. This class is designed for owner and dog who have completed a puppy or basic control class. For information regarding this class, call Doris Bryan at 898-6273 after 5 p.m.

BE LIKE THE SUN and the meadow, which are not in the least concerned about the coming of winter.

George Bernard Shaw

Married Co-ops

Continued from page 3.

the supervision of aerospace engineer Wayne Bryant.

In addition to their exhibits, George and Chris each had a part in the public forums held at Oshkosh.

George prepared a forum with aerospace engineers Anthony Busquets and Richard Hellbaum, titled "Microcomputer Graphics for Cockpit Displays," and did an oral presentation at Oshkosh.

Chris assisted Wayne Bryant in his forum, "Propeller Design, Personal Computers and You."

There has been a lot of excitement for them this year, and they have thoroughly enjoyed their stay at NASA.

"There are a lot of things offered -- a lot of variety," Chris said.

George added, "It's practical as opposed to theoretical (college) experience. We've learned a lot."

Concerning jobs after graduation, George says "we'll just have to wait and see."

The way things have been going for Chris and George, what they see will be good.

National Aeronautics and
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Hampton, Virginia
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Thanks

Yvonne Armstrong writes, "I want to thank all my friends and co-workers who contributed their time and efforts in selling raffle tickets for the 1983 LAA Carnival. I am appreciative of their support in my pursuit for the Carnival Monarch 'Crown'."

Eugene J. Hartmangruber thanks all those who have donated blood in his befalf. "The number of pints that have been donated more than paid back the amount I owned the Red Cross. I do feel very well now and can do most anything I want. Thanks to all," he said.

Speakers Bureau

Robert Baucom spoke August 8 to the Carrollton Lions Club about biomedical applications of composites.

Vivian B. Merritt gave a presentation on sex discrimination and sexual harassment at the National Association of Government Secretaries (NAGS) meeting at the Hampton Holiday Inn August 16.

Retiree Dies

Spurgeon B. Copeland, 72, died July 10. At the time of his retirement in August 1975, he was assigned to the operations Support Division.

25th Anniversary
1958-1983

Brown Bag Insight

A series of career development lectures will be presented by Tech International Corporation on Thursdays during the month of September, from 11:30 - 12 at the Activities Center (Building 1222). A question and answer period will be available.

The mini series is entitled, "Marketing Yourself in a Tightened Economy" and will provide you with specific tools and techniques to get you the right career position in the least amount of time.

September 8-Master Planning (outlining career goals)

September 15-Resume and Civil Service Form Construction

September 22-Specific Interviewing Techniques

September 29-Negotiating Techniques

Bring your own brown bag lunch. Beverage and dessert will be provided. For more information, call Louise Hamilton, ext. 2611, or Tech International Corporation at 595-0581.

cafeteria menu

Week of Aug 29 - Sept 2

MONDAY: Turkey Noodle Soup; Pork Chops; Beef Liver/ BBQ Beef & Rice. Snack Bar: NASA Sub; Knockwurst.

TUESDAY: Bean Soup; Rib Steak; Spaghetti; Chicken Pot Pie. Snack Bar: Chicken NASA Rib-B-Q.

WEDNESDAY: Vegetable Soup; Veal Parmigiana; Chicken Teriyaki; Ham & Macaroni. Snack Bar: Beef & Cheese Club; Hot Italian Sausage; 1/4 lb. Cheeseburger.

THURSDAY: Chicken Gumbo Soup; Salmon Cakes; Beef Tips & Rice; Braised Chicken Livers. Snack Bar: Polish Sausage; Beef & Bean Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Franks & Beans; Salisbury Steak. Snack Bar: Ham & Cheese Club; Taco.

Week of Sept 5 - 9

MONDAY: Have a Safe and Happy Holiday!!!

TUESDAY: Potato Soup; Braised Beef; Knockwurst Reuben; Turkey Breast Nuggets. Snack Bar: Chicken NASA; Grilled Cheese.

WEDNESDAY: Vegetable Soup; Corned Beef & Cabbage; Chicken & Dumplings; Chuckwagon. Snack Bar: Turkey Club; Rib-B-Q.

THURSDAY: Chicken Noodle Soup; Beef, Macaroni; Quiche; Braised Chicken Livers. Snack Bar: Chicken NASA; NASA Sub.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Beef Stroganoff; Baked Chicken Breast. Snack Bar: Fried Oyster Sandwich; Foot-Long Hot Dog.

swap and shop

For Rent

"Buzzards Roost" on Hatteras Island at Frisco: Oceanside, 50' house trailer, furnished, including dishes, etc., 2 BR, full bath, sun porch, outdoor shower, AM/FM stereo, walking distance to beach and fishing pier, 5 min. drive to Sport Fishing Center and charter boats, $160/wk., some weekends available. Call 826-6177.

Sandbridge: cottage with 3 BR, AC, phone, w/d, liv., kit., din., 1/2 block from ocean and Backbay, $450/wk., reser. limited, contact Kent, 420-8391.

Wanted

Ride from Norfolk/Va. Beach to West area on 7 or 7:30 a.m. shift, Mondays only. Call Hawkins, ext. 2384.

Driver for car pool from Norfolk to West area on 7:30 a.m. shift. Call Hudgins, ext. 3072.

Found

NASA 25-year pin found in Building 641 conference room. Call Brooks, ext. 2631.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 18 September 9, 1983

Whitehead Chosen as Director's Staff Assistant

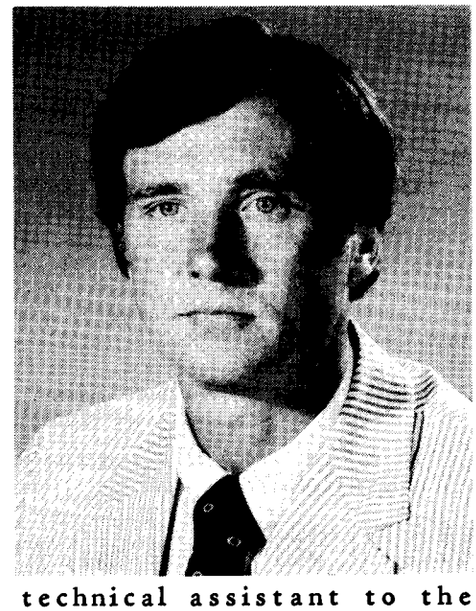
Dr. Donald P. Hearth, Langley director, has chosen Allen H. Whitehead, Jr., as his staff assistant. Whitehead, former technical assistant to the director for aeronautics, succeeds Sidney F. Pauls, who is now chief of the personnel division.

In his role as staff assistant, Whitehead will be responsible for assisting the director and deputy director in planning, coordinating and directing the center's research programs.

Whitehead began his NASA career in July 1962 as an aerospace engineer conducting experimental research in hypersonic aerodynamics and fluid mechanics. From 1972 to 1973 he participated in a management training program where he served as a technical assistant to the director for aeronautics. In that position he was responsible for participating in the coordination and management of four research divisions and a project office.

In 1973 Whitehead joined the aeronautical systems division where he directed NASA's air cargo systems studies. He was responsible for conducting and coordinating in-house and contracted systems design studies and research and technology activities; directing market analyses; initiating and maintaining liaison with the Department of Defense, the Department of Transportation, airframe manufacturers, airlines, air freight forwarders and others in the air cargo field; and providing general guidance and advocacy to the program.

In 1979 Whitehead became



technical assistant to the director for aeronautics where he assisted in all technical and administrative duties, monitored and evaluated progress of on-

Continued on page 2.

A message from your CFC Chairman

Help Alleviate Pain, Suffering and Despair

Within the next few weeks, Langley employees will be asked to contribute to the health and well-being of others through the Combined Federal Campaign. For many of us, the CFC drive is our once-a-year opportunity to help alleviate the pain, suffering and despair of millions throughout the world who are less fortunate than we are, and to help make our community a better place in which to live.

25th Anniversary
1958-1983

Our center goal this year is $195,000. A one-day solicitation campaign will be conducted Thursday, October 6. I suggest that you consider the payroll deduction method for your contribution as it requires only a small adjustment to your biweekly budget and provides a good record for tax purposes. Also, if you wish, you may support the organization of your choice by designating the recipients of your gift.

In deciding on your gift to the Combined Federal Campaign this year, I ask that you consider the following. In general, government is providing less support to health and welfare organizations. Our

Continued on page 4.

- photo by Hubert Lloyd

James O. Pendergraft accepts a NASA scholarship award from Paul F. Holloway, Langley's Director for Space, during a ceremony in the Visitor Center August 19. Pendergraft is one of two NASA dependents to receive $1,500 renewable college scholarships made possible by an endowment from Pulitzer Prize winning author, James Michener. Michener, who visited Langley several times while writing the book "Space," gave his generous gift to NASA employees because he holds the people of NASA in high esteem for their good work through the years and he thinks it is important for education to go forward in this country. Pendergraft will use his scholarship to study computer engineering at Virginia Tech. The other award recipient, Paul A. Schliesing of Houston, Texas, will study science and mathematics at Texas A&M. With Pendergraft are his brother, Matt, and his parents, Mr. and Mrs. Odis C. Pendergraft. Odis Pendergraft is an aerospace engineer in Langley's Transonic Aerodynamics Division.

Whitehead Named

Continued from page 1.

going research, served on a number of ad hoc committees involving technical and management decisions and was responsible for personnel functions associated with a staff of 300 employees.

Whitehead was born in Wilmington, N.C. He received a bachelor of science degree in mechanical engineering from Princeton University in 1961 and a master of science degree in aerospace engineering from the University of Virginia in 1965.

He is the author of numerous technical publications on fuelsaving concepts for transport aircraft, advanced transport designs and hypersonic aerodynamics and flow phenomena.

Whitehead and his wife, Pat, live in Yorktown. They have two sons and a daughter.

Langley Colloquium

Mark to Discuss 'Our Heritage in Applied Research'

To a truly remarkable extent, the recent history of technology can be traced to two revolutionary nonlinear discoveries that were made in the first three decades of the 20th Century: the theory of relativity and quantum mechanics. According to Dr. Hans Mark, NASA deputy administrator, these discoveries, as well as the ideas that led to them and those that subsequently evolved from them, form the heritage on which our technology today is based.

Using these two ideas and their related physics, Mark will offer his thoughts on future technology developments in microelectronics, lasers, molecular biology, composites, aviation and energy, during a Langley colloquium Monday, September 12, in the Activities Center. The lecture, "Our Heritage in Applied Research," will begin at 2 p.m.

Mark says that like the discoveries early in this century, there are now three other nonlinear discoveries on the horizon that may profoundly change the way we look at the world and at the universe. These discoveries are the space telescope, thinking machines and the search for extraterrestrial intelligence. He will discuss each of these briefly.

Mark has been deputy head of NASA since July 1981. He served as secretary of the Air Force from July 1979 to 1981; he had been under secretary since 1977. A physicist and nuclear engineer, he is former director of the Ames Research Center in Moffett Field, Calif.

Born in Mannheim, Germany, Mark became a U.S. citizen in 1945. He received his bachelor of science and doctorate degrees in physics from the University of California at Berkeley in 1951 and the Massachusetts Institute of Technology in 1954, respectively.

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 115, telephone 3006.

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.

Eighth Shuttle Mission Lauded

Challenger Ends Trip in Darkness

"A superb mission . . . very nearly perfect," is the way the eighth Space Shuttle flight was described just after Challenger materialized out of a moonless early morning sky and glided onto the landing strip at California's Edwards Air Force Base at 3:40 a.m. September 5.

The description was provided by Lt. Gen. James Abrahamson, NASA Associate Administrator for Space Flight, who also said that the mission logged "only about 18 anomalies; it's the cleanest mission yet."

One of those anomalies continues to be in communicating with the Tracking & Data Relay Satellite. While all of the mission tests were not perfect, NASA management thinks that the satellite will be usable for the next mission. The problems are with ground hardware and procedures, not with the satellite.

Another anomaly continues to be in the waste management system, which Abrahamson said he is "crusading" to have corrected as quickly as possible.

The five-man crew of Challenger completed all of the mission's technical and scientific duties with seeming ease, a reflection of their many months of practice on Earth and of the quality of the Orbiter's systems.

STS-8 LAUNCH. The Space Shuttle lights up the predawn sky as it lifts away from Complex 39's Pad A to begin the STS-8 mission with the first nighttime launch of the Shuttle era. Challenger's blastoff came 17 minutes late at 2:32 a.m. after mission managers prolonged the final built-in hold until weather conditions became acceptable. The evening's earlier rain storm failed to dampen enthusiasm for the spectacular sight of the Shuttle's departure on a planned six-day flight. The mission also ended in darkness with the Shuttle gliding to a nighttime touchdown on the concrete runway at Edwards AFB, Calif.

Flight Commander Richard Truly paid special praise to the spacecraft, calling Challenger the real hero of the mission. Truly proved his own brand of competence by setting Challenger down only 300 feet from the aim point, as good a landing as any made during daylight.

Truly predicted that night landings might become more routine, and Abrahamson later said that night landings at the Kennedy Space Center will be considered, since the climatology in the Cape Canaveral area is better at night than during the day.

Challenger was to be returned to Florida Thursday or Friday of this week, where it will get a rest until early next year.

Columbia, Orbiter for the first five Shuttle missions, will fly again October 28, taking the European Spacelab into orbit on a nine-day mission. The launch, scheduled for the civilized hour of noon, will carry a six-man crew, including two non-astronaut payload specialists, one from the United States and one from the European Space Agency.

Hunter Places First at NTA Symposium

-by Kathy Edwards

Monica Hunter, a Langley co-op student and a junior majoring in electrical engineering at Virginia Tech, was the first place winner at the National Technical Association's (NTA) Student Technical Symposium held July 27 through July 30.

Hunter was one of 12 students from various states who traveled to the Orlando Hyatt in Kissimmer, Fla., and presented papers at the 55th annual convention. The topics of the papers presented at the symposium included physics, engineering, chemistry, biology and computer science.

The major objective of the symposium was to provide the students with the opportunity to write and present a technical paper on some of the projects on which they have worked.

Her paper, in the area of engineering, was titled "The Development of the Pushbroom Microwave Radiometer," which is being considered for publication in the NTA's national publication, the **Journal.**

Hunter has been working in the Spacecraft Controls Branch of the Flight Dynamics and Control Division this summer, but was working in the Antenna and Microwave Research Branch of the Flight Electronics Division last winter, where she assisted in the calibration and testing phases in the development of the Pushbroom Microwave Radiometer. It was here that she got the background for her winning paper.

Four other NASA student engineering trainees participated in the symposium: Plez Joyner, a junior majoring in electrical engineering at the Georgia Tech; Joan Taylor, a junior in electrical engineering at Old Dominion University; Milton Jacocks, a junior majoring in aerospace engineering at Virginia Tech; and Cynthia Adkins, a sophomore in electrical engineering at the University of Tennessee at Knoxville.

Tips for Better Photographic Service

The following tips have been provided by the Photo/Graphics Branch to help employees receive better and faster photographic service.

- Provide a positive print or transparency for slides and vugraphs; avoid sending L-numbers or negative numbers
- Take as few photographs as necessary to accurately illustrate the test experiment
- Keep the negatives for reprints of line drawings
- Order the correct number of prints for each photo to eliminate costly reprinting
- Give advance notice for still and S & T requirements
- Call for an appointment for studio photography
- Avoid 35-mm negatives when possible because they produce poor quality enlargements
- Identify one person to request photographic services to avoid duplication of requests
- Request half-tone negatives and prints from the Publication Branch (Reproduction), Bld. 1152
- Prior to a holiday, allow additional deadline time for photographic request. **DO NOT INCLUDE HOLIDAY IN YOUR ALLOWANCE FOR COMPLETED WORK.**

For further information contact Al Moore, ext. 3521.

CFC Message

Continued from page 1.

increased participation is required to continue the many benefits offered by these groups. It should also be noted that the overhead associated with the Combined Federal Campaign is less than 3 percent, made possible through an army of dedicated volunteers and local management. Langley employees have always exhibited the highest standards of citizenship and community support by giving generously.

On behalf of your 1983-84 Combined Federal Campaign Committee and center management, we request your cooperation and generous support to achieve this worthwhile goal.

Maurice K. Morin
Chairman, 1983-84 CFC

Astronaut Recruitment Planned This Year

The first of what will become an annual selection of Space Shuttle astronauts will begin later this year, according to NASA Headquarters.

The Agency anticipates openings for six pilots and six mission specialists in the near future. Pilot-astronauts are responsible for control of Space Shuttles during launch, re-entry and other required maneuvers, and for maintenance of flight systems. Mission specialists' responsibilities include management and operation of Shuttle systems that support payloads during flight.

Applications from civilians will be accepted between Oct. 1 and Dec. 1, 1983. Selections will be made in the spring of 1984 and successful candidates will report to work that summer.

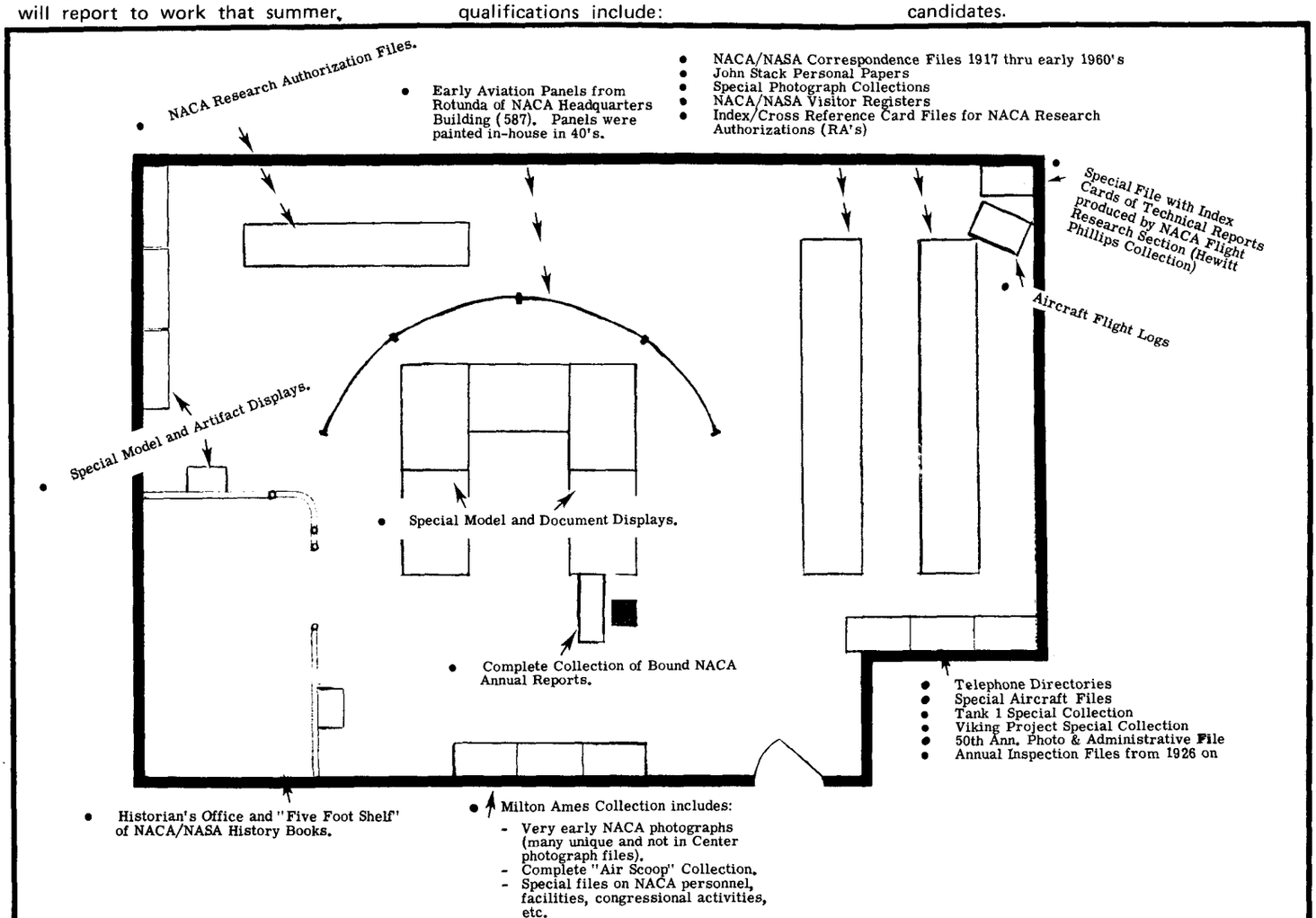
Minimum qualifications for pilot-astronauts include:

- A bachelor's degree from an accredited institution in engineering, biological or physical science, or mathematics.
- At least 1,000 hours flying time as a pilot in command of high-performance jet aircraft. Flight test experience is highly desirable.
- Ability to pass a NASA Class I space flight physical examination, which is similar to military and civilian flight physicals.
- Height between 64 and 76 inches.

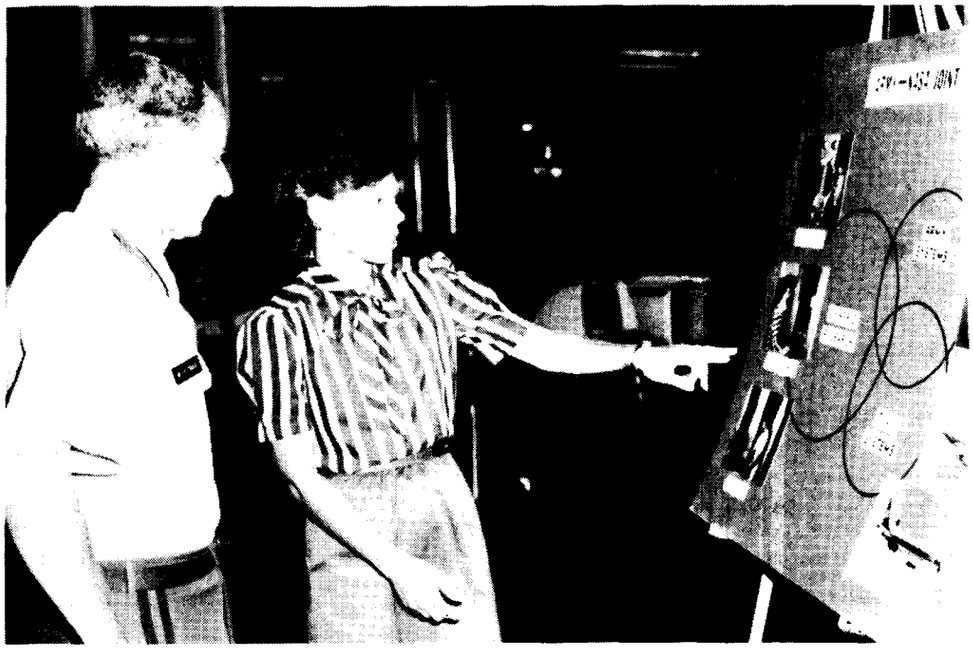
Mission specialist astronauts, minimum qualifications include:

- A bachelor's degree from an accredited institution in engineering, biological or physical science, or mathematics.
- Degree must be supplemented by at least three years related professional experience. An advanced degree is desirable and may be substituted for the experience.
- Ability to pass a NASA Class II space flight physical examination, which is similar to military and civilian flight physicals.
- Height between 60 and 76 inches.

NASA has an affirmative action goal of including qualified minorities and women among the newly-selected candidates.



HISTORICAL ARCHIVES. Langley's Historical Program documents 66 years of Langley history--41 years NACA, 25 years NASA--and includes collections of books, documents, photographs and artifacts. The program provides an archives for retention, display and use of historical documents and artifacts. This diagram shows the layout of Langley's document and artifact archives located in Building 1194, Room 200A. The room is attractively arranged to create "an atmosphere very conducive for scholarly research and writing," said Dr. James Hansen, Langley's contract historian.



- photo by Bill Salyer

LTG James Merryman, Army Deputy Chief of Staff for Research, Development and Acquisition, is briefed on research activities by Gretchen Bostaph, an aerospace engineer assigned to the Fatigue and Fracture Branch, during a recent visit to the Army Structures Lab (AVRADCOM) at Langley.

Cox Serves on Education Council

John J. Cox, Head, Staffing and Special Programs Branch, Personnel Division, has been appointed to the Advisory Council for Business Education, Commonwealth of Virginia.

The advisory council consists of six individuals who represent the broad spectrum of the business community, one vocational director and one secondary business education teacher. The council serves primarily as a "sounding board" for the staff of the Business Education service in planning new directions for business and office occupations. The council is concerned with discussing topics related to new office technology and changes in employment patterns and gives some of its attention to student organization activities and other areas of responsibility of the Business Education Service.

Cox's term of appointment is for three years.

Hispanic Heritage Observed

President Ronald Reagan has proclaimed the week of September 11 as National Hispanic Heritage Week. In honor of this occasion, the Office of Equal Opportunity Programs is sponsoring a "Meet Langley's Hispanic Employees" coffee Tuesday, September 13, at 1 p.m. in the Activities Center. All employees are invited to share in this informal interchange, and managers/supervisors will find it especially meaningful. Attendees should charge their time to JO A1599.

During this week-long observance, the Cafeteria will be serving special dishes and informational handouts will be available for interested employees by calling ext. 3487.

Thanks

James B. "Bruce" Skinner thanks his many friends and associates for their attendance and/or contributions to his retirement party. "Your best wishes, gifts and mementos are greatly appreciated and will be long remembered," he said.

Christensen Named Aerovan Lecturer

Dale C. "Chris" Christensen has been named AEROVAN Lecturer at the NASA Visitor Center. He will travel nationwide with NASA's newest traveling exhibit unit, the AEROVAN. This large, walk-through trailer has nine colorful exhibits which present the latest in aeronautical colleges telling the story of the first A in NASA - Aeronautics.

A retired U.S. Air Force pilot, Christensen brings valuable aviation experience to his AEROVAN position. He has piloted aircraft ranging from sub- to supersonic and has over 4400 hours of flying time in a variety of jet aircraft, including the F-101 and the F-4.

Christensen has always been an aviation enthusiast. Aircraft modeling was a childhood hobby, and he was an active member of the Civil Air Patrol through his high school and college years. He is excited about his AEROVAN work. "It's the ideal job for me," he says. "I look forward to talking about my first love, flying, and to telling the public about NASA's work in the field of aeronautics."

The AEROVAN's itinerary for the next three months includes the Great American Balloon Extravaganza at Darien Center, NY; the Cleveland Ohio Air Show, the Naval Air Station Oceana Air Show in Virginia Beach, VA; the USS Intrepid Air/Sea Museum in New York City and the Lake Charles International Air Show in Lake Charles, LA.

Happenings

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

SQUARE DANCE. Classes start September 12 and are sponsored by the Golden Boats Square Club. The first two weeks are free. The Caller is Ken Curtis. Classes will be held in The Community Presbysterian Church, corner of Fox Hill and Woodland roads in Hampton, from 7:30 til 9:30 p.m. every Monday night. For further information call either Ken Haggard, ext. 3431, or Steve Farmer, ext. 2225.

BLOODMOBILE. The American Red Cross Bloodmobile will be at the Activities Center September 14 from 9 a.m. to 3 p.m. For an appointment, call The Health Unit, ext. 3976 or 2246.

ASM. The American Society for Metals fall picnic will be held Monday, September 12, at the Activities Center beginning at 4:30 p.m. The cost is $5 per person. For reservations call Mary Swain, ext. 3048.

LAA TRIPS are planned as follows: Reading Pa. shopping trip, October 28-30, cost $89; Washington D.C., Redskins game, November 5-6, cost $119; and Atlantic City, N.J., November 18-20, cost $129. All costs are based on double occupancy.

SCOTTISH FESTIVAL. Williamsburg will provide the perfect setting for the Scottish Festival September 24, a daylong celebration from 9 a.m. to 5 p.m. with authentic Highland music, food, games and competitive events. Families can enjoy a wide variety of colorful and exciting entertainment on the campus of the College of William and Mary. Adult tickets are $4, student tickets $3, and children's (6-12) tickets $2.50.

TENNIS COURTS are now secured with a card lock system. Persons wishing to use courts during the workday may obtain a card in the Activities office with a returnable $5 deposit.

AIAA. The 1983-84 year will start with an informal meeting at the Activities Center grounds Wednesday, September 14, at 4 p.m. Beer soft drinks, chips, and pritzels will served. Each member is asked to bring along a non-member who is interested in learning more about the AIAA. Call Calloway, 898-7072, or Pittman, 877-6843, for reservations.

THE LANGLEY HISTORICAL SOCIETY will meet Wednesday, September 21, from 11:30 a.m. to 12:30 p.m. in the Chesapeake Room, Langley AFB Officers' Club. Col Charles L. Weidinger will speak on "Langley Field That Might Have Been." The honored quest will be Col John M. Davies, USAF (Ret), pioneer bomber pilot who flew with Gen "Billy Mitchell in the Naval Bombing tests of 1923. For further information contact Lt. Col Gene Alfaro, 5959300.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

83-62 - Secretary (stenography);GS-0318-4 or 5; Office of Director for Systems Engineering and Operations; Facilities Engineering Division; Transonic Dynamics Tunnel Project Office; Closes September 12, 1983.

83-63 - Supervisory Engineering Technician; GS-0802-10 or 11; Operations Support Division; Tunnels Operations Branch; Technical Support Section D; Closes September 19, 1983.

83-64 - AST. Technical Management; GS-0801-14; Office of the Director for Aeronautics; Closes September 19, 1983.

- photo by Bob Nye

Debra Subowicz (second from left), System Development Corporation, was named 1983 Carnival Monarch and presided over Carnival activites August 26 and 27 at the Activities Center. Paul Holloway, Director for Space, had the privilege of making the presentations to the Monarch and her court which included (from left) Janine Venable, Kelsey-Seybold Clinic, fourth runner-up; Yvonne Armstrong, High-Speed Aerodynamics Division, first runner-up; and Sharon Hassell, Programs and Resources Division, second runner-up. Absent was Beverly Thomas, Acquisition Division, third runner-up. First place prize was $100, second place $50 and third place $25; fourth and fifth place winners received tickets to Busch Gardens.

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Recent Retirees

Carlton D. King, Operations Support Division, retired August 19.

Mary J. Mesic Management Support Division; **James B. Skinner,** Facilities Engineering Division; **Joseph B. Bunting,** Fabrication Division; and **Robert K. Lenning,** Operations Support Division, retired September 2.

Wallops Open House

Wallops Flight Facility will observe the agency's 25th anniversary Sunday, October 9, 1983 with an Open House, the first in more than 10 years. Wallops invites its Langley friends and neighbors to share this day of observance with them from 10 a.m. to 5 p.m.

Aircraft and telemetry and radar vans will be on display; the Range Control Center, wave tank and environmental lab will be open to the public; and special displays will be exhibited both on the Main Base and at the Visitor Center where a bevy of rockets have recently been erected.

A schedule of events can be obtained by calling the Public Affairs Office at 928-5298, 5584 or 5579 after October 1, 1983.

swap and shop

Articles

42" round table and 4 chairs, walnut finish, $75.
Three sofas - 7' Blk. $25; 91" rust $90; 90;" Blk. & White stripe $175. 898-4683.
Ice skates: sizes 1 and 11, girls, LN, $5 a pair. Call Smith, 838-0016, after 5 p.m.
Pine Bark Mulch, any quantity, 3 cubic yards & $39.52 delivered. Call 865-3899.

WANTED

Driver for car pool from Norfolk to West Area on 7:30 shift, call Hudgins, ext. 3072.

Brown Bag Insight

A series of career development lectures will be presented by Tech International Corporation on Thursdays during the month of September, from 11:30 - 12 at the Activities Center (Building 1222). A question and answer period will be available.

The mini series is entitled, "Marketing Yourself in a Tightened Economy" and will provide you with specific tools and techniques to get you the right career position in the least amount of time.

September 15-Resume and Civil Service Form Construction

September 22-Specific Interviewing Techniques

September 29-Negotiating Techniques

Bring your own brown bag lunch. Beverage and dessert will be provided. For more information, call Louise Hamilton, ext. 2611, or Tech International Corporation at 595-0581.

cafeteria menu

WEEK OF SEPTEMBER 12 - 16

MONDAY: Ham & Lima Bean Soup: Burrito & Spanish Rice; Chopped Steak; Chicken Pot Pie. Smack Bar: Steak & Cheese Sub; Hot Italian Sausage.
TUESDAY: Minestrone Soup; Baked Lasagna; Chuckwagon Steak; Baked Filet Of Fish. Snack Bar: Chicken NASA; Polish Sausage; Taco.
WEDNESDAY: Fresh Vegetable Soup; Fried Chicken Dinner; Spanish Omelet; Beef Stew & Rice. Snack Bar: Rib B Q Ham & Cheese Club.
THURSDAY: Chicken & Rice Soup ; Seafood Quiche; Beef Enchiladas; Braised Chicken Livers. Snack Bar: Chicken NASA; NASA Sub; 1/4 lb. Cheeseburger.
FRIDAY: Bull Island Clam Chowder; Fish Cakes Dinner; Baked Chicken & Spanish Rice; Chopped Steak. Snack Bar: BBQ Beef; Turkey Club.

WEEK OF SEPTEMBER 19 - 23

MONDAY: Old Fashioned Bean Soup; Beef Liver & Onions; Ham & Swiss Quiche; Chicken Fried Steak. Snack Bar: Hot Ham & Swiss on Kaiser Roll; 1/4 lb. Cheeseburger; Hot Italian Sausage.
TUESDAY: Beef & Vegetable Soup; Stuffed Pepper; Fried Filet Of Fish; Chicken A La King. Snack Bar; Chicken NASA; Beef & Cheese Club.
WEDNESDAY: Fresh Vegetable Soup; Spaghetti & Meat Sauce Dinner; 1/2 Baked Chicken; Beef Pot Pie. Snack Bar: Bacon/1/4# Cheeseburger; Bean & Cheese Burrito; Polish Sausage On Bun.
Thursday: Chicken Vegetable Soup; Veal Cordon Bleu; Meat Loaf; Braised Chicken Livers. Snack Bar: Italian Beef & Pepper Sub; Foot Long Hot Dog; Ham & Cheese Club.
FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chicken Cacciatore; Polish Sausage & Sauerkraut. Snack Bar: Steak & Cheese Sub; Crab Cutlet.

Retirees Die

Roy E. Sharpes, 75, died July 12. He worked at Langley for over 30 years and was assigned to the Systems Engineering Division at the time of his retirement in 1976.

Clinton L. Chalkley, who retired from the Operations Support Division in 1973, died July 16. He was 69.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 19 September 23, 1983

Langley Earns Two IR-100 Awards for 1983

Two Langley researchers have received awards in the 1983 IR-100 competition for developing two of the 100 most significant new technical products of the year.

Charles J. Camarda, an aerospace engineer in the Loads and Aeroelasticity Division, along with Al Basiulis of Hughes Aircraft Company, developed "Heat-Pipe Sandwich Panels." Harlan K. Holmes, an aerospace engineer in the Instrument Research Division, developed a product called a "Non-Contacting Suction Force Generator."

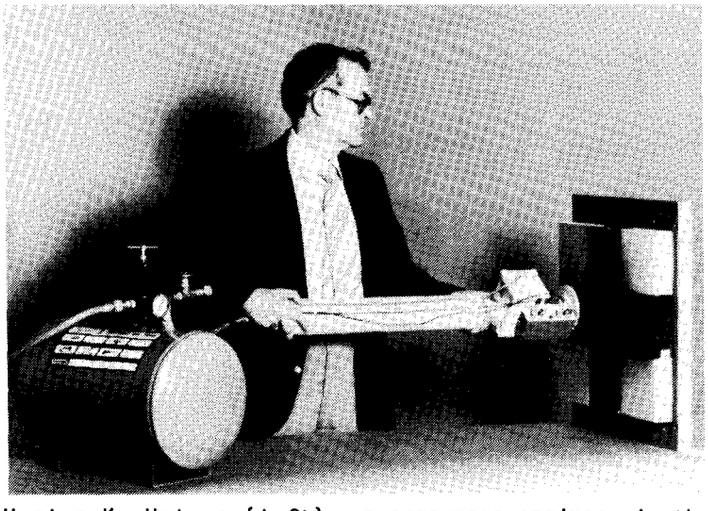
The IR-100 award is presented annually by the Industrial Research and Development magazine to 100 scientists or engineers who have contributed the most significant products for advancing science and technology during the year. Selections are made by a panel of scientists and engineers after studying new technology around the world.

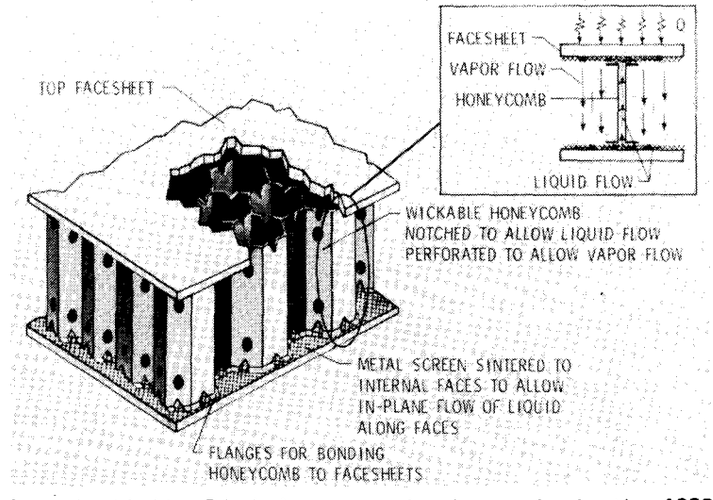
Camarda's device was developed to solve thermal stress problems in Langley's Airframe-Integrated Scramjet Engine. Excessive thermal stresses result from large transient temperature gradients across the honeycomb sandwich walls of the engine structure during engine start-up and shutdown, causing premature engine failure.

Camarda's heat-pipe concept can drastically reduce transient temperature differences with a modest increase in mass over the original, unacceptable non-heat-pipe design. This exceptional performance is possible because the integral heat-pipe sandwich panels synergistically combine the thermal efficiency of heat pipes with the structural efficiency of honeycomb sandwich construction.

Camarda says the primary functions of the panels are to reduce thermal gradients, distortions and stresses in heated honeycomb sandwich structures and simultaneously transport large quantities of heat over long distances without the need for external pumping. The sandwich panels consist of two different wickable honeycomb cores, facesheets with screen mesh

Continued on page 2





Harlan K. Holmes (left), an aerospace engineer in the Instrument Research Division, demonstrates the product, "Non-Contacting Suction Force Generator," that he developed to investigate the integrity of the bonding interface between the Space Shuttle's metallic skin and its ceramic thermal protection tiles. He and Charles J. Camarda, an aerospace engineer in the Loads and Aeroelasticity Division, received awards in the 1983 IR-100 competition for developing two of the 100 most significant new technical products of the year. Camarda, along with Al Basiulis of Hughes Aircraft Company, developed "Heat-Pipe Sandwich Panels," (right) to solve thermal stress problems in Langley's Airframe-Integrated Scramjet Engine.

- photo by Hubert Lloyd

Langley Director Donald P. Hearth (second from right) presented government service awards to these Langley employees August 9. John W. Quinn (third from right) received an award for 45 years of service. John Samos (left), O. Earl Shortt, C. Wayne Williams, Duane C. Zellers and William W. Metz received awards for 40 years of service.

IR-100 Awards Presented *Continued from page 1*

sintered to the internal surfaces, and potassium or sodium as the working fluid. The simple machine-welded, fabrication method eliminates possible compatibility problems with bonding agents and provides an inexpensive method for fabricating flat-plate heat pipes.

The panels add a new dimension to the design of lightweight structures subjected to thermal load and stimulates a new heat-pipe design philosophy. Camarda explained that structurally efficient heat pipes are a feasible solution to many current and future thermal/structural problems and should be used more for such applications.

Camarda said the panels may ultimately have a variety of uses, including cold plates to cool electronic components, radiators to dissipate heat from space stations and space antennas, and to cool the leading edge of re-entry vehicles.

Langley's second IR-100 award for 1983 was presented to Holmes for developing a device to investigate the integrity of the bonding interface between the Space Shuttle's metallic skin and its ceramic thermal protection tiles.

The non-contacting suction force generator functions by requiring that a high-velocity fluid be constrained to flow radially between a radial diffuser and a flat surface located 1/16 to 1/8 inch apart, explained Holmes. A negative pressure, or suction, is created between the two surfaces and an attractive force is generated. Holmes said that by controlling such factors as plate separation, diffuser diameter, fluid velocity and flow duration, a variety of force conditions can be created. Surface contours other than flat also can be accommodated to provide lateral force components.

Other applications include conveying or positioning articles where physical contact is not desirable or for non-destruction investigations of material bonding integrity.

Holmes said this device is a unique application of a well-known physical phenomenon, that of trading velocity pressure for static pressure. "Through this phenomenon, one can exert relatively large pulling or suction forces without contacting the object under investigation. There is no known device that has this advantage and, as such [it] represents a new tool in the non-destructive testing area," Holmes said.

In the past 16 years of NASA's participation in the IR-100 competition, 55 NASA developments have been selected, contributing significantly to the recognition of NASA as one of this country's centers of technical excellence. Langley has earned 10 of NASA's 55 awards and the Lewis Research Center leads with 40 awards.

The IR-100 winners were honored at an awards banquet at the Museum of Science and Industry in Chicago September 22. The banquet marked the beginning of a month-long exhibit of products to be viewed by scientists, engineers, educators and the general public.

CFC Kick-off Set

A Combined Federal Campaign Kick-off meeting will be held for division chairpersons and key solicitors Monday, October 3, at 2 p.m. in the Activities Center.

A one-day center-wide solicitation will be held Thursday, October 6.

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 115, telephone 3006.

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 following technical sessions are planned for Monday; the morning session will begin at 8:30 and will include a presentation by the Office of Equal Opportunity and Management Operations.

ELECTRONICS

On-Board Information Processing: The Information Adaptive System

Recent Accomplishments on the Laser Heterodyne Spectrometer

Technical Development Activities of the Pushbroom Microwave Radiometer

STRUCTURES

Non-Linear Structural Dynamics Analysis Using a Modified Modal Method

Preliminary Assessment of Film-Cooling Tests of 12.5 Degree Cone in 8-Ft. High Temperature Tunnel

SPACE

Preliminary results from the GTE Instrument Intercomparison Workshop

Rarefied Flow Aerodynamics from Hirap on STS-6

The afternoon session will begin at 1:30.

SE&O

Overview

NTF Update

Project/Research Support in Electronics

PROJECTS

Aeronautical Systems Office Introduction

Fighter Update

VTOL is Here

Interactive Computer System

AERONAUTICS

Flow Studies of 30- by 60-Foot Tunnel

Collector Performance of 4- by 7-Meter Tunnel

Introduction of New Employees

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.

Lend a Helping Hand, Support CFC

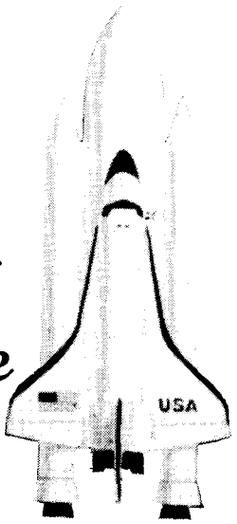
Let's lead the way for the annual Combined Federal Campaign (CFC). This event calls for our united efforts to help provide our local communities with the means to support the special health and welfare services. As we count our many blessings, we are likewise reminded of those who need the helping hand made possible by our support of the CFC.

I've no doubt Langley people will continue their generous support of the CFC. Even in hard economic times, the voluntary spirit of Langley has continued to work as the dollar goals are exceeded year after year. Perhaps this helps prove the value of this system of giving.

With everyone giving, everyone benefits. Let's show the best of our character, our leadership, and our community commitment on campaign day -- October 6.

Charlie Blankenship
1982 - 83 *CFC Chairman*

Space Shuttle Update



Orbiter Columbia was due to be transferred to the Vehicle Assembly Building Wednesday night, one step closer to its planned Oct. 28 launch of Spacelab on STS-9. Columbia, which hasn't flown since flight five in November of 1982, underwent a series of modifications to prepare it for the first flight of Spacelab.

Spacelab is in the cargo bay and ready for flight. The payload bay doors will not be opened again until the spacecraft is placed into orbit.

After Columbia is mated to a twin set of solid rocket boosters and an external tank, the completed Shuttle will be rolled out to the launch pad. The move is planned for early Tuesday morning, Sept. 27.

Launch and landing will occur in daylight hours. Because the weight of the European Space Agency (ESA's) Spacelab will add greatly to the overall weight of the orbiter at landing, Edwards Air Force Base has been selected as the landing site.

In addition to the first use of the European-built Spacelab, other milestones for STS-9 include the first foreign crewmember on an American spacecraft, the first flight of payload specialists (as opposed to mission specialists, who are astronauts), and the first six-person crew.

NASA — Past and Present

To The Outer Edges of The Solar System in 25 Years

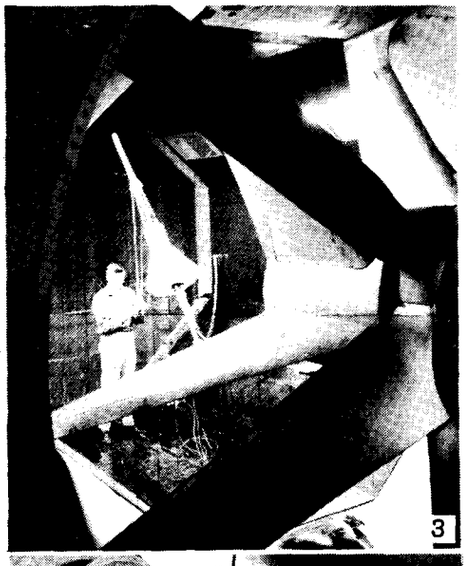
NASA's 25th Anniversary commemorates 25 fast-paced years of aeronautical research and space exploration.

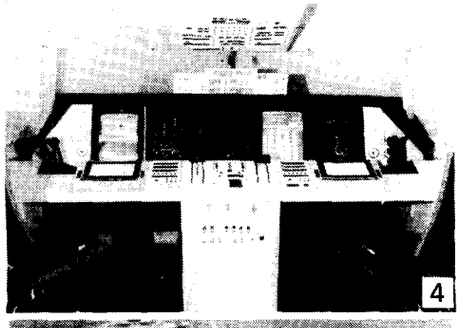
In 1958, our predecessor, the National Advisory Committee for Aeronautics, transferred intact to NASA 8,000 employees, three laboratories (Langley, Lewis and Ames), two stations, and a reputation for high-caliber research and high-performance workmanship.

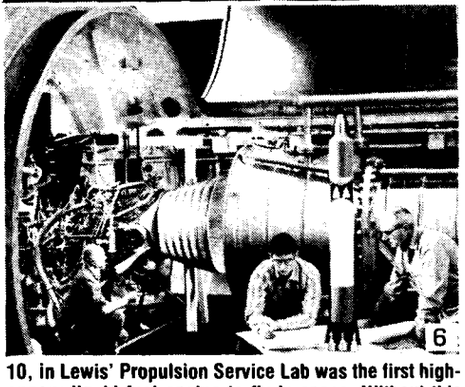
Today NASA's nine research facilities scattered throughout our nation are 22,000 employees strong. And our research and workmanship has led to aircraft that fly farther, faster and more efficiently than ever before. We list among our accomplishments explorations of the moon, Mars, Venus, Jupiter, Mercury and Saturn. In June of this year, the spacecraft Pioneer 10 sailed beyond our known solar system.

We have come a long way in a very short time.

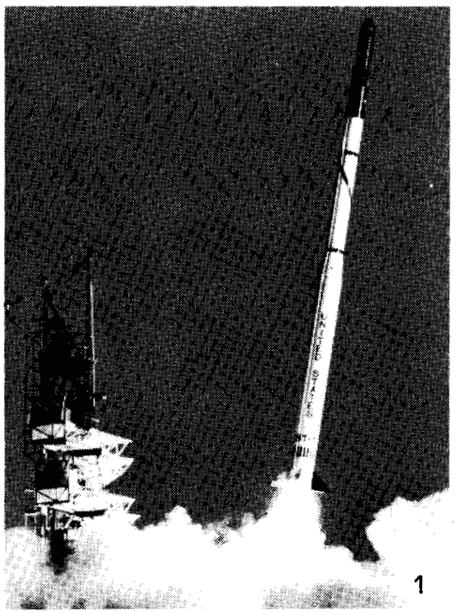
It seems appropriate at the time when we are racing toward the future Shuttle technology has opened for our nation to reflect on what our past has held. For it is the same dedicated excellence in research and development that brought us to the milestone of our 25th anniversary that will lead us to our future accomplishments.

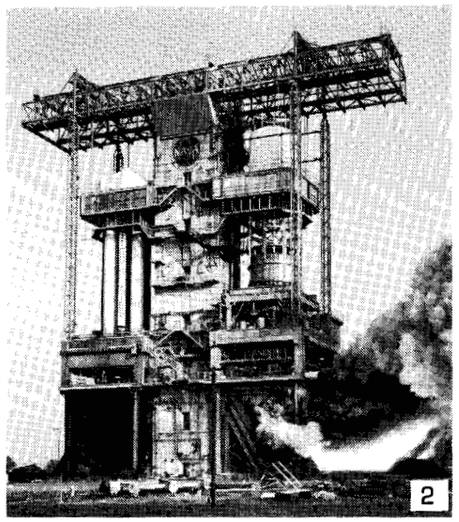


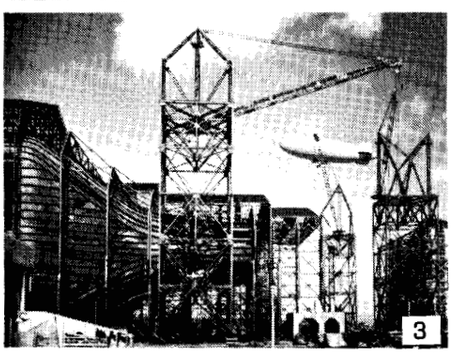


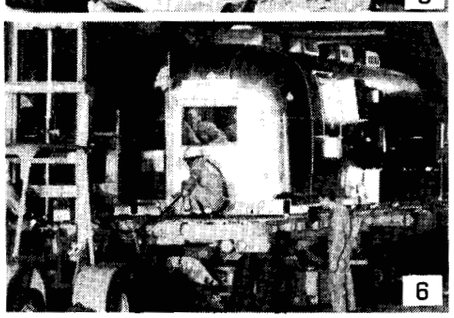


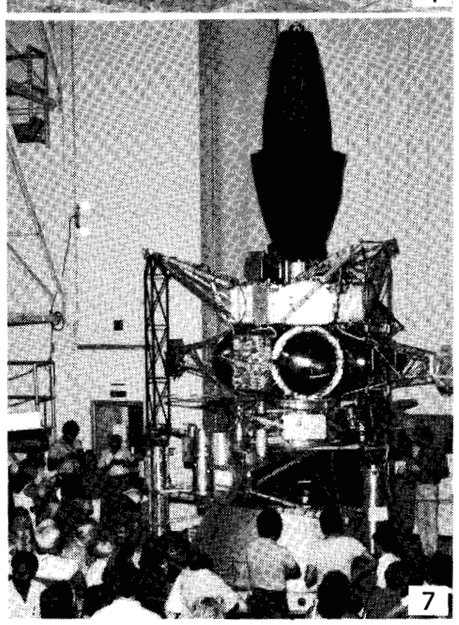
1. On August 19, 1958, President Eisenhower swore in T. Keith Glennan (right) to be the first Administrator of NASA, newly created by the National Aeronautics and Space Act of 1958, signed into law on July 29 of that year. Also sworn in on that day was NASA's first Deputy Administrator, Hugh L. Dryden (left). 2. Shortly thereafter plans were formulated for building a new center for space science research, satellite development, flight operations, and tracking. The Robert H. Goddard Space Flight Center, named for America's rocket pioneer, was dedicated in March 1961. Abe Silverstein, NACA official who later became part of NASA management team, stands with a bust of Goddard and Mrs. Esther Goddard. 3. Scientists at Langley tested this one-fourth-scale model of a Project Mercury space capsule to determine static stability characteristics of the abort configuration. 4. Looking more like a set for Star Wars than an aircraft research facility, this advanced concepts simulator reflects the latest NASA thinking in efficient airplane cockpit displays and controls. Researchers at Langley expect the desk-like cockpit simulator to be completed in mid-1984. 5. Lewis engineers are studying several Advanced Turbo Prop (ATP) concepts that will permit large passenger jets to fly just as fast as they do today, with a significant fuel savings over conventional turbofan engines. 6. The RL-10, in Lewis' Propulsion Service Lab was the first high-engery liquid fuel engine to fly in space. Without this vital, Lewis-engineered, propulsion system, the United States probably would not have gone to the Moon (Saturn V upperstages used larger versions of these engines) and the Shuttle would not have flown. 7. Wallops was 20 years old when NASA was established. The first rocket launch--a Tiamat--was conducted July 4, 1945. Since then over 13,000 rocket launches have taken place from the six launch pads shown here.



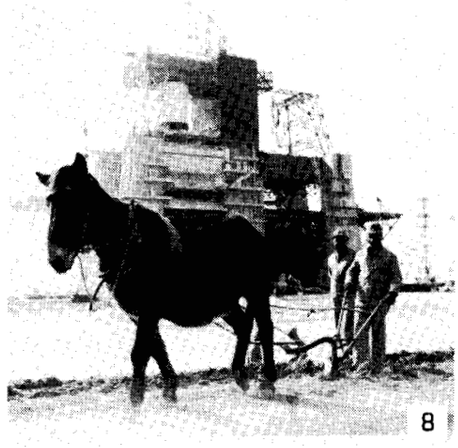






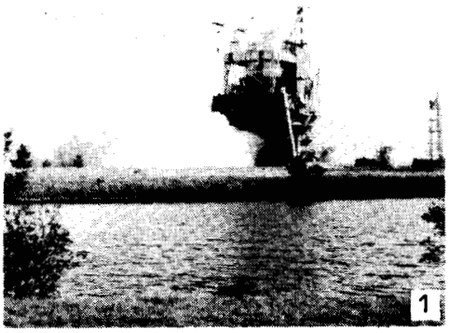


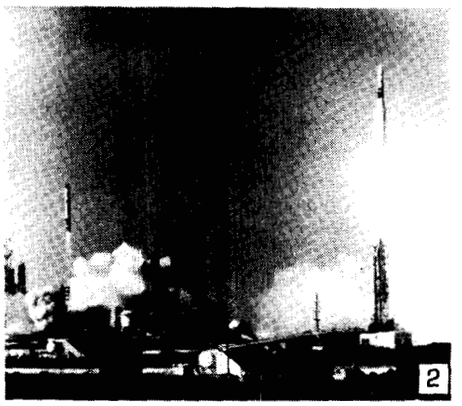
1. Liftoff of the Scout vehicle carrying the first satellite, Explorer IX, took place from Wallops Island February 16, 1961. 2. This is the F-1 engine for the Saturn V at the Saturn test stand at Marshall. A Saturn 1 flight booster is shown in the left test position. 3. Ames' 40 x 80' Wind Tunnel is shown under construction in 1943. 4. The Ames' XV-15 Tilt Rotor NASA/Army research aircraft has helicopter-like rotors which tilt up for vertical takeoff and landing and forward for horizontal flight. 5. In the Arroyo Seco river bed near the Jet Propulsion Laboratory, Guggenheim Aeronautical Labortory/California Institute of Technology students and co-workers fired their first liquid rocket motor October 31, 1936. This test led to the creation of the GALCIT Rocket Research Project in 1937, formal government sponsorsh ip of GALCIT rocket research activities in 1939-40 and the subsequent founding of JPL November 1, 1944. 6. Apollo 11 crew returns home. Astronauts Neil A. Armstrong, Michael Collins and Edwin E. Aldrin Jr. are shown in the Mobile Quarantine Facility following their historic lunar landing mission. The crew remained in the MOF until they arrived at the Manned Spacecraft Center. 7. Jet Propulsion Laboratory visitors get a look at the Development Test Model of the Galileo spacecraft. The NASA Project to orbit Jupiter and send an instrumented probe into the giant planet's atmosphere is scheduled for 1986 to study the chemical composition and physical state of Jupiter's atmosphere and selected Jovian satellites. 8. During the construction phase of the National Space Technology Laboratories in the 1960s, old and new come together as men with mules build terraces in the vicinity of the dual test stand.

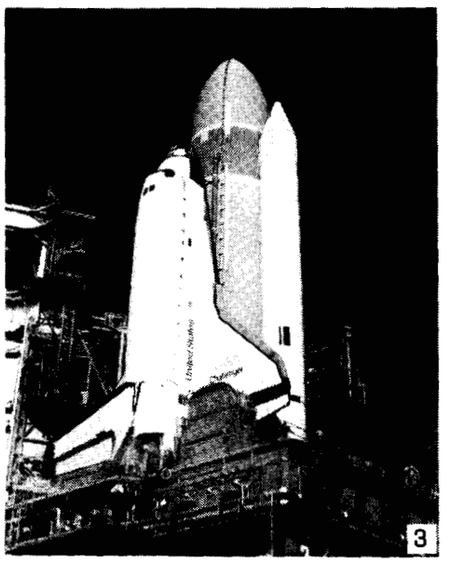


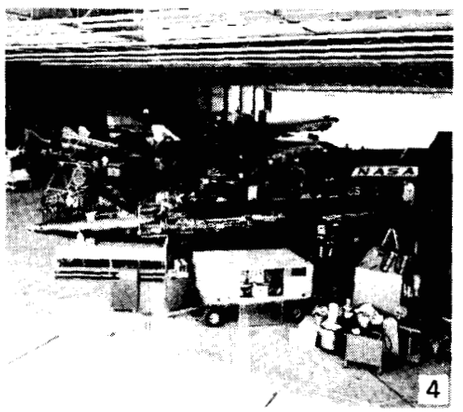
25th Anniversary
1958-1983

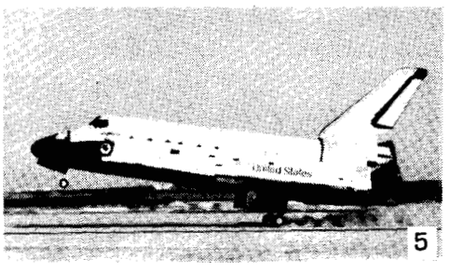
NASA — Past and Present

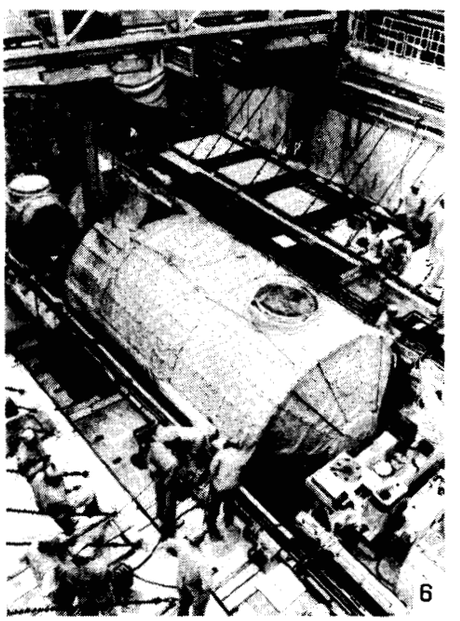












1. A Space Shuttle main engine firing takes place in one of two single engine test stands at NSTL. 2. This photograph shows a double exposure of the lift-off of a Gemini Titan and Atlas Agena at the Kennedy Space Center. 3. A major milestone in NASA's history came April 12, 1981 when the Space Shuttle Columbia lifted off the pad at KSC on its maiden voyage, ushering in a new era of U.S. technology and expanded opportunities. Shown here is the Space Shuttle Challenger climbing the ramp to Pad 39-A. The first flight of Challenger took place April 4, 1983. 4. During the 1960s, NASA research pilots departed this building at the Flight Research Center in California's Mojave Desert, to fly into space aboard black steeds called X-15s. A little more than a decade later, the Space Shuttle Orbiter Enterprise would undergo Approach and Landing Tests from the center, renamed in honor of the Administrator Hugh L. Dryden. The facility supports shuttle development and operations as well as the high performance flight research of aerospace craft. 5. The Space Shuttle Orbiter Challenger touches down on lakebed Runway 15, directly in front of the Dryden Flight Research Facility, June 24. 6. The Spacelab 1 module and attached pallet were installed in the cargo bay of Orbiter Columbia in August. Testing is continuing at Marshall to prepare the Shuttle for its first Spacelab mission (STS-9) scheduled for launch October 28.

James Beggs, NASA Administrator, reflects on NASA's 25 years, "Man has learned more about his planet, the near-Earth environment and the universe in the last years than in all the prior years of history. NASA's space science program has spearheaded this great expansion of human knowledge . . . The agency pioneered in weather communications and Earth resource satellites . . . In aeronautical research, NASA has contributed in substantial degree to safer, better performing, more efficient, more environmentally acceptable aircraft. In support of the national energy program, NASA has successfully applied its technical expertise to development of alternative sources of energy and new ways to conserve it. Finally, the technology generated in all these mainline areas of research has been reapplied, literally thousands of times, to produce a broad range of indirect benefits . . . This year marks a major milestone for the National Aeronautics and Space Administration: its silver anniversary."

Anniversary Tape

"NASA: the 25th Year" will be shown to Langley employees and contractors September 26 through 30 from 12 to 1 p.m. in the Visitor Center auditorium.

Employees are reminded that food is not allowed in the Visitor Center; therefore, plan to eat lunch before or after viewing the tape.

Employees are to charge their time to JO A1980.

Happenings

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

SWEET ADELINES. Barbershop harmony fans can get their kicks Saturday, September 24, when the Greater Tidewater Chapter of Sweet Adelines, Inc., present their annual show at the Virginia Beach Pavilion theater. The show, "Oh, How They Roared in the Twenties!," features special guest quartet "Diamonds in the Rough" from Charlotte, N.C., and the "Virginia Gems."

Show time is 8 p.m. and tickets are $5 each. Call 464-5823 or contact Roy Albang, 596-7736 or Jim Youngblood, 877-1224.

LAA EXECUTIVE BOARD ELECTION of the LAA President, Treasurer, Arts and Crafts Chairman and Social Chairman will be held in November. Nomination forms and a description of the duties of each office are available from the LAA Office in the Activities Center. Nomination forms must be completed and sent to Bob Huffman, Mail Stop 104, by October 3.

THE ANNUAL PICNIC sponsored by AFGE Local 2755 will be held Saturday, October 1, from 3 to 6 p.m. on the Activities Center grounds. Special guests will include State Senators Bill Fears and Bobby Scott. Tickets are $1 each for members and immediate family over age 12, 50 cents each from 6-12, and those 6 and under are free. For non-members and immediate family, tickets are $2 each. Tickets may be purchased from any officer or steward until Monday, September 26. Door prizes will be announced during the picnic.

COMPUTER SCIENCE SEMINAR "Office Automation and Its Impact at Langley" is the topic for the September 26 seminar. Fred Moore, Special Assistant for Productivity Improvement of Management Systems in the Office of the Director for Management Operations at Langley, will be the speaker. The siminar will be held at 3 p.m., in the Activities Center (1222).

HELLENIC FESTIVAL - The Greeks are at it again, Thursday, Friday, Saturday, September 22, 23, 24, at the Hellenic Center, 60 Traverse Road (Intersection of Rt. 17 and I-64), 11 a.m. to 11 p.m.

Meets Planned

The Fall 1983 Intercenter Running Competition will be held between October 1 and October 23. Runs on the Langley course at 5 p.m. are scheduled on October 4, 11, 13 and 20 for the 10k and October 11, 13 and 18 for the 2 mile. A 2 mile will be held on the Bethel High track at 11:30 a.m. October 12.

Any individuals willing to help as course stewards or timers, contact Bill Woods, ext. 2483.

A VIKING SEAFOOD FEAST is planned for October 29 in the Activities Center. Contact Jesse Timmons, ext. 4621, for more information.

Training Offers Class

The Training and Educational Services Branch is interested in offering an IEEE videoconference, "Robot Sensing and Intelligence," November 7, from 11 a.m. to 4 p.m.

The course, to be televised nationwide on a 'live' network established by TLC, "The Learning Channel," will cover multi-spectral robot vision, contact and non-contact, and internal state sensing; characteristics of signals generated by various sensors; robot sensing and intelligence from a systems integration viewpoint; machine intelligence related to sensor data processing, productivity increases through robot sensing and intelligence; advances in sensing and intelligence to broaden robot applications through flexibility and adaptability.

If you are interested in attending this course please contact George Allison, ext. 2611.

- photo by Ronnie Booth

HISPANIC HERITAGE WEEK. Employees, including managers and supervisors, gathered in the Activities Center September 13 to honor Hispanic-Americans. A "Meet Langley's Hispanic Employees" coffee was held commemorating National Hispanic Heritage Week which, each year, recognizes the accomplishments of Hispanic-Americans.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Combined Federal Campaign Day - October 6

Changes Due

The furnishing of accurate information for the Alphabetical Personnel Section of the Directory is the responsibility of each individual employee. Langley Form titled "NIPPS - Telephone Directory Transcript (Change Notice)" is provided in the back of the Langley Telephone Directory for reporting changes in mail stop, building number, room number and telephone number. These changes must be submitted no later than **September 26, 1983** to **Mail Stop 196** for inclusion in the new issue.

Offices are also reminded that any changes in the Organizational Listing or the Service Directory listing for inclusion in the next issue are due the same day.

Volunteers Needed

The Peninsula Boy Scouts of America and Langley's Office of Public Services are seeking **volunteers** to serve as post leaders and assistants to support the Explorer Program.

The Explorer Program is designed to provide enriching and challenging experiences for students with a career interest in aeronautics, astronomy, computer science and electronics.

Volunteers are asked to meet with the students from October 1983 until May 1984. Classes will be held twice a month for two hours each meeting.

If you are interested in serving as a post leader or as an assistant, please call Roger A. Hathaway, Office of Public Services, Mail Stop 154, ext. 4358.

swap and shop

FOR SALE

Articles

Ladies made-to-order cotton and silk bow ties. Various styles, many colors and designs. Call Suzanne Scarborough, 723-5134.

Real Estate

Riverdale area: Three-bedroom brick house, one bath, LR, DR, KIT, one-car detached garage, 10 x 20' covered patio, maintenance free, $65,000, assumption available. Call 838-0785 after 5:30 p.m.

FOR RENT

Sea Ranch II: Condo at Kill Devil Hills, ocean front, sleeps 6, enclosed pool, tennis, Nautilus Fitness Center, restaurant and lounge, everything furnished, available Nov. 27 through Dec. 3 for $325 or will rent $65/night. Call 877-2210 after 5 p.m.

WANTED

AM/FM stereo tuner. Call Brooks, 898-6517.

Fourth driver from James-York Plaza, Williamsburg to West area on 8 a.m. shift. Call Hudson, ext. 4631 or 229-2356.

Fourth driver (non-smoker) to complete our car pool from Virginia Beach to the West area on the 7:30 a.m. shift. Call Allen Waters, ext. 4199; Vic Delmore, ext. 3631; or Janet Brunelle, ext. 3681.

Driver for car pool from Norfolk to West area on 7:30 a.m. shift. Call Hudgins, ext. 3072.

COMBINED FEDERAL CAMPAIGN

CFC ★★★

Remember that your CFC gift will be used to help someone, maybe someone in your own family, in time of need.

cafeteria menu

WEEK OF SEPTEMBER 26 - 30

MONDAY: Ham & Lima Beans; Roast Pork & Dressing; Beef Chow Mein; Cheese Omelet. Snack Bar: Ham & Cheese Club Sandwich; 1/4 Cheeseburger.

TUESDAY: Potato Soup; Salisbury Steak; Franks & Baked Beans; Baked Filet of Fish. Snack Bar: Chicken NASA; Beef & Cheese Club.

WEDNESDAY: Fresh Vegetabel Soup; Chopped Steak; 1/2 Baked Chicken; Seafood Quiche. Snack Bar: BBQ Beef Sandwich; Grilled Cheese Sandwich.

THURSDAY: Chicken Noodle Soup; Beef Stew; Chicken Croquettes; Braised Chicken Livers. Snack Bar: NASA Submarine; Bean & Cheese Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Country Style Steak; Hot Turkey Sandwich. Snack Bar: Rib B Q; Taco.

WEEK OF OCTOBER 3 - 7

MONDAY: Old Fashioned Bean Soup; Braised Beef & Vegetables; Turkey Breast Nuggets; Tuna Noodle Casserole. Snack Bar: Hot Italian Sausage; Steak & Cheese Sub.

TUESDAY: Beef & Vegetable Soup; Pork Chop & Apple Sauce; Hamburger-Eggplant Casserole; Chicken Chow Mein. Snack Bar: Chicken NASA; Polish Sausage.

WEDNESDAY: Fresh Vegetable Soup; Roast Turkey Dinner; Knockwurst & Sauerkraut; Fried of Fish. Snack Bar: Corned Beef Rueben; 1/4 Cheeseburger.

THURSDAY: Turkey Noodle Soup; Veal Parmigiana; Macaroni, Franks & Cheese; Braised Chicken Livers. Snack Bar: Turkey Club Sandwich; Italian Beef & Pepper Sub.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Beef Liver & Onions; Beef Tips and Rice. Snack Bar: Crab Cutlet Sandwich; Taco.

Memorial Established

In memory of Ronald B. Amole, who died August 13, the Peninsula Ski Club is establishing a living memorial. Needy community children will be given membership at the Peninsula YMCA.

If you would like to contribute or to receive further information, please call Ron Harvey, ext. 2244 or 838-2886.

National Aeronautics and
Space Administration

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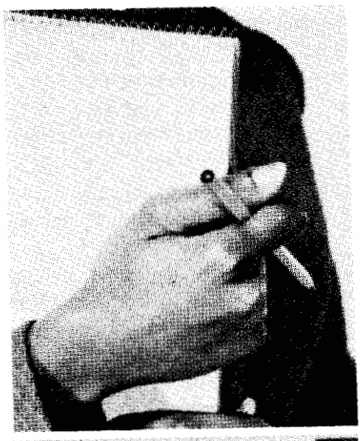
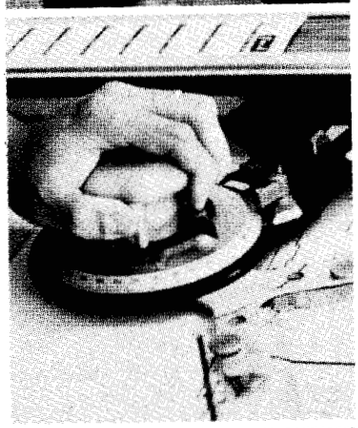
SPECIAL ISSUE

September 30, 1983

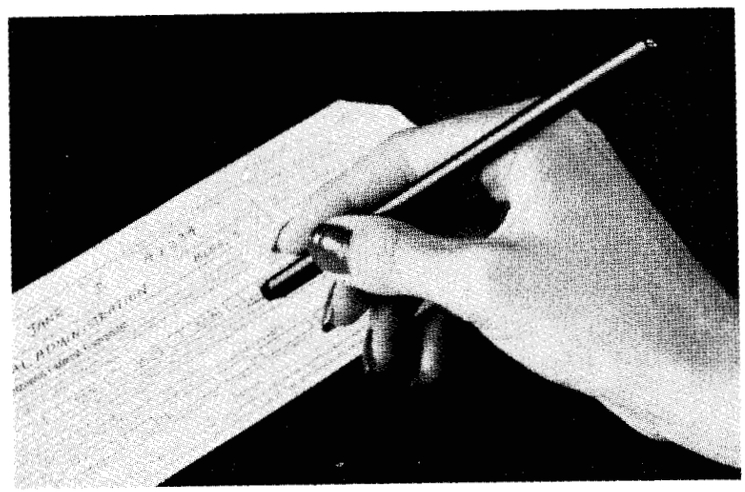
Helping Hands





CFC

COMBINED FEDERAL CAMPAIGN



One Campaign Helps People All Year Long

The Combined Federal Campaign provides an opportunity once a year for civilian and military employees of the government to lend a helping hand by contributing to many worthy health, welfare and community service organizations. The funds we provide to these agencies permit them to relieve suffering, provide care for the young, aged, homeless and hungry, and bring hope to the depressed. It is the one campaign which helps people—our families, friends and neighbors—all year long.

The Peninsula Combined Federal Campaign goal for this year is $831,693. The agencies comprising the CFC include the Peninsula United Way, Williamsburg United Way, National Health Agencies, National Service Agencies and International Service Agencies. Each of these organizations distributes its funds directly to subsidiary agencies.

Each agency is dedicated to helping people, not only in this area but around the world. A brochure, listing the recipients of our gifts and describing their activities, will be distributed during the one-day solicitation—**October 6**. Please take the time to study the brochure before making your contribution. Each agency needs your support to provide for the needs of the less fortunate.

Charity begins at home, but must not stop there in this age of interdependence.

Freedom of Choice - People Take Care of One Another

We all share in the concern for the health and welfare of people in our community and most of us care about others in our nation and in the world that are suffering from insufficient food and health care. Well, the Peninsula Combined Federal Campaign offers us a convenient way to help those that we want to help the most, whether they be in our own community or in some foreign land.

Agencies participating in the Peninsula CFC were carefully chosen on the basis of the services that they provide; however, some agencies provide more local or community service whereas others distribute their services nationally or internationally. Through the CFC we have the freedom to choose the organizations that we feel the most comfortable with and want to support the most. This is done very simply by using the individual pledge card where the agency and amount of contribution can be designated for as many as five different organizations. Last year Peninsula federal employees designated more than half of their gifts, so the practice is pretty widespread.

Undesignated funds are distributed among the five major sponsor groups according to precentages established by the Local Federal Coordinating Committee before the campaign. Percentages for the 1983-1984 campaign are: United Way of the Va. Peninsula - 90.215; Greater Williamsburg United Way - 2.895; International Service Agencies - 5.190; National Health Agencies - 1.700; National Service Agencies - 0.000.

These five sponsor groups, in turn, distribute their share of any undesignated funds to their respective member agencies. Only those agencies specifically identified as participants in the Peninsula CFC and listed in the brochures are eligible to receive campaign funds.

The most important thing is for us to support the campaign, so let's join together and participate generously this year and exceed the Center's goal of $195,000. And, remember, "Freedom of Choice" -- choose your favorite organizations and support them with your contribution.

Bob James
Co-Chairman
1983-1984 CFC

Unions Endorse CFC Efforts to Provide Health and Welfare Service to the Peninsula Communities

- photo by Hubert Lloyd

Union leaders met with the Langley CFC Committee to lend their support to this year's Combined Federal Campaign. The leaders encourage employees to designate their gift to specific local voluntary agencies and emphasized the many positive benefits provided by the CFC to local communities. From left are Benjamin F. Guenther, representing the Newport News Association of Pattern Makers League of North America; Bruce McLemore, Lodge 892 of the International Association of Machinists and Aerospace Workers; Maurice K. Morin, Chairman of the Langley CFC; Sharon K. Crockett, representing Local 2755 of the American Federation of Government Employees; and Robert L. James Jr., Co-Chairman of the Langley CFC.

Lend A Helping Hand

ISA Sends 'A WORD OF THANKS'

Dear CFC Contributors:

There is no simple way for the International Service Agencies (ISA) to express how grateful we are for your past contribution to the Combined Federal Campaign.

Because of you, through your generous giving, the ISA team of international self-help organizations is making life better for hundreds of thousands of people around the world.

- . . . .hungry children
- . . . .the blind
- . . . .the sick
- . . . .refugees
- . . . .individuals and whole communities

They're all better off because of the help, training and supplies, from the ISA agencies.

And although you may never directly see the results of your contribution, rest assured that you have helped significantly . . . and we thank you again for your continued support.

International Service Agencies

Just a few cents a day, through payroll deductions, can make a world of difference. In the community, across the country, and abroad . . . Especially for the children. Support our CFC!

Why United Way? It's for all of us!

There are a lot of worthwhile organizations today funded by citizens' donations. United Way is just one of many, but there are some good solid reasons why it is the one.

To begin with, United Way has a local commitment. This means that United Way funds programs that help the people who live on the Peninsula or the people who work on the Peninsula. So when you give money to United Way, you can be sure that it will be spent to help your neighbors and your family.

One of the nicest things about United Way is that you know that your money is being spent on worthwhile projects. The United Way volunteers check out programs thoroughly before they are funded, to make sure that the programs are well-run and financially responsible. And it makes sure that the programs are directed at services our community needs now. That means that, even if a particular program has been funded for 20 years, it will still be examined in detail to make sure that it is still necessary to this community and that it is still the best way of serving the Peninsula's needs.

Who makes all these decisions? You do. Or maybe, if you don't have time to act as a United Way volunteer, the man in the next office or your neighbor across the street does. You see, nobody can tell better what a community needs than the people living in the community. And nobody will stretch a dollar farther than somebody whose family and friends are affected by it. There are over 350 Peninsula citizen volunteers for every paid United Way staff member, volunteers who make decisions and direct the staff in carrying them out. (And this is not counting the volunteers who work with specific United Way member agencies, directing them and assisting in their service programs.)

When you get down to brass tacks, United Way is just neighbors trying to make the Peninsula a good place to live. It's a big job, but we can do it if everyone pulls their own weight. And that's what "fair share" giving is all about. Your friends and neighbors aren't asking you to "dig down deep" or to do without to keep your community fit to live in. And they realize that some people can

As Time Marches on, so do Human Needs

give a little more than others. They figure that if everybody gives a percentage amount of what they earn, those that can afford one percent. One percent of $10 is only a dime, and they're asking for less than that. It's not a whole lot, but if everybody gives their fair share, nobody will have to carry the whole load. And we'll still have good recreational facilities, good emergency services and good youth programs for our children.

That's why, wherever you see the United Way logo, a hand holding out a rainbow, you'll usually see the United Way slogan, "Thanks to you, it works for all of us." Because without you, it won't work at all.

Director's Message

Our Opportunity To Help -- CFC

The Combined Federal Campaign is important to many people -- including us. It is our opportunity to help those who need our help. CFC money is well spent.

During my eight years at LaRC, the Center has always gone over the CFC goal; a goal that I select intentionally to be a challenge.

I urge you to contribute to CFC and to help Mo Morin's team raise more than the $195,000 goal.

Donald P. Hearth
Langley Director

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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COMBINED FEDERAL CAMPAIGN
CFC

NHA Grateful for Langley Support

The following article was written by James A. Hagemann, to Langley employees, retirees and contractors.

"Federal employees of the Peninsula always have been most generous in their support of the Combined Federal Campaign, especially at the Langley Research Center. Last fall, the average gift at Langley was $114.41, nearly five times the national average. This accounted for 23.5 percent of the total Peninsula CFC. Langley's $202,855, pledged through payroll deductions and paid in cash, came from only 12 percent of all who gave to this campaign, a measure of the sincerity of those who believe in supporting the community's health and social welfare needs.

"The National Health Agencies are most grateful for the amounts designated to the agencies within the NHA federation. From the total Peninsula campaign of last fall, over $167,000 was directed to NHA. Much of it from Langley. Every penny of the designated gifts was distributed to the recipient agencies in strict compliance with the rules of the game. Of course, NHA shared in the costs of the campaign, providing 19.4 percent of the overall expenses in direct proportion to the amount received from both designated and undesignated gifts. With a tightly run campaign, with so many federal workers joining in as enthusiastic volunteers, the costs were kept to an extremely low level of less than 4 percent -- a most efficient fund-raising project.

"Some people are confused about designated and undesignated pledges. All contributions designated to any agency, in any of the four major federations that have joined together to make this a combined effort, is paid out exactly. Normally, about 60 percent of all contributions in this CFC are designated by the givers. The remaining 40 percent is "deemed designated" to the Principal Combined Fund Organization which, in this CFC, is the Peninsula United Way. Using a five-year average for each federation, the undesignated was divided by the PCFO 90.2 percent to the Peninsula United Way, 2.9 percent to the Greater Williamsburg United Way, 5.2 percent to the International Service Agencies, and 1.7 percent to the National Health Agencies."

ANOTHER LITTLE MIRACLE. If you've ever loved someone who's fighting a deadly disease, you know what fear is. You know what hope is, too. And you pray for a miracle -- because they do happen. Your CFC gifts will help make these miracles happen. Medical research to find the cures, a helping hand to those afflicted now, the lastest information on diagnosis and treatment from your doctor -- all this is possible through agencies in the Combined Federal Campaign. Please lend a HELPING HAND.

Langley has always supported United Way through the CFC — one way by holding Bloodmobiles, sponsored by the American Red Cross. These Langley employees, along with approximately 300 others who donate blood at each Bloodmobile, know that by extending their helping hand, they might be saving a life — maybe even the life of a family member.

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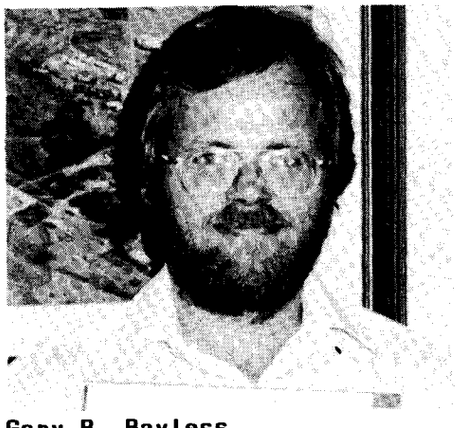
Special Awards

October 14, 1983

Staff Members Receive Recognition for Contributions



Gary B. Bayless

Certificates of Recognition

A **Certificate of Recognition** is presented for the 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.

Space Act Awards have been presented to **Gary B. Bayless** for his invention titled "Line Hook with Loop Expander;" **Harold D. Bush** and **Terry L. St. Clair**, for "Polypheylene Ethers with Inside Linking Groups."

L. Robert Jackson and **Allan H. Taylor**, for "Pumped Vortex;" **Moses G. Farmer**, for "Model Mount System for Testing Flutter;" **Victor A. Carrens**, for "A Single Frequency Multitransmitter Telemetry System;" and **Jackson, Taylor** and **Randall C. Davis**, for "Daze Fasteners."

Special Achievement Awards

A **Special Achievement Award** is granted for performance exceeding job requirements. The monetary award may be either for sustained superior performance or for a one-time special act or service in the public interest, connected with, or related to official employment.

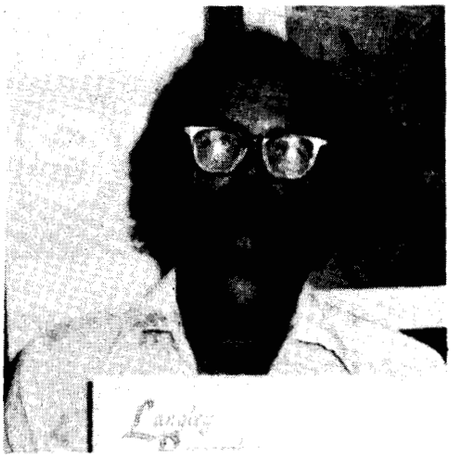
Awards have been presented to the following employees:

Robert B. Askew, for "high performance and technical contributions in support of the 4 x 7 Meter Wind Tunnel;" **Stephanie A. Vay**, "in recognition of extraordinary performance, exceeding that normally expected of an apprentice technician, during fabrication, installation and operational checkout of the automated ammonia sampling instrumentation package;" **Forrest L. Dickinson**, for "outstanding technical leadership in the management of the Avionics Research Intergration Laboratory (Airlab) Project;" **Judson S. Black, Jr.**, for "exceptional skill and achievement in support of the rehabilitation and modification of the 7-Inch High Temperature Tunnel;" **Gloria S. Evans**, for "outstanding performance in providing efficient secretarial support to the Laboratories Operations Branch."

Charmaine B. McLean, for "exceptional performance of the complete secretarial duties of the Advanced Materials Branch during a time of critical need;" **W. Barry Lisagor**, for "sustained superior performance in providing Materials Division Support for NTF materials needs, and failure analysis for the U.S. Navy, in addition to carrying out regular duties;" **William L. Jones** and **Peter Toth**, for "special efforts in maintaining test instrumentation and insuring data reliability during the operation of the Laminar Flow Control Airfoil Experiment at the 8' Transonic Pressure Tunnel;" **Cicero Fields, John R. Huffman** and **Warner W. Smith, Jr.**, for "exceptional skill and achievement in support of the rehabilitation and modification of the 7-Inch High Temperature Tunnel;" **Robert L. Fixx, Jr.**, for "diligent and conscientious efforts during extensive repairs at the 30- by 60' Tunnel."

Janice Y. Smith

Alexander Evans, for "excellence in technical performance on the Gas Lab Control System design team;" **Timothy J. Pios**, for "innovative work in support of the Drag Reduction research in Building 1247;" **Carlton G. Pike**, for "exceptional initiative, dedication, and achievement in support of calibration tests conducted in the Low Turbulence Pressure Tunnel which resulted in the successful evaluation of its performance following a major



Eugene L. Bunting

rehabilitation;" **Edgar J. Yarrington**, for "sustained superior performance in supervisory technical support at the National Transonic Facility;" **Dr. James W. Sawyer**, for "sustained superior performance contributing to improved understanding of the Shuttle Orbiter thermal protection system life expectancy and of the application of advanced composite materials to space transportation systems."

Allan H. Taylor, for "the timely conception, development and evaluation of a highly innovative space transportation system orbiter structural design concept;" **Timothy R. Rau**, for "exceptional leadership during 1982 in research on engineering data management through development, evaluation, and application of data management software;" **Norman F. Knight, Jr.**, for "continuing high quality performance in the development of nonlinear structural analysis procedures;" **Dr. Jerry G. Williams**, for "contributions to the understanding of damage-tolerance requirements and the evaluations of improved resins for graphite-epoxy structural components;" **Roger W. Housman**, for "sustained superior performance in his academic course studies and on-the-job training for the past year."

Michael B. Crawford, for "continued high quality performance in the electrical/electronic support of the rehab project to the High Pressure Air and Vacuum Systems at the Gas Dynamics Facility, Building 1247-D;" **Jerry W. Deaton**, for "sustained superior performance in conducting research which contributed significantly to the application of composite materials to aircraft structures;" **Cecil E. Nichols, Jr.**, for "development of new techniques of seeding wind tunnels for laser velocimeter measurements;" **Joseph G. Hudson**, for "responsive and effective technical management of task contracts for complex research facility equipment;" **Robert C. Basford**, for "outstanding performance associated with the '1/3-Meter Boundary Layer Control System', the `7-Inch Mach 7 Lox System', and 'Mods to the 8-Foot High Temperature Tunnel Project."

Andrew L. Forbes, Jr. for "exceptional service in providing correlated resource/schedule

Dave F. Crockett

systems on SED engineering efforts, Kentron and Micro-craft support service contracts and the GTE R&D project;" **E. Conrad Compton**, for "exceptional dedication to the HALOE program;" **Susan P. Massey**, for "providing outstanding secretarial services to the Configuration Aeroelasticity Branch;" **R. Wayne Matthews**, for "outstanding contributions to the design, fabrication, programming, and implementation of an alternate system for determining flow characteristics in the Transonic Dynamics Tunnel;" **Jack D. Leatherwood**, for "developing a

E. Miles Riley Jr.

user oriented meter for the assessment and diagnostics of vehicle ride quality;" **Lindsey W. Lowe**, for "outstanding performance in the design of special circuits for support of pilot workload studies."

Phillip T. Smith, for "outstanding performance in the design and development of circuitry for a color CRT monitor for simulator cockpit displays;" **Bruce D. Fisher**, for "outstanding managerial and technical contributions to the Storm Hazards Program of the Special Projects Office;" **Clarence F. Breen**, in "recognition of outstanding performance in support of the LaRC Lifting Operations Program;" **Theresa F. Elliott**, for "outstanding secretarial and administrative support of the programs conducted by the Low-Speed Aerodynamics Division Special Projects Office;" **Rosa C. Webster** and **Jimmy M. Cawthorn**, for "sustained superior performance in Structures Directorate Program Management."

Frances A. Coram, for "sustained superior performance in the conduct of secretarial

NASA

Langley Researcher

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Editor . . . . . Jean Saunders

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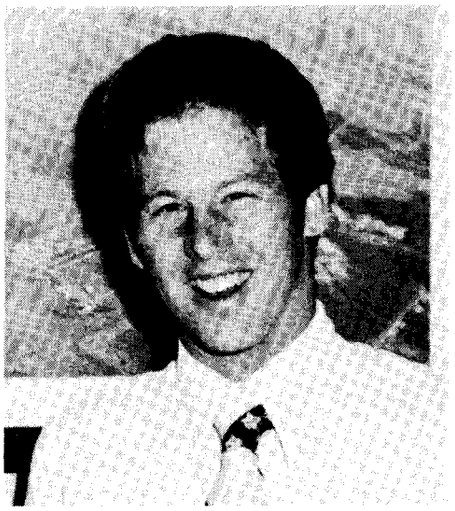
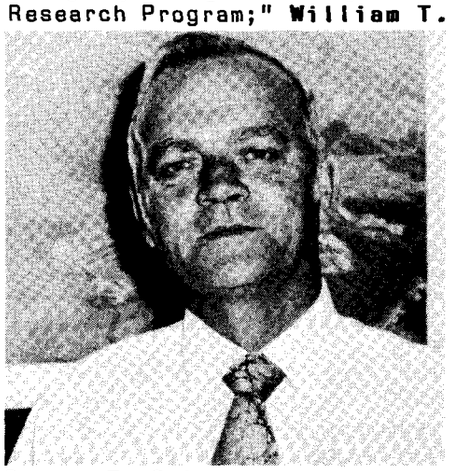


Edward J. Nisbet

duties of the Structures Directorate Office;" **Sandra J. Lowther**, in "recognition of extremely competent and cooperative contributions to the Flight Management Branch during recent reorganizational transitions;" **Larry E. Johnson**, for "superior performance in the exercising of duties related to the development of systems critical to the ATOPS TSRV upgrade;" **Charles W. Meissner, Jr.**, in "recognition for outstanding performance in bringing to a successful conclusion the development of the Software Implemented Fault-Tolerant (SIFT) Computer;" **Bruce K. E. Outlaw**, for "exercising superior performance and innovativeness in modifying the ATOPS TSRV Experimental System for the MLS STEP Flight Program and Supporting Flight Tests."

Salvatore J. Bavuso, in "recognition of outstanding performance in developing a computer-aided reliability estimation program (CARE III);" **Harry V. Fuller**, for "superior performance in the repair of the ATOPS TSRV navigation system and in support of the MLS STEP Flight Program;" **James R. Hall**, in "recognition of outstanding managerial skill in the timely completion of the joint FAA/NASA Runway Friction Program;" **Richard M. Hueschen**, for "the implementation and flight test of the Digital Automatic Landing System;" **Frederick R. Morrell**, for "the development of Redundancy Management Equations for application to flight crucial controls;" **Robert M. Thomas, Jr.**, for "outstanding performance in developing a hardware logic translator for the Diagnostic Emulator;" **David H. Williams**, in "recognition of excellent contributions in the development of an improved engine model for the DC-9 and B-737 simulations."

James J. Adams, in "recognition of technical innovativeness and excellence in the conceptual design, evaluation, and reporting of a pictorial display that can replace conventional attitude, directional gyro, horizontal situation, and flight director indicators in an aircraft instrument panel;" **Dr. Roland L. Bowles**, in "recognition of excellent contributions to the definition of computer requirements for man-in-the-loop simulations that support the Langley Flight Management Research Program;" **William T.**



George E. Geiger

Suit, for "analyses of Shuttle flight test data to obtain improved estimates of aerodynamic characteristics and improved prediction of response characteristics contributing to the safety of future Shuttle flights;" **Ernestine M. Phillips**, for "exceptional contributions to the efficient operation of the Office of Equal Opportunity Programs."

John F. Rogers, for "outstanding work and leadership in performing the fracture control analysis on diverse and complex set of 32 LDEF scientific

William S. Jones

experiments from a group of National and International Experimenters and for characterizing the SE&O vibration test facility to obtain a reliable and accurate capability;" **Robert F. Greene, Jr.**, for "outstanding dedication and performance in managing and performing the thermal analysis for the Long Duration Exposure Facility (LDEF) and its complement of 41 experiments furnished by a diverse group of National and International Scientific Investigators;" **Cynthia S. Belsches**, for "sustained superior performance in carrying out duties as the Engineering Analysis Branch secretary, with special recognition for the outstanding support provided to Space Shuttle Analyses and Cryogenic Models Technology Development activity."

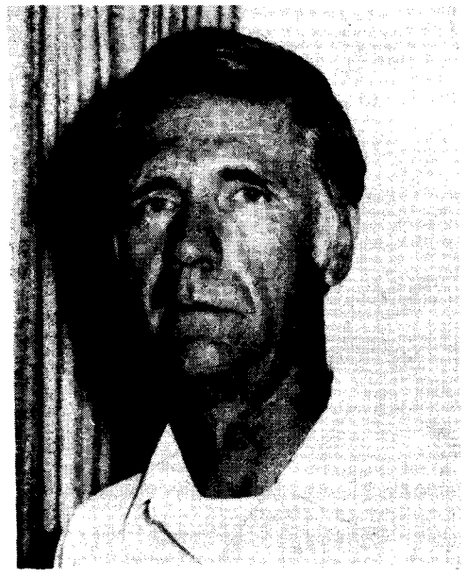
Carol C. Kiser, for "outstanding management of LDEF Experiment Systems and Integration including experiment modeling, environmental testing, design, and planning for experiment launch operations;" **W. Douglas Morris**, for "outstanding performance and contributions toward the development and initial operation of a simulation modeling program for assessing operational features of advanced space transportation systems;" **Sharon K. Crockett**, for "effective leadership in the development of training classes for the

application of ANVIL 4000;" **George E. Whitehurst,** for "effective and innovative effort in the implementation and maintenance of LaRC's CAD/CAM system;" **David H. Butler,** for "outstanding technical support and system management of the Large Space Flight Antenna Program, the Hoop/Column Antenna Program, and the NTF Cooling Coils shakedown and performance evaluation."

William C. Honaker, for "significant contributions to the successful implementation and application of the laser transit anemometer to a variety of research tasks;" **Eugene L. Bunting,** in "recognition of the design and fabrication of a flow control mechanism which significantly increased the Mach 4 tunnel efficiency;" **Janice Y. Smith,** in "recognition of modifications to the Chemical Kinetic Shock Tube resulting in increased data repeatability, accurate control of testing parameters, and efficiency of operation;" **E. Miles Riley, Jr.,** for "sustained superior performance during troubleshooting and repair of the Temperature Scanning System at the National Transonic Facility;" **L. Frederick Tomlinson** and **William E. Sanders,** for "dedication, outstanding performance and contributions which assist the Fabrication Division in supporting the Center's research goals and objectives."

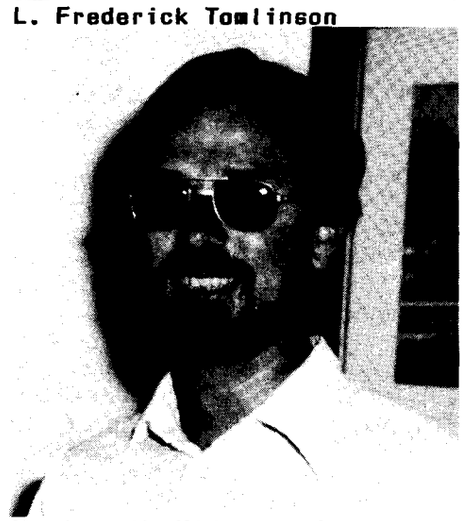
Howard C. Jones, for "outstanding performance and significant contributions to the successful vibrational testing of LDEF experiments;" **Gloria C. Carney,** for sustained high level of performance in timely support of the numerous project activities managed by the Space Systems Engineering Branch;" **Irby W. Jones,** for "sustained and outstanding performance in support of the LHS project;" **Winifred A. Stalnaker,** for "exceptional performance in the development of finite element models of the CGN-38 ship deck and cruise missile launchers;" **Tazwell O. Reed,** for "exceptional performance and contributions to the 8' x 15' thermal vacuum chamber updating and cryo vacuum system installation, and in meeting the MAPS test chamber cleanliness requirements;" **Blair B. Gloss,** for "outstanding performance related to the activation of the NTF and the implementation of research in that facility."

William E. Sanders



L. Frederick Tomlinson

Ned Wagner



Woodrow W. Midgette Jr.

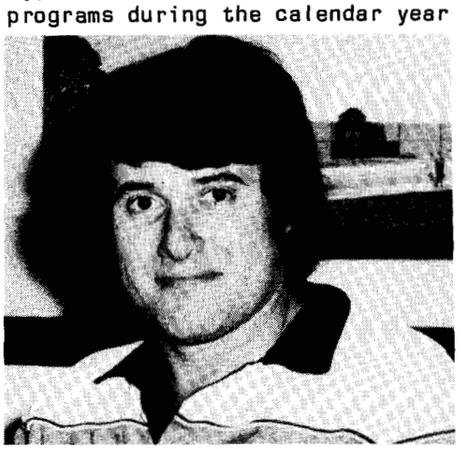
Carl R. Pearson, for "diligence and technical excellence in conceiving and implementing a remote multiplexed fiber optic data system for the 8-Foot High Temperature Tunnel;" **W. Pelham Phillips, William I. Scallion, Bernard Spencer, Jr.** and **George M. Ware,** for "outstanding performance and contributions to the assessment of crew bailout from the Shuttle orbiter during contingency abort situations;" **John L. Hudson, Jr.,** for "outstanding technical leadership and engineering management of the 20-Inch Supersonic Wind Tunnel Project;" **Linda W. Sutherland,** for "providing outstanding secretarial support and leadership for secretarial trainees within the Structural Acoustics Branch;" **Warren R. Nichols,** in "recognition of outstanding performance as the Quality Assurance Specialists assigned to the HALOE Project in assuring the implementation of the reliability and quality requirements essential for Shuttle payloads."

Robert E. Satterthwaite, for "significant contributions in support of Langley's proposed FY '85 discrete programs;" **Kenneth J. A. Balka,** for "determined efforts in developing an efficient data acquisition system

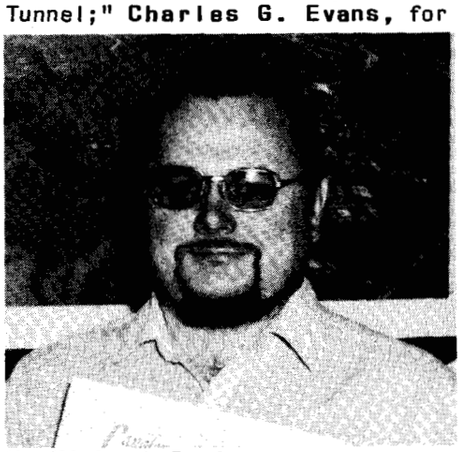
for tests of the DAST ARW-2 wing in SDD;" **Bradley D. Leighty** and **John M. Franke**, for "efficiently and expeditiously adapting and calibrating a light scattering probe for droplet size measurements in the 0.3 meter transonic cryogenic tunnel;" **Charles G. Marple**, for "exceptional performance in developing a vehicular data acquisition system for the Vortex Facility featuring the first laser data communication link used at Langley Research Center;" **Evelyn D. Harris**, in "recognition of the outstanding efforts and dedicated service in support of Langley Research Center's Cooperative Education Program."

Annette L. Forrest, for "outstanding performance for review and processing of compensation claims;" **Brenda N. Steele**, for "exceptional performance in support of Hypersonic Propulsion Branch programs during the calendar year 1983;" **Stephen P. Wilkinson**, for "outstanding innovation in turbulence control and modification;" **Sharon H. Stack**, for "outstanding performance in developing and executing a plan to modernize the data acquisition systems for the research facilities of the Performance Aerodynamics Branch and for implementing a complete aerodynamic analysis and design system on a secure computer;" **Earl H. Andrews, Jr.**, for "outstanding leadership of the test program which demonstrated high levels of net thrust for scramjet engines."

James M. Arbuckle, for "exceptional technical performance with the Robotics Lab development team;" **H. Michael Squires**, for "outstanding contributions to the design, fabrication, and implementation of an alternate system for determining flow characteristics in the Transonic Dynamics Tunnel;" **Charles G. Evans**, for "exemplary performance and support to the Center's Transportation and Support Service Contract Programs;" **Billy G. Smith**, for "exemplary performance and support to the Center's Security Program;"



James M. Arbuckle



H. Michael Squires

Billy J. Smith

Charles G. Evans

Dave E. Crockett, for "outstanding efforts and contributions associated with the operation of the Central Heating and Steam Generation Facility and the High-Pressure Air Compressor Station;" **William S. Jones**, for "innovativeness and dedication in the fabrication engineering of SR-2 propellar blades;" **George E. Geiger**, in "recognition of outstanding effort and contribution associated with the installation, checkout, startup, and operations of Langley's Utilities Control System;" **Edward J. Nisbet**, for "exceptionally high quality of electrical support to the V/STOL and 7 x 10 Wind Tunnel;" **Woodrow W. Midgette, Jr.**, for "excellence in electronics packaging development;" **Ned D. Wagner**, for "exceptional performance in providing technical support to the Energy and Environmental Monitoring Base Station."

James F. Bradshaw, for "dedication and innovative efforts in the development of Cryogenic Model Technology and the design of the Pathfinder I model;" **Eileen M. Strickland**, for "outstanding clerical support of LDEF and ERBE Projects;" **Homer F. Rush, Jr.**, for "dedicated an innovative efforts in the development of cryogenic materials;" **Thomas J. Lash**, for "achievements in troubleshooting and contributions to design modifications for the HALOE electronic motor control system and DSAT flutter suppression system;" **Barry L. Price**, for "innovative application of CAD/CAM techniques to the design of the Pathfinder II fuselage;" **Gerald R. Egan**, for "outstanding and sustained support of the ERBE Instrument Testing Program;" **Alfred B. Vig, Jr.**, for "dedicated and efficient monitoring of model design activity under the Kentron NPS cotnract."

Army Presents Awards for Civilian Service

Frances E. Sabo, Low-Speed Aerodynamics Division, receives a Certificate of Achievement from the Department of the Army for "significant secretarial contributions in the Subsonic Aerodynamics Branch, Low-Speed Aerodynamics Division. For the past 12 years, Sabo, a NASA employee, has provided invaluable support to Army personnel in the Subsonic Aerodynamic Branch. Her support has been timely, professional, comprehensive, and contributed to the success of Army sponsored activities in the Langley 4- by 7-Meter Tunnel. Such support has also contributed materially to the success of the interagency agreement between the Structures Laboratory, USARTL (AVRADCOM)." Presenting the award are Richard L. Long (left), Director of the Army Structures Laboratory, and John C. Wilson, an Army employee assigned to the Low-Speed Aerodynamics Division.

In a recent awards ceremony Dr. Larry Roderick was presented the Department of the Army Commander's Award for Civilian Service. Making the presentation on behalf of Major General Stevens, the AVRADCOM Commander, is R. L. Long, Director of the Army Structures Lab. The award consists of a medal and citation. Dr. Roderick was cited "for exemplifying professional excellence while serving as Chief, Army Aeronautical Research Group and Deputy Director of the Structures Laboratory, US Army Research and Technology Laboratories from 1 June 1981 through 31 May 1983. He has demonstrated great talent for perceptive decision-making and an unusual ability to identify, analyze and set priorities on tasks and projects which resulted in the timely and effective utilization of resources. Dr. Roderick's outstanding achievements reflect great credit upon himself, the Command and the Department of the Army."

MG Story Stevens presents the Commander's Award for Civilian Service to Dr. Warren H. Young, Jr. (right). The Citation read: Dr. Warren H. Young, Jr. is commended for exemplifying professional excellence while serving as Group Leader and Senior Army Research Engineer with the RTL Structures Lab. Through his technical competence, capable leadership and sound judgment, he has directed a series of highly successful projects that were conducted in the Transonic Dynamics Tunnel of the Langley Research Center. The technical knowledge generated by these projects has made significant contributions to the rotorcraft state-of-the-art and will benefit current and future Army helicopter programs. Dr. Young's professional competence and dedication to Army aviation research make him a valuable asset to this Command and a credit to the federal service.

MG Story Stevens presents the Commander's Award for Civilian Service to Mrs. Bettye J. Fields. The citation read: Mrs. Bettye J. Fields is commended for sustained high level performance as Administrative Officer for the RTL Structures Laboratory from 1 August 1980 to 31 May 1983. She has consistently demonstrated a remarkable degree of knowledge of Army and NASA Regulations and administrative procedures. During periods of changes in key personnel, she has provided an essential measure of stability and continuity that has promoted mission accomplishment. Her experience, expertise, and devotion to duty have contributed to outstanding administrative support. Mrs. Fields' competence and outstanding achievements reflect great credit upon herself, the RTL Structures Lab and the federal service.

Tech Brief Awards

The quarterly "NASA Tech Briefs" journal, distributed nationwide, stimulates technology transfer by disseminating information on new developments stemming from aerospace research.

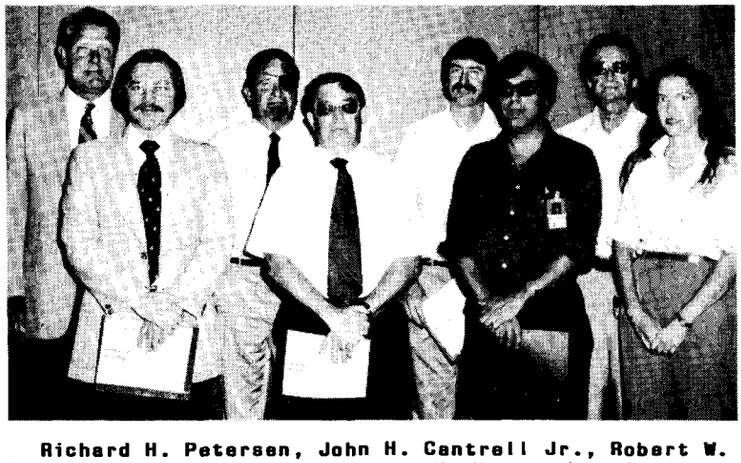
Cash awards and certificates for recent contributions to the Tech Briefs journal were presented to the following employees by Richard H. Petersen, Langley Deputy Director or John F. Stokes, Director for Management Operations.

Jerry W. Deaton, "A Repair Technology Program at NASA on Composite Materials;" **Huey D. Carden** and **Robert J. Hayduk,** "Five Concepts of Energy-Absorbing Airframe Structures for General Aviation;" **L. Robert Jackson, Randall C. Davis, Allan H. Taylor, Robert R. McWithey** and **Max L. Blosser,** "DAZE Fasteners, Inserts, Bushings;" **Edward A. Crossley, Jr., David P. Haynes, Howard C. Jones** and **Irby W. Jones,** "Adjustable Mount for Electro-Optic Transducers in an Evacuated Cryogenic System;" **William H. Phillips,** "Propellar Design Program;" **Robert L. Stermer, Jr.** and **Archibald L. Fripp, Jr.,** "Technique for Producing High-Mobility Epitaxial Silicon Wafers;" **P. Calvin Stainback** and **Charles B. Johnson,** "Measurement of Velocity, Density, and Total Temperature Fluctuations in Compressible Subsonic Flow;" **James C. Patterson, Jr.,** "Wing Tip Vortex Augmented Turbo Pusher Propeller Thrust;" **James F. Meyers** and **Timothy E. Hepner,** "Autocovariance Computer;" **Allan J. Zuckerwar,** "Ground Surface Flow Resistivity Measurement;" **John H. Cantrell, Jr.,** "Optical Fiber Interferometer for Detection of Acoustic Emission in Composites;" **Robert W. Hess, William T. Davis** and **Pamela A. Bolt,** "Oscillating Pressure Device for Dynamic Calibration of Pressure Transducers;" **James L. Rogers, Jr.,** "EAL/PROSS-A Programming System for Structural Synthesis Using the Engineering Analysis Language;" **Don E. Avery, Gary K. Ballard** and **Maywood L. Wilson,** "Heat Transfer Model With Concentrated Single-Wire Thermocouples Fabricated by Electroless Plating;" **Bland A. Stein, James R. Tyeryar, Robert L. Fox, S. Elmo Sterling, Jr.** and **John D. Buckley,** "Rapid Adhesive Bonding;" **Kenneth N. Cole,** "Differential Temperature Control of Electrical Heaters;" **James J. Kiss, Gary L. Farley** (Army) and **Donald J. Baker** (Army), "Shear Panel Test Fixture;" **Gary L. Farley** (Army), **William T. Freeman, Jr.** and **William S. Jones,** "In Situ Composite Fastener;" **Edward V. Browell,** "Remote Tropospheric Sensing With Airborne DIAL System;" **Ronald A. Outlaw** and **Bill T. Baugh,** "Austere Ultrahigh Vacuum (UHV) Sample Transfer System" and "Precision Manipulator Heating and Cooling Assembly;" **Bruce J. Holmes, Cynthia C. Croom** and **Warren C. Kelliher,** "Sublimating Chemical Method for Detecting Laminar Broundary-Layer Transition;" **Bobby L. Berrier,** "Rotating Drum Thrust Reverser and Boundary-Layer Control Device for Nonaxisymmetric Nozzles;" **Willard E. Foss, Jr.,** "A Computer Program for Detailed Analysis of the Takeoff and Landing Performance Capabilities of Transport Category

Seated are **Howard C. Jones, Richard H. Petersen, William H. Phillips** and **David P. Haynes** (retired). Standing are **Robert L. Stermer Jr., Irby W. Jones, Edward A. Crossley Jr., Archibald L. Fripp Jr., P. Calvin Stainback, Charles B. Johnson** and **James C. Patterson Jr.**

John D. Buckley, James R. Tyeryar, Richard H. Petersen, Bland A. Stein, Robert L. Fox, Maywood L. Wilson, Kenneth N. Cole, Gary K. Ballard and **Don E. Avery.**

Richard H. Petersen, Jerry W. Deaton, Robert J. Hayduk, Randall C. Davis, Robert R. McWithey, Max L. Blosser, L. Robert Jackson and **Allan H. Taylor.**



Richard H. Petersen, John H. Cantrell Jr., Robert W. Hess, James L. Rogers Jr., Timothy E. Hepner (Army), **James F. Meyers, William T. Davis** and **Pamela A. Bolt.**

National Aeronautics and
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Aircaft;" **Raymond D. Whipple,** "Rigid Towline Anti-Spin Parachute System;" **Ian O. MacConochie, Ashby G. Lawson** and **H. Neale Kelly,** "Shell Tile Thermal Protection System;" **Moses G. Farmer,** "Flutter Mount System for Testing Rigid Airfoils at Different Angles of Attack;" **James L. Rogers, Jr.** and **Jaroslaw Sobieski,** "PROSSS-Programming Structures Synthesis System;" **Edward N. Fleenor, Jr.,** "Conversion of Stock Bearings to Precision Ground Experimental Bearings;" **George E. Dickerson,** "Process for Molding Nonreinforced (Neat) Resins;" **Allan J. Zuckerwar,** "Acoustic Ground Impedance Meter;" **John E. Lamar,** "VLM-The Extended NASA-Langley Vortex Lattice Method Computer Program;" **Richard G. Wilmoth,** "RAXJET-Prediction Method for Transonic, Axisymmetric Flow Over Nozzel Afterbodies With Supersonic Jet Exhausts;" **Darrell A. Wood,** "RECAP-Resource Escalation and Cost Analysis Program;" **Jag J. Singh,** "Radionuclide Counting Technique for Measuring Wind Velocity;" **Robert L. Ferguson** and **Ray W. Lovelady,** "Underwater Electroacoustic Transducer Fabrication Method;" **James C. Townsend,** "QUIAGA-Quick Interactive Graphics Analysis."

Allan J. Zuckerwar, John E. Lamar, Richard G. Wilmoth, Darrell A. Wood, Jag J. Singh, Robert L. Ferguson, Ray W. Lovelady, John F. Stokes and **James C. Townsend.**

Bobby L. Berrier, Willard E. Foss Jr., Bruce J. Holmes, Richard H. Petersen, Raymond D. Whipple, Cynthia C. Croom and **Warren C. Kelliher.**

Seated are James J. Kiss, Donald J. Baker and **Gary L. Farley** (Army employees), **William T. Freeman Jr.** and **William S. Jones. Standing are Robert L. Swain, Edward V. Browell, Bill T. Baugh** and **Ronald A. Outlaw.**

H. Neale Kelly, Moses G. Farmer, Ian O. MacConochie, Jaroslaw Sobieski, James L. Rogers Jr., Robert C. Goetz (looks on), **John F. Stokes** and **Edward N. Fleenor, Jr.** (retired).

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22 Issue 21 October 21, 1983

NASA Honors Employees at Awards Ceremony

NASA will honor employees who have made outstanding contributions in aeronautical and aerospace research during the past year at the Annual Honor Awards Ceremony Friday, October 28.

John W. "Jack" Boyd, NASA Associate Administrator for Management, will be the guest speaker for the ceremony, which will begin at 1:30 p.m. in the Activities Center.

Boyd has been Associate Administrator for Management since September 4 and provides managerial direction involving all functional management and administrative matters, such as personnel, supply and equipment, facilities and computer support. He also provides managerial advice and support to the administrator, deputy administrator and the program associate administrators.

Boyd began his NASA career at the Ames Research Center in 1947 as an aeronautical research scientist and served in a variety of positions until 1979, when he was appointed Deputy Director of the Dryden Flight Research Center. He returned to Ames in 1980 as Associate Director and served additionally as the Acting Deputy Director.

Employees receiving NASA medals and Group Achievement awards at the ceremony will be featured in a special issue of the **Langley Researcher.**

Trashburner Gets National Honor

"Power" magazine, an energy generation industry publication, awarded a national environmental protection award to the Hampton-NASA trashburning steam plant located at Langley.

The plant is able to dispose of about 200 tons of trash each day. This in turn produces steam that is primarily bought by the research center to cover the costs of operating the plant. This steam has supplied heat to the research center for three years and has significantly reduced fuel oil consumption at the center. The problems with refuse disposal for the city, NASA and Langley Air Force Base have also been lessened as a result.

The award was accepted in Southfield, Mich., on October 11 by James R. Denkins of Langley and Clifton W. Loveland of the City of Hampton.

In addition to the award from "Power" magazine, the project team, which included the city, NASA, the U.S. Air Force and contractor J.M. Kenith Company of Atlanta, has received a NASA Group Achievement Award for their success in designing, constructing and operating the nation's first federal-municipal refuse-fired steam plant.

"Power" magazine was quoted as saying "it (the plant) can serve as a model for other communities."

25th Anniversary
1958-1983

Contributions Near $177,000

As of **Researcher** press time, Langley personnel and NASA affiliated organizations had donated $176,759.90 to the 1983-84 Combined Federal Campaign. This figure represents 90.65 percent of Langley's goal.

Langley has a long history of outstanding participation in community activities, especially in times of community need. The CFC is the one time each year when that community need is made known to us. Please consider the needs of our community and make your pledge if you haven't already done so. Your contribution will help Langley meet its goal, and in turn, will help our community.

The CFC office has closed. Any late reports should be sent to Mail Stop 950.

- photo by Bill Salyer

EEO AWARD. Malcolm P. Clark and Evelyn D. Harris receive the quarterly FY 1983 Equal Employment Opportunity Award from Richard H. Petersen, Langley Deputy Director. Clark and Harris, both of the Training and Educational Services Branch, Personnel Division, were recognized for "Continued Success in the Development and Recruitment of Minorities and Females."

Tips For Better Graphics Service

The following tips have been provided by the Photo/Graphics Branch to help employees receive better and faster graphics services.

- Call for an appointment to discuss graphics requirements
- Make certain that **all** aspects of the requirements are understood (e.g., artwork is to be used as both a report journal figure and a visual)
- Submitted work should be legible and neat; pencil drawings are fine provided they are dark enough to reproduce
- Give advance notice for graphics requirements especially when large displays and silk screening are in involved
- All work must be submitted with a Form 58 and a valid job order number
- To avoid wasted effort, report figures should be checked by the Technical Editing Branch before being submitted for final preparation
- To avoid duplication of effort and wasted time, original artwork which will be used again or updated should be retained
- Prior to a HOLIDAY, allow additional deadline time for graphics service. DO NOT INCLUDE HOLIDAY IN YOUR ALLOWANCE FOR COMPLETED WORK.

For further information, please call Elizabeth Fedors, ext. 3344.

Langley Apprentices to Graduate

Fifty-seven Langley apprentices will receive their journeyman certificates Friday, November 4, at the 39th Annual Completion Exercises for Engineering Technicians.

The ceremony will begin at 1:30 p.m. in the Activities Center. The apprentices will be featured in a special issue of the **Langley Researcher** distributed that day.

Bloodmobile Supported

Langley employees, retirees and contractors donated 341 pints of blood during the September 14 visit of the Red Cross Bloodmobile.

Achieving gallon status were:

13 gallons - Billy B. Dancy.

12 gallons - Sue E. Wilder.

9 gallons - William G. Chapin and Raymond E. Midden.

8 gallons - Billy W. Beasley, William J. Debnam and Robert F. Berry.

7 gallons - Robert Bruce and George T. Carson Jr.

5 gallons - Richard L. Chatten and Earl S. Knight.

4 gallons - John R. Despres, Jack Paden, Clyde C. Lane, Charles A. Sweet and Mary M. Mack.

3 gallons - Tyrone O. Ellis and Herbert Shackelford.

2 gallons - Vance Overbay, Scott O. Kjelgaard, John T. Dorsey, Charles W. Sibbers, Pamela F. Bradley, Edward J. Roberts, Michael Mitchell, Charles Wittkopp and Richard Young.

1 gallon - Nancy K. Myrick, Mark W. Frye, Walter F. Presson, Randolph W. Mixon, Cathie C. Urban, Fereiddum Farassat, Janice Y. Smith, Anthony K. Brooks, Carolyn K. Heinen and Arthur J. Charnick.

Donating blood for the first time were Raghavachari Srivatsan, Susan Jones, Chris Rumsey, Mark C. Shipman, Thaddeus C. Michorczyk, Henry B. Reichle Jr., Peter Cuthbert, Jeffery K. Viken, James B. Miller, Perry R. Liefenbein, Lawrence D. Huebner, Leigh Ann Smith and George McVay.

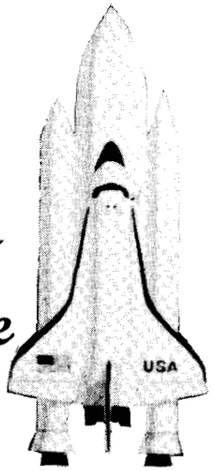
NASA coordinators were Virginia Jones and Annette Forrest; Red Cross coordinators were JoAnn Owens, Marge Turner and Scotty McArthur.

The **Langley Researcher** an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published ever other week in the interest of its employees. Address contributions to the Editor, Mail Stop 115, telephone 3006.

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.

Space Shuttle Update



The Space Shuttle Columbia has been moved from the launch pad--from which it was to have boosted Europe's Spacelab to orbit Oct. 28--and returned to the Vehicle Assembly Building.

One of two solid rocket boosters is suspected of having a possible problem. After the launch of STS-8, the recovered boosters were inspected and "excessive erosion" was discovered in the nozzle of one of the rockets. Morton Thiokol and MSFC believe the problem may have been due to "abnormal processing conditions" of the nozzle's ablative carbon cloth liner and traced the suspected bad batch of material to several SRB's, including one on Columbia which had already been rolled to the pad.

According to a KSC spokesman, the crew of STS-8 was not in danger at any time, contrary to press accounts.

Technicians have until Nov. 10 to replace the lower one quarter of the suspect SRB, which includes the aft segment and the nozzle, and return Columbia to the launch pad to meet the most recent timeline. The timeline, described as "tight," would allow a launch as early as Nov. 28.

No launch date has been set, however. A launch in November would move the projected launch time from about 12:30 p.m. to about 11:00 a.m., reflecting a slight change in launch window and the change to standard time.

One permutation of the slipped launch date is that the delivery of the third orbiter, Discovery, has been delayed from the week of October 17 to early November--or whenever Challenger is moved from the Orbiter Processing Facility or Columbia is returned to the launch pad.

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, October 24; the morning session will begin t 8:30 and will include a presentation by the Office of the Senior Scientist.

PROJECTS
- ERBE Overview
- Eleventh ERBE Science Team Meeting Review

SE&O
- SE&O Summary
- NTF Update
- Composite Pultrusion Technology

AERONAUTICS
- Yaw Vectoring Control for Fighter Aircraft
- Propfan Effects on Unswept Supercritical Wing
- Laminar Flow Nacelles for Transport Application

STRUCTURES
- Propeller Noise Research
- Adhesive Bonded Joints

The afternoon session will begin at 1:30 and will include a presentation by Management Operations.

ELECTRONICS
- An Integrated Control/Display System Concept
- Restructurable Controls: Concepts and Examples

SPACE
- Effect of Volcanic Material in Polar Stratosphere on Commercial Aircraft Windshields
- Aerodynamic Development of the Shuttle Orbiter

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.

HI Offers Degree Opportunities

Hampton Institute offers two professional degrees through its Division of Continuing Education program on Langley Air Force Base: the bachelor of science degree in business management and the master's degree in guidance and counseling.

Five eight-week sessions per year allow qualified enrollees to earn credits at an accelerated pace. Classes meet on Base during the hours of 5-10 p.m. daily. Regular college faculty and fully credentialed adjunct faculty staff the programs. Session two will begin October 24 and will end December 16. Registration is open until October 21. New applications are accepted throughout the year. Tuition is $33 per credit hour until the January term. Tuition will then increase to $40 per credit hour. Master Card and Visa are accepted. The programs are also approved for V.A. Benefits and Tuition Assistance. Any qualified person may apply.

For further information, call Dr. Ire A. Page, 851-3469.

Langley Federal Women's Program

Bradley to Discuss Her Federal Career

Ann P. Bradley, Deputy Associate Administrator for Management at NASA Headquarters, will discuss her career in the federal service at a special Federal Women's Program November 7 in the Activities Center at 10:30 a.m.

As Deputy Associate Administrator for Management, Bradley assists the Associate Administrator providing executive leadership, direction and coordinating agency-wide administrative management activities involving personnel and staffing, information management facilities, ADP systems, office automation, supply and equipment, occupational health, aircraft, transportation, industrial relations and security.

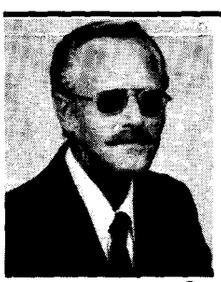
Bradley joined NASA Headquarters in April 1973 as a Personnel Management Specialist. In September 1974 she was appointed a Princeton Fellow in Public Affairs and attended the

Woodrow Wilson School at Princeton University. She returned to Headquarters in June 1975 as Assistant Executive Officer to the Deputy Administrator at NASA. From July 1976 to September 1979, she was the Director of Administration and Management Support at the Dryden Flight Research Center. In September 1979 she went to the Jet Propulsion Laboratory to be Manager of the NASA Resident Office and in April 1980, she returned to Headquarters as Deputy Associate Administrator for Management Operations.

Prior to joining NASA, Bradley served in various personnel management positions with the Office of Economic Opportunity and the Agency for International Development, having originally entered the Federal Government in 1955 with the Central Intelligence Agency. She also served a tour of duty with the U.S. Air Force from 1957 to 1960.

Born in Washington, D.C., Bradley received a bachelor's degree from George Washington University, Washington, D.C. She received NASA's Director's Award while at Dryden Flight Research Center in 1978 and the NASA Exceptional Service Medal in 1982.

In Memoriam



John W. Sundy, a construction representative in the Construction Management Unit, SSQRO, died after a lengthy illness on September 12, in Riverside Hospital. He was 52.

John was employed by NACA on September 16, 1955, and graduated from the NASA Apprentice School in 1961. He served as a supervisor in the Laboratory and Plant Electrical Section of OSD until June 13, 1983, when he transferred to the Construction Management Unit, SSQRO.

John W. Wainwright, Sundy's supervisor, said, "John's experience with the center's electrical distribution systems was a great asset in his duties as a construction representative. John's technical skills and ability to communicate with his co-workers greatly enhanced the unit's performance. John's pleasing disposition and dry wit made him a pleasure to work with--he will be greatly missed."

Stanley B. Heywood Jr., 55, an engineering technician in the Fabrication Division, died at his home in Williamsburg, September 23.

He began his NASA career September 1, 1963 in the Light Machine Shop, and was re-assigned to the Advanced Machining Development Section working in the Numerical Controlled Machining Unit. He was then given lead responsibility in the Electrical Discharge Machining area where he contributed significantly both in the up-dating of equipment as well as advancing the state-of-the-art.

Co-workers stated that Heywood's unique, congenial personality and his willingness to help others were exceptional and will be greatly missed.

Douglas Stroupe, head, Advanced Machining Development Section said, "Stan was a key member of the section and his expertise will be difficult to replace."

Change Your Clocks

It's time to move back the clocks. Everyone is reminded that the switch from Eastern Daylight Time to Eastern Standard Time will occur at 2 a.m. October 30.

Thanks

Eddie Fink writes, "I wish to thank all of my friends and co-workers for a great retirement party, and for the nice gifts I received. Don't miss my work, but sure miss my friends!"

Pauline Leftwich and son, Joe, write "The family of William J. Leftwich Jr., would like to thank the NASA employees for the kindnesses and sympathy shown to us following his recent death. NASA was his second home and he always loved working there. Our heartfelt thanks to each of you."

Langley Staff Members Earn Advanced Degrees

Twelve staff members have received advanced degrees through the center's Graduate Study Program during Fiscal Year 1983.

The program, established in the late 1940s, provides Langley scientists, engineers and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while working at Langley. Approximately 840 employees have been awarded master's or doctoral degrees through the program.

Doctoral degrees have been awarded to the following two employees: Christine M. Darden, High-Speed Aerodynamics Division, Doctor of Science in Mechanical Engineering - Fluid Mechanics from George Washington University and Peter A. Gnoffo, Space Systems Division, Doctor of Philosophy in Mechanical and Aerospace Engineering from Princeton University.

The Professional Degree of Engineering has been awarded to Patricia W. Block, Acoustics and Noise Reduction Division, from George Washington University.

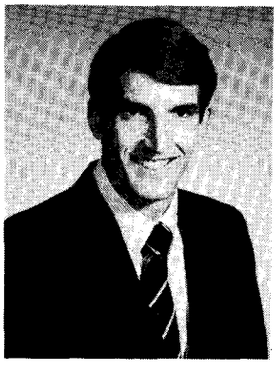
Master's degrees were awarded to the following nine employees: John R. Carlson, Transonic Aerodynamics Division, Master of Science in Mechanical Engineering from George Washington University; Panice H. Clark, Acquisition Division, Master of Public Administration from Golden Gate University; Plesent W. Goode IV (not pictured). Flight Dynamics and Control Division, Master of Science in Applied Science from College of William and Mary; Michael M. Hart, Flight Electronics Division, Master of Engineering (Electrical) from Cornell University; William D. Olstad, Facilities Engineering Division, Master of Engineering in Computer and Systems Engineering from Rensselaer Polytechnic Institute; Thomas E. Pinelli, Research Information and Applications Division, Master of Science in Library and Information Science from Catholic University of America; Robert M. Thomas, Jr., Flight Control Systems Division, Master of Science in Applied Science - Computer Science from College of William and Mary; Jon E. Thompson, Facilities Engineering Division, Master of Science in Mechanical Engineering from University of Akron; and Thomas M. Moul, Low-Speed Aerodynamics Division, Master of Science in Aerospace Engineering from George Washington University.

The Training and Educational Services Branch congratulates these individuals for the long hours and hard work necessary for this academic accomplishment. Such work not only brings additional expertise to Langley but also enhances the individual's professional growth and career development.

For information on the Center's Graduate Study Program, call the Training and Educational Services Branch, ext. 2611.

Fire-Wise Tip

Don't use a candle inside your Halloween pumpkin. Electric light is safer and makes the pumpkin last longer. For more information on Halloween safety call your Newport News Fire Prevention Bureau at 247-8873.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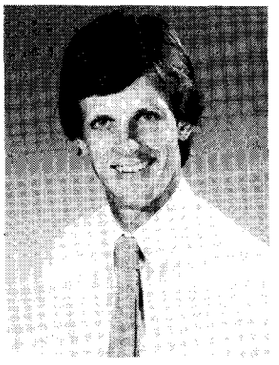
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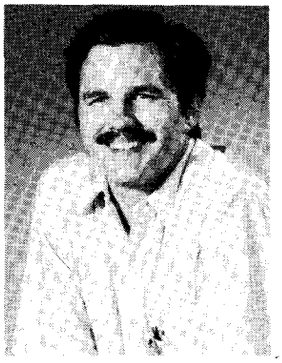
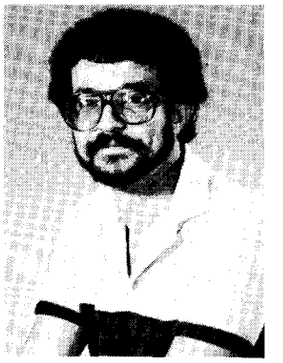

Carlson

Clark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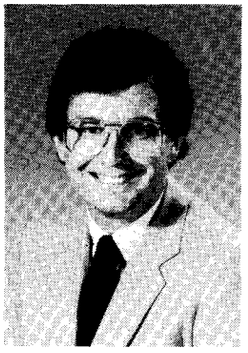
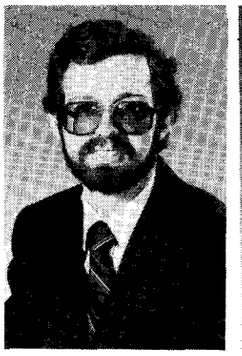
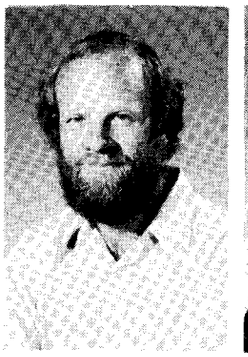
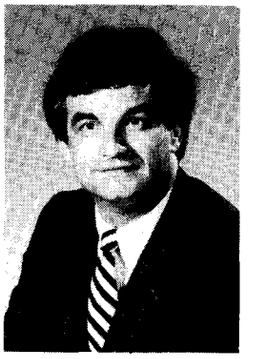

Gnoffo

Darden


Thompson

Block


Thomas


Pinelli

LAA

Walt Disney Film Festival

OCTOBER 30 - - - PETER PAN
This classic story of the boy who would not grow up includes the memorable characters of Peter Pan, Wendy, Tinker Bell, the vile pirate Captain Hook, and his blubbery first mate Smee. . . . . 1 hr. & 20 min.

NOVEMBER 20 - - - NIGHT CROSSING
In the fall of 1979, two families built a makeshift hot air balloon and dared an escape from the oppression of communist East Germany for freedom in the West by riding the wind. This inspiring story is filled with heart-pounding suspense, and above all, great courage! . . . . . 1 hr. & 50 min.

DECEMBER 11 - - - CHILDREN'S CHRISTMAS CARTOONS & VISIT FROM SANTA
"Fun & Fancy Free" an animated surprise package of lighthearted fun and delightful fancy. You'll enjoy the escapades of Bongo, Mickey and the Beanstalk, and more. Also being shown "Santa's Workshop." . . . . . 2 hrs.

JANUARY 22 - - - DUMBO
As packed with excitement as a three-ring circus, "Dumbo" is the story of a baby elephant with oversized ears who, with the help of his only friend Timothy Mouse, soars to fame and fortune when he learns to fly . . . . . 1 hr.

FEBRUARY 12 - - - ICABOD & MR. TOAD & LONESOME GHOSTS
Animated version of "The Legend of Sleepy Hollow" and the classic "Wind in the Willows" and Mickey and Donald cartoon. . . . . 1 hr.

MARCH 18 - - - THE SWORD IN THE STONE
Of all the monarchs in life or legend, one of the most heroic is King Arthur. Delight in the medieval magic of his exciting boyhood through this animated classic. . . . . 1 hr. & 20 min.

APRIL 15 - - - CHILDREN'S EASTER EGG HUNT
Easter Egg Hunt on LAA grounds for 5 different age groups and prizes for each group.

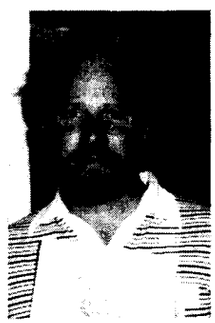
Price - 75 cents per person . . . . . 2 p.m.
NASA Activities Center, Building 1222

Employees Receive Suggestion Awards

The Langley Suggestion System was established to increase productivity, efficiency, economy and other improvements in center operations. Employees are recognized and rewarded, either individually or collectively, for idea - type contributions which are adopted.

Suggestion Awards have been presented to **Robin K. Rubrecht,** for a "Multichannel Variable Ramp Attenuator;" **Charles E. Jenkins,** for "Installation and fabrication of the NTF flow filter;" and **David F. Johnston,** for "Modification of Control on Sundstrand 5 Axis OMNIMIL."

An Honorary Suggestion Award has been presented to **Virginia B. Marks,** for "Combining Forms 11 and 53."


Jenkins

Johnston

WOODEN SPOONS AND ROLLING PINS will be among the hundreds of 18th-century reproductions available in booths at Colonial Williamsburg's Publick Times and Colonial Fair, Oct. 22-23. The gala weekend event will be reminiscent of the Publick Times held in Williamsburg 200 years ago when merchants, planters and socialites gathered in town during Virginia government and court sessions. Publick Times also will draw 600 costumed military men and camp followers who will demonstrate the drills, cooking and daily life of 18th-century soldiers. Festivities include colonial dancing, plays, music, juggling, acrobatics, auctions, carriage races, livestock displays, parades and fireworks. All activities will take place on Colonial Williamsburg's Market Square and Courthouse Green. Hours of the event are Saturday, 9 a.m.-1 a.m., and Sunday, 9 a.m.-10:30 p.m. Admission is free.

Employee Rally Set

The lack of a proper or adequate cost-of-living increase and a 20 percent increase in health insurance will be the topics discussed at a free federal employee rally Saturday, October 22.

The rally will be held from 3:30 to 5:30 p.m. at the ODU Field House in Norfolk. Invited guests include Senators Paul Trible and John Warner and Congressmen Herb Bateman, Norm Sisisky and Bill Whitehurst.

Those who would like to carpool to the rally should be at the Langley Federal Credit Union's Riverdale Branch by 2 p.m. Retirees, family and friends are also invited.

The American Federation of Government Employees Local 2755 is coordinating Peninsula efforts. Questions may be addressed to any officer or steward or by calling 826-5134 or 850-1515, in the evening.

Happenings

HAPPY HOUR will be held today from 4 to 7 p.m. in the Activities Center. FULL CIRCLE, a comtemporary band, will furnish the evening's entertainment.

BINGO will be played Thursday, October 27, beginning with the "early bird" at 7:10 p.m.; regular games start at 7:30.

INTERCENTER JOGGING COMPETITION. Participation in the intercenter jogging competition has been lighter than usual. Times on any certified course between October 1-23 can be counted. All participants in both the Phoebus and Coliseum 10k please call your times in to Bill Woods, ext 2483, before October 30.

ONE DAY TRIP TO READING, PA. Leave October 29 - 12 a.m., shop all day Saturday - leave Reading at 5 p.m. - supper stop, return home at midnight. Cost of trip $30 per seat. Call Betty Joyner for more details at ext. 3285 or 826-4684 (after 5 p.m.)

LAA PLANS. The 1983 LAA Turkey Shoot will be held Saturday, November 12, from 9 a.m. until sunset. Raffle tickets are available from LAA club members. An Arts and Crafts show will also be held in conjunction with the Turkey Shoot. The show will be on Saturday, November 12, from 12 to 5 p.m. and Sunday, November 13, from 1 to 5 p.m. Volunteers are needed to help with the Turkey Shoot. If you can help call Ernie Green, ext. 2312.

COMPUTER SCIENCE SEMINAR. Dr. Jack Fritz, IBM Engineering/Scientific Branch in Washington D.C., will speak Monday, October 24, at 3 p.m. in the Activities Center. Fritz will discuss the IBM computing hardware and softwre tools being used in IBM research laboratories to solve engineering and scientific problems. In addition, an IBM van will be at Langley Wednesday, October 26, for demonstrations of the products discussed on Monday. Hardware in the van will include an IBM 4300, an IBM personal computer, and graphics devices. Attendance at the Wednesday demonstrations will be limited, so sign up sheets will be available at the October 24 seminar.

SAILING COURSE OFFERED. Williamsburg Flotilla of the U.S. Coast Guard Auxiliary will be offering a seven lesson basic sailing and seamanship course Monday and Thursday nights from 7 to 9. The course will be taught at Lafayette High School starting October 17. Topics to be taught are sailing terminology, how a boat sails, basic sailboat maneuvering, how to rig and handle a sailboat, weather forecasting and bad weather sailing, rules of the road and legal requirements, sailing seamanship and knot tying. Text books for the course will be available for $10. Additional information can be obtained from Andrew Swanson, 229-8024.

SCI-CON 5. HaROSFA, the NASA science fiction club, is helping to sponsor SCI-CON 5, the fifth convention of Tidewater science fiction fans. It is being held at the Sheraton Inn Virginia Beach November 4-6, 1983. The guest of honor is Alan Dean Foster noted author of "Alien," "Star Logs" 1-10, and over 30 other books. Other guests include Ron Miller conceptual artist for the upcoming "Dune" movie, Allen Wold "Star Gods," Somtow Sucharitkul (Starship and Haiku), and Richard Pini (Elfquest). There will also be presentations by Scott Holton of MGM-UA on the new movie "Brainstorm." Convention memberships are $13 at the door. For more information contact the club president John Kaiser, ext 2146, Mail Stop 157B.

"THE CHEMICAL PEOPLE" will be shown on WHRO, Channel 15, November 2 and 9 at 8 p.m. The goal of the first program, "The Chemical Society," is to present the facts about school-age drug and alcohol abuse in communities across America in an attempt to motivate each community to face the problem in a coherent way. The second night, "Community Answers" will reveal how those suffering and those who want to help can band together to organize a community effort to combat the problems of rampant drug and alcohol abuse among young people. Both programs feature the First Lady, Nancy Reagan and other celebrity co-hosts. For more information call 868-6575.

- photo by Hubert Lloyd

NATO DIRECTORS VISIT LANGLEY. Ed Bruce (fourth from right) gives members of the NATO Four Power National Armament Directors group a tour of the National Transonic Facility September 21. Dr. Robert DeLauer (third from left), Under Secretary of Defense for Research and Engineering, headed the U.S. delegation. In addition to the NTF tour, the group was given a Langley overview by Director Donald Hearth.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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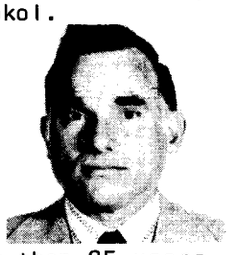
CFC

Candidates for LAA Executive Board

Four offices on the LAA Executive Board will be filled in the upcoming election, November 7-21. Running unopposed for the offices of Treasurer, Social Committee Chairman, and Arts and Crafts Committee Chairman are, respectively, **Patricia F. (Pat) Gates, D. Eugene (Gene) Hicks,** and **Betty B. Hughes.**

The candidates for Vice President are William C. Henley, Jr. and Samuel Sokol.



SAMUEL SOKOL is an Aerospace Technologist in the Spacecraft Instrumentation Systems Section, FED. A NASA employee for more than 25 years, he has served the LAA by being in charge of a carnival concession every year for the last six or seven years, and has been President of the LaRC Tenpin Bowling League. He has served in such civic offices as President and Vice President of the Mallory Civic Association; President, Vice President, and Treasurer in the Parent Teachers Association; and Board Member and Concession Chairman of the Mallory Swimming Association.

WILLIAM C. HENLEY, JR. is an Engineering Technician in the Instrument Application Branch, IRD. A NASA employee for 29 years, he has served the LAA as Children's Committee Chairman and has served as a division delegate for a number of years. He has served in such civic and fraternal offices as President of the Khedive Temple Oriental Band, State Chairman on Youth Accent for the Eastern Star, and Past Worthy Patron of the Warwick Eastern Star. He is State President for the 1976 Matrons and Patrons of the Order of Eastern Star, and is Chairman of the Peninsula Shrine Club's Ways and Means Committee.

Ranftl Seminar Set

Robert Ranftl, the Corporate Director of Engineering/Design Management at Hughes Aircraft Company, will conduct a one-day seminar on R & D Productivity for Center senior management October 31 in Building 1219.

Ranftl is exceptionally qualified by virtue of his extensive experience in managing high technology enterprises over the last 30 years. He has lectured widely on the subject of productivity and is the author of numerous publications, the most noteworthy being R & D Productivity and Productivity: Prospects for Growth.

Topics covered in the seminar will include definition and analysis of organizational, operational, and managerial productivity, the identification of counterproductive factors in the organization and the development of strategies to reduce or eliminate those factors.

cafeteria menu

WEEK OF OCTOBER 24-28

MONDAY: Seafood Gumbo; Chicken Gizzards & Rice; Stuffed Pepper; New England Scrod. Snack Bar: Beef & Cheese Club; Knockwurst on Bun.
TUESDAY: Old Fashioned Bean Soup; Deluxe Rib-Eye Steak Sandwich; Roast Pork & Dressing; Turkey Nuggets. Snack Bar: Chicken NASA; 1/4 lb. Cheeseburger.
WEDNESDAY: Fresh Vegetable Soup; Chicken & Dumplings; Chopped Steak; Quiche Lorraine. Snack Bar: Steak & Cheese Sub; Polish Sausage on Bun.
THURSDAY: Chicken Noodle Soup; Beef Enchiladas; Crab Cutlets; Braised Chicken Livers. Snack Bar: Rib-B-Q on Bun; NASA Sub.
FRIDAY: Bull Island Clam Chowder; Fish Cakes Dinner; Franks & Baked Beans; Chuckwagon Steak. Snack Bar: 1/4 lb. Bacon Cheeseburger; Beef & Cheese Burrito.

WEEK OF OCTOBER 31-NOVEMBER 4

MONDAY: Minestone Soup; Meatloaf Sandwich w/Mashed Potatoes; Cheese Omelet; Chicken Pot Pie. Snack Bar: BBQ Beef Sandwich; Hot Ham & Cheese on Kaiser Roll.
TUESDAY: Tomato & Rice Soup; Beef Liver & Onions; Veal Cordon Bleu; Broiled Filet of Trout. Snack Bar: Hot Italian Sausage; 1/4 lb. Cheeseburger.
WEDNESDAY: Fresh Vegetable Soup; Pork Chops & Applesauce; Baked 1/2 Chicken; Braised Beef & Vegetables. Snack Bar: Ham & Cheese Club; Knockwurst on Bun.
THURSDAY: Beef Vegetable Soup; Roast Beef Au Jus; Salmon Patties & Cole Slaw; Braised Chicken Livers. Snack Bar: Rib-B-Q on Bun; Italian Beef & Pepper Sub.
FRIDAY: Bull Island Clam Chowder; Fish Dinner; Burrito & Spanish Rice; Country Style Steak. Snack Bar: Corned Beef Reuben; Turkey Club Sandwich.

swap and shop

FOR SALE

Vehicles
1975 Plymouth Valiant, 4-dsed, 6 cyl, AT, AC, PS, 95,000 mi, GC, VG rad tires, $1,195. Call 838-4477 after 5:30 and weekends.

Articles
Rotohoe shredder and mulcher, hammer mill type, EC, $265. Call 229-7445.

LOST
Fluke Digital Thermometer, NASA Control No. 181643. Call Wayne Sawyer, ext. 2239, if you have any information regarding same.

WANTED
Driver for car pool from Norfolk to West area on 7:30 a.m. shift. Call Hudgins, ext. 3072.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

SPECIAL ISSUE

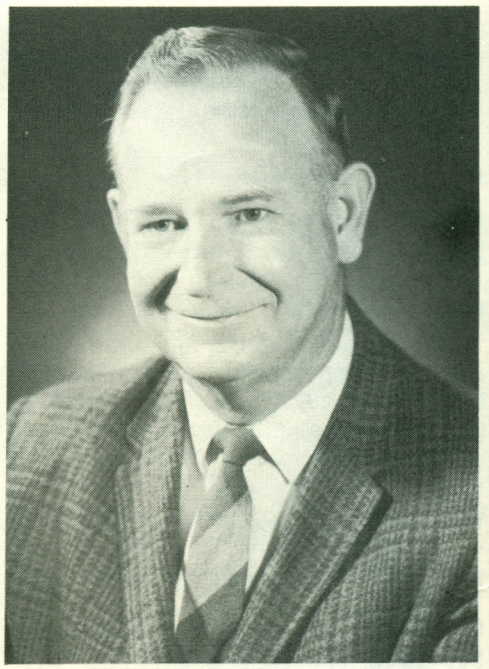
November 4, 1983

Apprentices Graduate Today

Thirty-ninth Annual Completion Exercises
H.J.E. Reid Auditorium, Activities Center

Program

Presiding	*Dr. Donald P. Hearth* Director
Processional	Hampton High School Band *Directed by Mr. Dave Anson*
Invocation	*Reverend Dr. Robert E. Gray* Temple Baptist Church, Newport News
Speaker, Class of 1983	*Mr. Delwin R. Croom, Jr.*
Musical Selection	Hampton High School Band
Introduction of Speaker	*Dr. Donald P. Hearth*
Address	*Mr. James H. Parks* Former Assistant Director for Systems Engineering & Operations
Presentation of Certificates	*Mr. Malcom P. Clark* Head, Training and Educational Services Branch
Closing Remarks	*Dr. Donald P. Hearth*
Recessional	Hampton High School Band



Parks to Address Graduates

James H. Parks, former Assistant Director for Systems Engineering and Operations at Langley, will be the guest speaker for the apprentice graduation ceremony at 1:30 p.m. today. The 39th Annual Completion Exercises for Engineering Technicians will be held in the Activities Center.

Parks, who retired from NASA in December 1979 after more than 37 years of federal service, assisted the Director for SE&O in managing the activites of five principle divisions: Fabrication, Operations Support, Systems Engineering, Research Facilities Engineering and Plant Engineering. The Systems Engineering and Operations Directorate is a multi-disciplined engineering and technical organization comprised, at that time, of over 1,100 Civil Service employees and a contract staff of approximately 450 employees, responsible for unique research and testing facilities valued at more than $350 million. Parks personally directed the center's formal design review system, chairing all major review committees for center spaceflight hardware/projects and ground-based facilities/faculty support equipment.

In addition to Parks' technical and managerial achievements, one of his major accomplishments was in his interest in and development of new employees to enable them to reach their full potential. He served as a member and/or chairman of senior career development committees for many years and played a major role in the development of Langley's current middle management personnel. This interest was evidenced by his tenure on the Professional Entrance Training Review Committee, the Under Graduate Training Committee and the Apprentice Advisory Committee.

Director's Comments

Best Wishes for Your Success

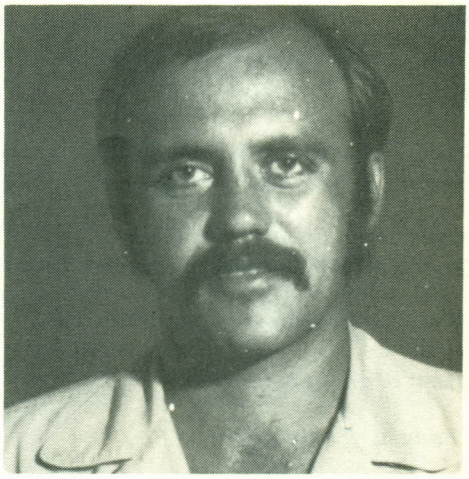
Today is a special day for you--one, I am sure, you have been striving to reach for the past five years of schooling and training. I congratulate all of you on the completion of the Engineering Technician Apprentice Program.

I especially congratulate the 25 honor graduates for their achievements. They are graduating with at least a 3.20 grade point average. These graduates represent approximately 44 percent of this year's class.

Best wishes to each of you as you begin your new careers. I am very proud of you.

Donald P. Hearth
Langley Director

In Memoriam



Robert J. Quesinberry, who was to graduate today, died in a traffic accident in North Carolina May 23, 1982. He was 29.

An apprentice electrical engineering technician in the Operations Support Division, Quesinberry had worked at Langley since September 1980. "He was an outstanding young man," said William Small, an electrical enginnering technician who worked with Quesinberry in the Electrical Support Branch. "Quesinberry had an excellent attitude toward his work and his co-workers. He always showed an eagerness to take on new and more challenging work. He will surely be missed by all of us."

Croom Elected Class Speaker

Delwin R. Croom Jr., Fabrication Division, has been elected by his classmates as Speaker for the Class of 1983 at today's ceremony.

Graduating with honors from the Engineering Technician Training Program's Mechanical Development curriculum, Croom has been assigned to the Advanced Machining Development Section since the beginning of his apprenticeship. "My educational background was purely liberal arts. Based on my part-time job experince in construction, it was determined that this section was a good place for me to be assigned," explained Croom.

Croom has already completed several projects, including Self-Noise 2-D Airfoils and 1/2 Scale Pathfinder I. "I have always enjoyed working with my hands. My basic interests, hobby wise and eductional, have been in the space program. The technology that NASA is developing and the spinoffs will help our nation become ready for the 21st century. The apprentice program offered me a good way to train myself and to be of service to others," he said.

A native of Hampton, Croom graduated from Bethel High School in 1973 and is attending Old Dominion University where he is pursuing a bachelor of science degree in physics. "I plan to get a master's degree or doctorate in astrophysics with hopes of working with the interplanetary studies group at the Jet Propulsion Laboratory in Pasadena, Calif.," Croom said as he discussed his future.

Before joining NASA, Croom was a store manager for Jack-In-The-Box restaurants. He has worked at the Newport News Shipbuilding and Drydock Company, Basic Construction Company and the Virginia ABC Department.

He was a member of Boy Scout Troop 57 where he earned the Eagle Scout award. Scouting honors include Lodge Chief of Kecoughtan Lodge 463 Order of the Arrow, where he is a Vigil Honor member. He is also a member of the Apprentice Advisory Committee, co-leader of the Shopkeepers Quality Circle and Recording Secretary of IAM, Local Lodge 892.

Class History

The Class of 1983 represents the seventh class in which Thomas Nelson Community College Technical Co-op graduates have been combined with Langley's Engineering Technician Training Program.

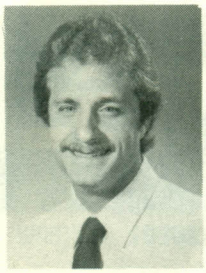
Eighty-six individuals were hired in FY 1980, majority taken from the GS-4 register. The new apprentices ranged in educational background from a master's degree in biology, 13 bachelor's degrees and 10 associate degrees, to a general equivalency of two years post-secondary education, making this class one of the largest in recent years. All of the apprentices in the Class of 1983 entered the program at an advanced standing and were given 18 months credit toward completion of their apprenticeship. Due to normal attrition and competitive promotions, the Class of 1983 has dwindled to 57 graduates.

The future of the Class of 1983 looks bright. Several of the graduates are pursing bachelor's degrees at Christopher Newport College and Old Dominion University. Some of the graduates have already received Special Achievement awards for their work during their brief three years at Langley.

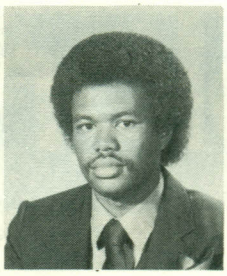
The Class of 1983 is looking forward to advancing the new technologies so necessary in the research environment of the center.

The Class of 1983

*Designates Honor Graduate

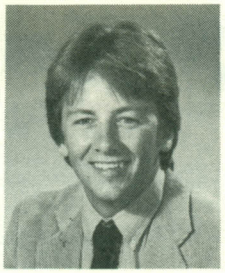


James D. Adkins
Engineering Technician
(Aerospace Model Development), FD

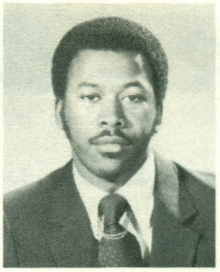


*Obediah Andrews, Jr.
Engineering Technician
(Mechanical Development), FD

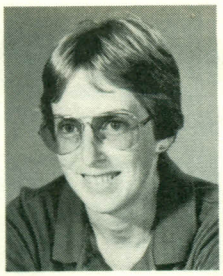
*Donald C. Athearn
Engineering Technician
(Mechanical Development), FD



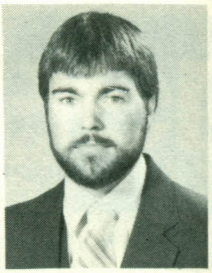
Kevin N. Barnes
Electronics Technician
FDCD



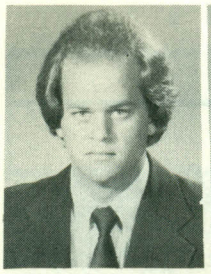
Keith L. Benson
Engineering Technician
(Aerospace Model Development), FD



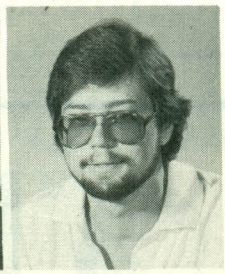
*Maggie Berry
Engineering Technician
(Materials Processes)
FD



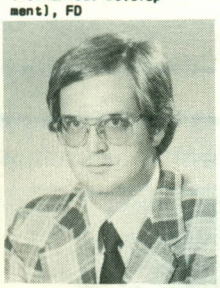
*Michael G. Burroughs
Aerospace Engineering Technician, LSAD



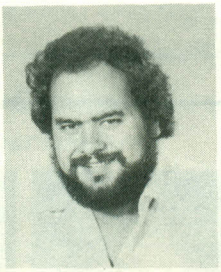
Michael L. Carr
Electrical Engineering Technician, OSD



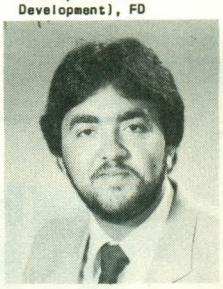
William D. Castle
Engineering Technician
(Aerospace Model Development), FD



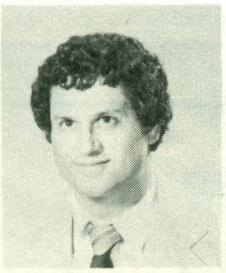
Delwin R. Croom, Jr.
Engineering Technician
(Mechanical Development), FD



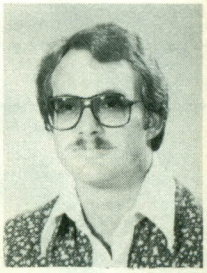
Robert L. D'Angostino Jr.
Engineering Technician
(Mechanical Development), FD



Archie D. Dimery
Electronics Technician
FD



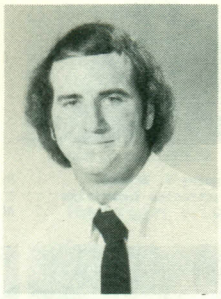
Thomas J. Doneson
Engineering Technician
(Mechanical Development), FD



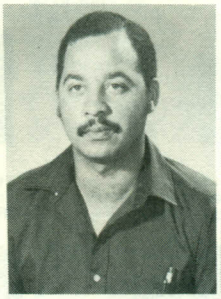
*Daniel W. Fisher
Engineering Technician
(Aerospace Model Development), FD

James K. Geiger
Engineering Technician
(Research Facilities Operations), OSD

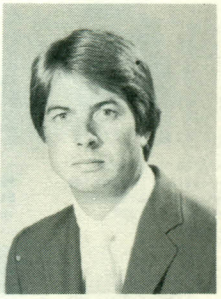
Wanda Lynn Gresham
Engineering Technician
(Research Facilities Operations), OSD



*Mark S. Griffith
Engineering Technician
(Aerospce Model Development), FD



Lonnie D. Hammonds
Electronics Technician
FD



Franklin K. Harris
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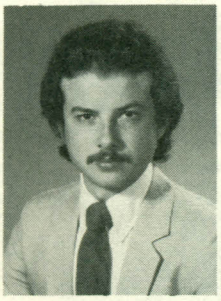

Bill B. Hefner, Jr.
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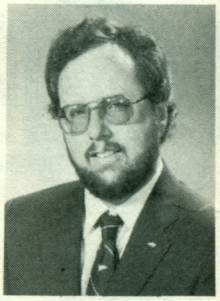

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Curtis R. Horton
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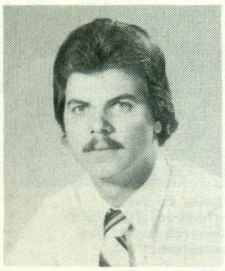

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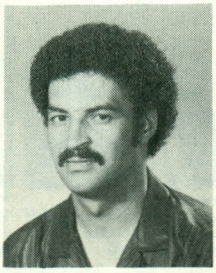

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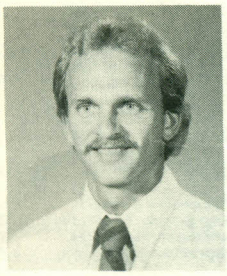

Gary S. Johnson
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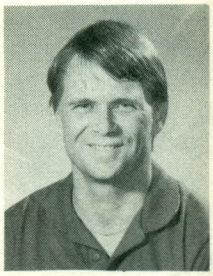

James O. Johnson
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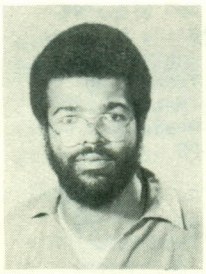

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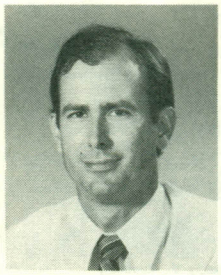

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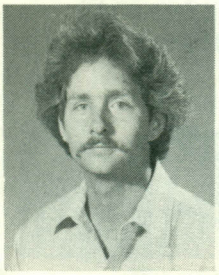

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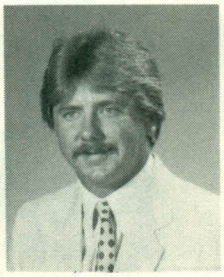

*Thomas R. Levin
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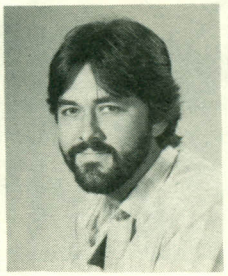

*Mark T. Lord
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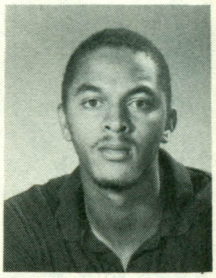

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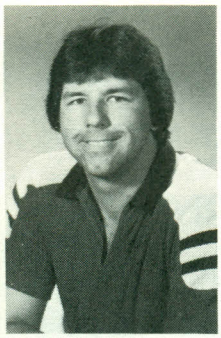

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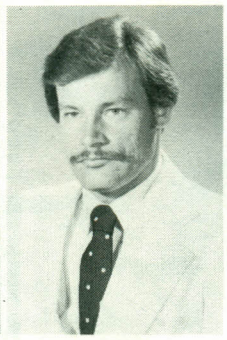

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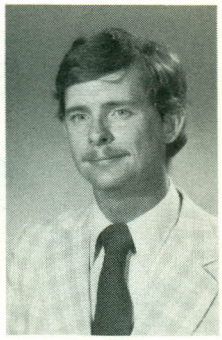

*E. Miles Riley, Jr.
Electrical Engineer-
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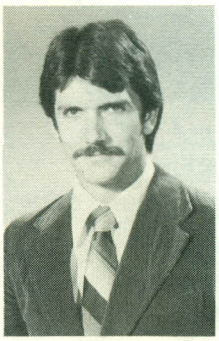
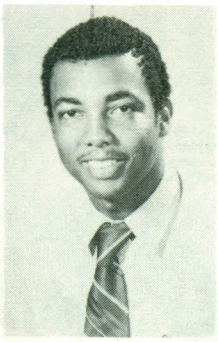


Timothy D. Schott
Electronics Technician
IRD



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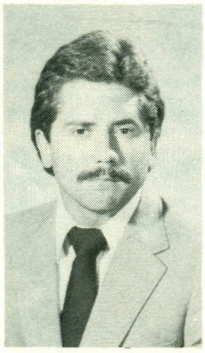
Electronics Technician
ACD

*Danny R. Sprinkle
Electronics Technician
IRD



*Gary P. Stergin
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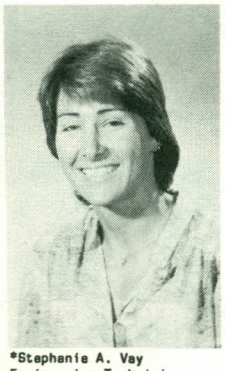

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Operations), OSD

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(Materials Processes)
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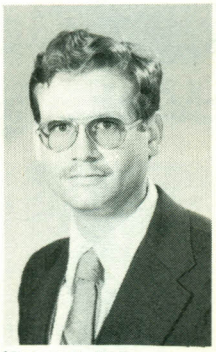

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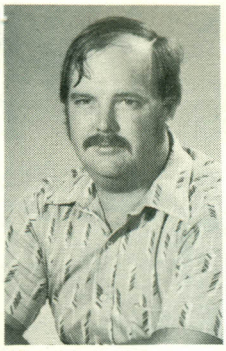

*Thomas F. Weston
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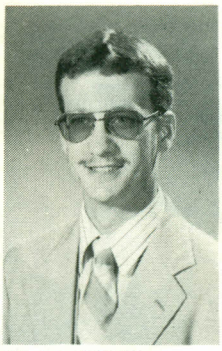

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Engineering Technician
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Engineering Technician
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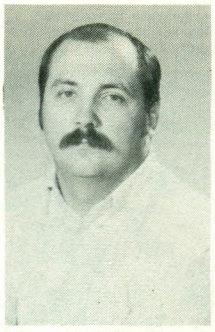

*Norman F. Willey, Jr.
Engineering Technician
(Fabrication Develop-
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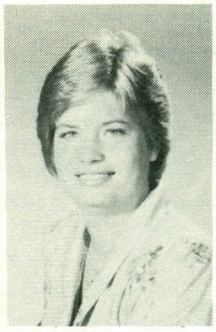

Cheri L. Wood
Engineering Technician
(Research Facilities
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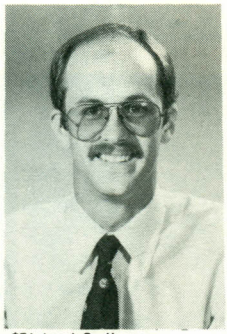
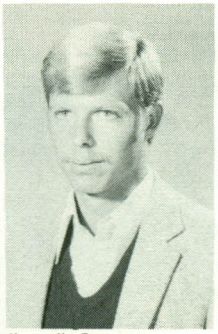
Kathleen M. Yopp
Electronics Technician
IRD



*Richard S. Young
Engineering Technician
(Research Facilities
Operations), OSD

Roy N. Zalameda
Electronics Technician
IRD



Henry N. Zumbrun
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ment), FD

-photos by Bob Nye
-not pictured:
*Gilda A. Miner
Engineering
Technician
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National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 22, Issue 24

December 2, 1983

Director's Comments

Happy Birthday

Be Proud of Your Many Accomplishments

1983 marks the 25th Anniversary of NASA. On October 1, 1958, the National Advisory Committee for Aeronautics (NACA) went out of business and all of the NACA facilities, resources, people and programs became a part of the newly established National Aeronautics and Space Administration (NASA).

Twenty-five years is a long time. During that time, Langley people have accomplished a tremendous amount. Among the many accomplishments that we can point to with pride are the Mercury Project which resulted in the first American orbiting the Earth, the ECHO Project which resulted in the world's first communication satellite, the Viking Project which resulted in the landing on Mars during the nation's bicentennial, and the development of the supercritical airfoil. It has been an exciting and productive 25 years.

Another major accomplishment during the past 25 years was the development of the cryogenic approach for obtaining full scale Reynolds numbers in a transonic wind tunnel. This was not an original idea of Langley people. However, the concept matured at Langley and was demonstrated by a small transonic wind tunnel built inhouse here at Langley. Its success led to approval by NASA and DOD of the Langley proposal for the nation's high Reynolds number transonic wind tunnel. (At the time, we were competing with both the Ames Research Center and the AEDC for the location of the new facility.) The construction of the National Transonic Facility (NTF) was begun in 1976, about the time I came to Langley. In the Spring of 1977 we made a commitment to complete the facility for $85M and to have it operational in the Fall of 1982. We came close to meeting the cost commitment (the final number will be $85.8M), but we did not make the operational date because of problems associated with installation of the insulation inside the tunnel shell.

I have chosen the successful design, construction and checkout of NTF to illustrate our last 25 years because in so many ways it epitomizes Langley and its people. I am convinced that NTF will go down in the history of aeronautical facilities as an engineering and scientific marvel. It is advanced technology in every sense of that term. Thus, it required the application of the many talents of Langley people under very challenging circumstances.

NTF is a tribute to the Transonic Aerodynamics Division for their advocacy and aerodynamic verification of the cryogenic concept. It is a tribute to the project

Continued on page 5.

25

25th Anniversary
1958-1983

NTF Events

Monday, December 5

8 a.m. - 4 p.m.	TAD/NTF Symposium
6:30 p.m. - 9 p.m.	Aero Banquet

Tuesday, December 6

8 a.m. - 12 noon	Mini-Aero Inspection
9:30 a.m. - 11:30 a.m.	TAD/NTF Symposium Tour
10 a.m. - 11 a.m.	Press Briefing and Press Tour
2 p.m. - 3 p.m.	Dedication Ceremony
3 p.m. - 4:30 p.m.	NTF Tour for Dedication Guests
5 p.m. - 6 p.m.	LAA Toast to NTF Workers

Wednesday, December 7

8:30 a.m. - 4:30 p.m.	NTF Open House for Employees and Retirees

For futher details, please see the NTF special issue of the *Langley Researcher* Monday, December 5.

NOTE: See Employees Announcement 32-83 regarding Special Security including parking regulations and street closings, for December 6.

- photo by Bill Salyer

Robert B. Lee III, former Head of the Office of Equal Opportunity Programs, stands beside one of the panels developed by Mary W. Jackson, who is detailed to NASA headquarters as Agency Federal Women's Program Manager, showing Women at Work at NASA. This particular panel is part of the Scientists and Engineers exhibit and includes four Langley women—(center row) Dr. Christine Darden, Carmen Batten, Dr. Judy Shinn and Nettie Faulcon. The panels were on display in the Activites Center November 7 when Ann Bradley, Deputy Associate Administrator for Mangement, spoke to employees during a Federal Women's Program.

Langley Colloquium

Lane to Discuss Cancer Research

In a molecule of DNA in each human cell, there are 100,000 genes, each carrying instructions to produce a single body protein. Inside each gene, 6,000 nucleotides in coded sequence contain the information for the operation of that particular gene.

Researchers have recently been able to discover the details of some minute changes in the genetic code which convert a normal cell to a cancer cell.

Dr. Mary-Ann Lane of the Dana-Farber Cancer Institute, Boston, Mass., will review these recent advances in the understanding of cancer at the Langley colloquium Monday, December 12, in the Activities Center. The lecture, "Current Issues in Cancer Research," will begin at 2 p.m., followed by a question and answer session and an informal discussion.

According to Dr. Lane, the changes which cause a cell to become malignant form a multi-stage process. In several types of cancer, genetic events have been identified which occur at an early stage to produce a rapidly dividing population of cells which is still subject to limitations of its growths through biochemical regulatory signals. In a later event, a second gene becomes activated through changes at the DNA level. Cells in which both events have occurred are no longer subject to regulatory signals and behave in a malignant manner. Understanding the function of these genes in both normal and abnormal cells will lead to methods of preventing cancer.

Lane is Chief of the Laboratory of Molecular Immunobiology at the Dana-Farber Cancer Institute, a branch of the Harvard Medical School. She has studied at Boston University, Georgia State College, the National Institute of Health, Johns Hopkins University and the Cornell University.

Langley Supports Bloodmobile

Langley employees, retirees and contractors donated 342 pints of blood at the November 9 Bloodmobile, sponsored by the American Red Cross.

Achieving gallon status were:

9 gallons - Brickey Hughes.

7 gallons - Stephen Devan and Charles Maysle.

6 gallons - George J. Link, Pendleton M. Jackson and William Hollingsworth.

5 gallons - Donald B. Shortt and Stuart Rose.

4 gallons - Wayne Barfoot, Clarence C. Poe Jr., Douglas Grizzle, J. Richard Rawls, John W. Simpson, Virgil S. Laney, Garland O. Goodwin and John N. Shoosmith.

3 gallons - Wayne Matthews, Michael G. Fleck, Richard Hellgamm and Robert Connell.

2 gallons - Mike Stubbs, Melvin K. Jones, Floyd Ayres, William R. Johnson, Buford Thaxton and Otto C. Ripley.

1 gallon - Dan Vicroy, Gerald Rynal, Kimberly Middleton, Lee T. McIntosh, Myrna Slayton, Ronald G. Hermansderfer, Bessie Sample, Robert Lutinski, Artistine Lethcoe, Steven Bauer, Hubert M. Squares and Richard Knight.

Donating blood for the first time were John F. Carter, Deborah Mitchell, Bert Laity, John Simmons, Donald Rooks, George Palko, William Foster II, Robert A. Hess, Daniel Robertson, Yvonne Weakley, Mary H. Danborn, Phil Robinson, Mercedes Lopez, Fred Carder Jr., Gina Gwaltney and John Micoe.

Red Cross Coordinator was Scotty McArthur. Langley Coordinator was Annette Forrest. Coffee and doughnuts were provided by the Langley Federal Credit Union.

thinking out loud

One of the greatest victories you can gain over a man is to beat him at politeness.

The *Langley Researcher* is an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665. It is published every other week in the interest of its employees. Address contributions to the Editor, Mail Stop 115, telephone 3006.

Editor ..... Jean Saunders

Staff Photographer ..... Bob Nye

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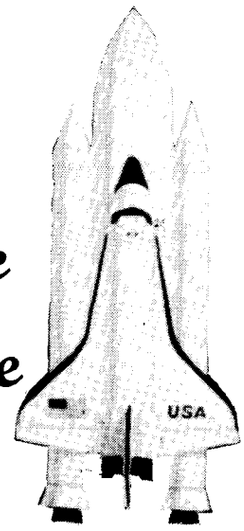
The STS-9/Spacelab 1 mission continues to demonstrate the flexibility and reliability of the Space Transportation System, of which the Space Shuttle fleet is the key element. At press time, another flawless launch had been accomplished, a mere 484 ten-thousandths of a second late at 11:00:00.0484 a.m. EST (Monday, Nov. 28). Spacelab, the largest payload to date, had been activated with nearly two dozen experiments operating. Only a minor problem with a remote acquisition unit, which helps experiments talk with their computer, marred the flight. Hopes were high that it would be repaired on orbit.

Space Shuttle Update



For the first time, Shuttle crewmembers are working around the clock. The STS-9 crew is divided into two teams of three crewmembers each. Habitability has apparently been no problem. There was concern about how well the off-duty team might sleep, but both crews have had the opportunity of sleep in space, and there have been no complaints about the physical comforts of life in the orbiter, according to a JSC spokesperson.

Built by the European Space Agency (ESA), Spacelab converts the Shuttle spaceship into an orbiting research laboratory for both astronauts and a new breed of spaceborne scientists. Spacelab 1 will demonstrate new instruments and methods for conducting experiments that are difficult or impossible to perform in ground based labs, rockets or orbiting satellites. Many of the instruments will be the largest, most powerful or most sensitive of their kind ever to be placed in orbit. This mission is expected to produce a high yield of knowledge and establish a pool of resources for reuse in future missions.

As previously reported by the media, the solid rocket boosters performed as expected and were successfully recovered from rough seas the day of launch.

The launch crowd at the Cape was much smaller than any other Shuttle mission to date. Some speculated that the threat of inclement weather, coupled with a weekday launch, may have contributed to declining interest in the launch. Total number of media observers at KSC was also the smallest for any Shuttle launch. Fewer than 900 reporters were present, including 114 foreign reporters, although the new Payload Operation Control Center (POCC) at JSC and a well-staffed media center in West Germany were thought to have drawn many reporters away from the launch site.

The record nine-day mission is scheduled to end with a landing at Edwards Air Force Base, Calif. at 11:11 a.m. EST, Wednesday, Dec. 7.

Status Review Set For December 12

The agenda for the Monthly Status Review is given below, so that researchers may attend talks of particular interest. The review will be held in Room 225, Building 1219.

The following technical sessions are planned for Monday, December 12, 1983; the morning session will begin at 8:30 and include a presentation by the Office of Public Affairs.

STRUCTURES
Aerothermal Environment of an Apparatus for Testing Curved TPS Concepts
ACCESS - The First On-Orbit Construction Experiment

SPACE
Analysis of a Stratospheric Warming Using Dynamical Quantities Derived from LIMS Temperature Measurements
The Floyd L. Thompson Fellowship Program

PROJECTS
Further VTOL Fighter Studies
Navy Missions for Twin-Boom Fighter

ELECTRONICS
Dynamic Pressure Transducer Calibration
Photogrammetric Measurements at Langley Research Center

The afternoon session will begin at 1:30 and will include a presentation by Management Operations.

AERONAUTICS
Parametric Experimental Results on Scramjet Flameholding
Computational Insights on Scramjet Flameholding
Development of Pseudo-Spectral Techniques for Simulation of Turbulence

SYSTEMS ENGINEERING AND OPERATIONS
SE&O Summary
NTF Update
Configuration Control for Higher Risk Ground Based Facilities, System Definition

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.

Personnel Profiles

Some Young-At-Hearts In Their Old Cars

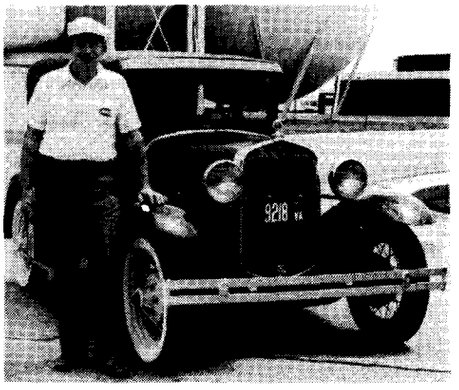
by Allan C. Hanrahan

Jackie E. (Jack) Cain, Edgar L. (Ed) Collier, Jr., and **Robert Earl (Bob) Williams** are three guys you can sit down with, and with your feet propped up, pass stories back and forth—that is, if you are not scribbling furiously in an attempt to record all they are saying about Ford Model "A" automobiles and their fondness for and activities with the same. All three gentlemen are center employees and members of the Model "A" Club of America as well as members of the Colonial Virginia Chapter of the Model "A" Ford Restorers Club.

Almost five million of this functional and now-nostalgic vehicle were produced during the years 1928-1931, and it is estimated that as many as a million still exist in some form or another, attesting to the automobile's durability. It is estimated that approximately 13,000 have been restored and are on the road—to the delight of spectators whenever these old classics roll proudly by. And roll by they do. Our three guests spoke of once-a-month tours taken by the local chapter, as well as participation in as many as six parades a year. They have bemused crowds at such events as the Newport News Spring Thing, Phoebus Day, Gloucester Day and Denbigh Day, as well as added color to promotionals at such shopping centers as Tower Mall in Portsmouth and Newmarket North and Newmarket South here on the Peninsula.

Jack, Ed and Bob are a treasure trove of knowledge and experience where these old cars, in particular, and all old cars, in general, are concerned.

Jack's Model "A" is a 1930 Tudor Sedan that came on the market originally just about the time he was born in September of 1929. He acquired it about five years ago when it was advertised in the Trading Post.



Jackie E. Cain is pictured with his 1930 Tudor Sedan.

"It was just parts," he said, before he restored it, and it is just like a model his father had for 10 years while Jack was growing up. This year's president of the Colonial Virginia Chapter and a judge at local competitions of the Model "A" cars, "Hungry Jack," as he is known by his Citizens Band handle, is restoring a 1931 pickup truck.

"It will be finished this year—hopefully," said Jack. "It's only two and a half years behind schedule," he chuckled.

The truck is for his daughter Deborah; Jack and his wife Doris have two other daughters, Ann and Barbara, and a grandchild.

Born in Hampton, Jack is a graduate of Poquoson High School, an Air Force veteran, and a center employee for over 30 years. He completed the then—NACA Apprentice School in 1957 as a journeyman machinist and is presently an Engineering Technician and the Training Coordinator for Metals Applications Technology Branch of the Fabrication Division.

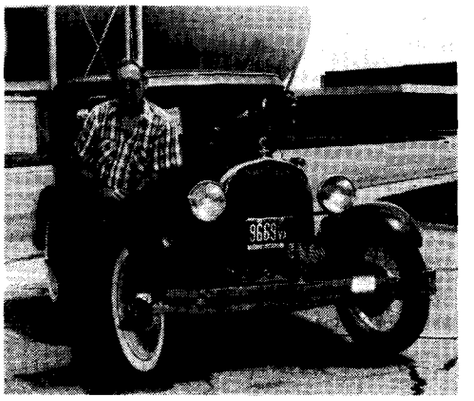
Ed Collier made a dream find of his 1929 Fodor Sedan. It had only 32,000 miles registered on the odometer and had sat for 28 years when he found it in 1972. He did not have to restore the body very much.

Reportedly, it was bought new in Poquoson, but not by Ed, obviously; he wasn't born on Gwynns Island until February of 1934. He was reared on Gwynns Island and in Hampton, graduating from Hampton High School before coming to the center in 1954. Soon after, he served an enlistment in the Navy and came back home to Langley.

He is presently an Engineering Technician in Mechanical Equipment Support Section of the Operations Support Division.

Ed and his wife, the former Lois Dryden of Poquoson, who works in the Fund Accounting and Control Section of the Financial Managemnet Division here at the center, have one daughter.

In addition to the Model "A" memberships, Ed is a member of the Antique Car Club, an active Mason, and he also enjoys hunting and fishing.



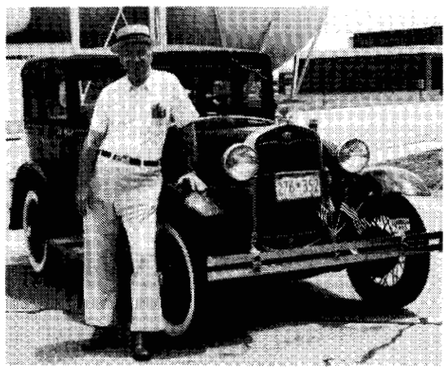
Edgar L. Collier Jr. is shown here with his 1929 Fodor Sedan.

Bob Williams' Model "A" is a 1931 Fodor Slant Windshield Town Sedan and in 1945 he "had one just like it," he said, "bought with my second paycheck" here at the center where he came to work in January, 1945. He is presently Head of the Utilities Operations Section of the Operations Support Division.

In addition to being a national official in Model "A" judging, Bob was President of the Colonial Virginia Chapter in 1978 and his wife Maizie (whom he met when she worked here in the Steam Plant years ago) is Vice President this year—many of the wives enjoy very much the Model "A" comaraderie. Bob and Maizie have five sons, one daughter, and at least seven grandchildren (another was on the way when I first talked with Bob).

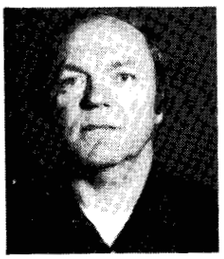
"Traveling Bob," as he is known over the CB radio, has traveled to places almost too numerous to mention: practically all of the contiguous United States, all of the islands of Hawaii, parts of Canada and most of the countries of Europe.

Over the years, when not traveling or working on one of his multitude of automobiles—or the automobile of a friend—this Poquoson native has helped out the Boy Scouts organization as well as served as manager of Little League and Pony League teams. He has served as President of the Men's Club of Bethany Methodist Church and in fact one year attended the National Conference of Methodist Men held at Purdue University.



Robert E. Williams stands with his 1931 Fodor Slant Windshield Town Sedan.

Bob is a member of the Sports Car Club of America as well as the Bantam Austin club—these in addition to his Model "A" memberships.



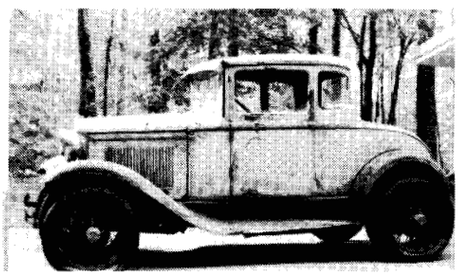
A relatively new member to the Virginia Colonial Chapter is **Walter A. Vahl,** an Aerospace Technologist in the Advanced Concepts Branch of the High-Speed Aerodynamics Division. But Walt is no newcomer to the Center; he came here to work in October, 1975. And this isn't his first Model "A".

"I owned one in high school, a 1928 two-door sedan," he related.

His present Model "A" is a 1930 Deluxe Coupe that he bought about a month ago and it had been sitting in a barn for 25 years.

"It's hard to say," he replied to the question of when did he think he would have the automobile restored. "It takes quite a bit of time and money. I've just found the local and national clubs and they give lots of information and sources of parts," he added. "It (the Virginia Colonial Chapter) seems like a real congenial group," be observed.

So, perhaps before too long a time, Walt's classic will be rolling in parades with those of Jack, Bob and Ed.



Walter A. Vahl's unrestored car is a 1930 Ford Model A.

THE FEDERAL WOMEN'S PROGRAM PRESENTS

Di Dio to Discuss 'The Work Place Hustle - What is Sexual Discrimination?'

John S. Di Dio, Area Director of the Equal Employment Opportunity Commission, will speak at the Langley Activities Center Friday, December 16, at 10 a.m. He will discuss "The Work Place Hustle - What is Sexual Discrimination?"

Di Dio serves as the Director of the Norfolk Area Office of the EEOC, which analyzes, investigates and conciliates charges of discriminatory employment practices filed under Title VII of the Civil Rights Act of 1964, as amended; the Age Discrimination in Employment Act; and the Equal Pay Act of 1963.

He has had extensive experience in planning and managing an Equal Opportunity/Human Relations Office to support a community of 10,000 people in Bad Kreuznach, West Germany. He is a qualified Department of Defense race relations instructor, experienced in organizing and conducting long- and short-range educational programs for upper- and mid-level supervisors and their dependents in problem solving, EOP compliance and promotion of non-discrimination in employment and inter-personal relationships.

The session should last about an hour with time allowed for question and answeres. Employees may charge their time to job order A-1599.

Happy Birthday

Continued from page 1.

management team (since the early 1970s there have been three project managers—Bob Howell, Bob Swain and Mo Long) for their superb management effort. It is a tribute to the engineering talent of Langley for the excellent design of the facility. It is a tribute to the fabrication capability of Langley for efforts such as showing industry how to fabricate composite fan blades. It is a tribute to our instrumentation people who developed the new instrumentation technology required by the very severe cryogenic environment. It is a tribute to the Center as a whole when many of our technicians responded to our call to meet a crisis. About 80 of our technicians went into the tunnel and did what a contractor could not do—complete installation of the insulation under very difficult circumstances. In order to do this, the tech nicians had to stop what they were doing for several months; but, the entire Center adjusted well. Finally, NTF is a tribute to the Langley review system in which the facility's design, construction, and checkout were successfully subjected to intensive external reviews.

NTF, in this context, is only a symbol of NASA's 25 years and Langley's 66 years. There are other examples—but this is one in which I have shared and one that seems to show what Langley people can accomplish when provided both the opportunity and the challenge.

In a few days, we will hold the NTF dedication ceremony at Langley. The Vice President of the United States has accepted our invitation to be the principal speaker. Many others from government, industry, and the universities will attend along with many of you. For the final event of "NTF Week," we are inviting all employees, onsite contractors, and their families to tour NTF on the day after the dedication and to share in the pride of being a part of Langley. This is our "employee event" of NASA's 25th birthday year because, as I have said, NTF is a perfect symbol of Langley and what it has done in the past and will do in the future.

Happy Birthday!

Final Runners' Event of 1983

The last club event for the year will be the interdirectorate 5K, using cross-country scoring rules. The race will be run December 8 at 4:45 p.m. at the NASA course.

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

Team managers should advise Bill Woods, ext. 2483, of their intent to enter a team.

Welcome New Employees

Langley welcomes the following new employees to the center: (top row) Eric K. Hoffman, Materials Division; Glenn K. Yue and Mark Shipman, Atmospheric Sciences Division; Nancy Murawski, Personnel Division; Christopher Rumsey, Low-Speed Aerodynamics Division; Mary L. Sandy, Office of External Affairs; (bottom row) James C. Barnes, Flight Control Systems Division; Carlos S. Perez, Facilities Engineering Division; Peter A. Stein, Structures and Dynamics Division; Patricia A. Apple, Instrument Research Division; Mary J. Dorsey, Office of Chief Counsel; and Sherry B. Richardson, Acoustics and Noise Reduction Division.

Space Telescope Renamed as Edwin P. Hubble Space Telescope

The Space Telescope, America's future orbiting optical astronomical observatory, has been renamed the Edwin P. Hubble Space Telescope in honor of one of the nation's foremost astronomers.

It is scheduled for launch aboard the Space Shuttle in 1986. Dr. Burton Edelson, NASA's Associate Admini strator for Space Science and Applications, announced the renaming.

Hubble's astronomical research over three decades profoundly changed our understanding of the basic structure of the universe.

Before Hubble, scientists held differing views on the extent and dimensions of the universe. It was believed that our solar system was part of a larger system which contained all the stars visible to the naked eye. Astronomers were uncertain whether the faint spiral nebulae were also part of our Milky Way system or themselves distant universes each composed of countless stars.

Working at the 100-inch telescope at Mount Wilson, California, Hubble succeeded in observing individual stars in the Andromeda nebula. By the end of 1924, he thus was able to show that Andromeda was many times more distant then any star within the Milky Way system. By means of similar observations of other nebulae, Hubble established that these nebulae were in fact galaxies far beyond our system.

Equally important was a later discovery by Hubble and his assistant, Milton Humason, that the universe was expanding, providing the basic evidence of the Big Bang theory. Their observations showed that external galaxies were traveling away from us, and, the more remote the galaxy, the faster it moves. This phenomena is known as Hubble's Law and the coefficient relating the distance and the velocity of the galaxy is called the Hubble constant.

Hubble was an active research scientist until his death in 1953.

The Hubble Space Telescope will be operated much like a ground-based observatory. The 94.5-inch (2.4-meter) telescope and five scientific instruments will be housed in the space observatory configuration in orbit while spacecraft command, control and scientific operations will be ground based. The observatory, which will not have any interference introduced by earth's atmoshpere, will be able to look into space seven times farther than any ground-based observatory, and its imaging will have 10-20 times better resolution. Thus, the Hubble Space Telescope offers the potential of making new cosmological discoveries, in the spirit of its namesake.

Thought for the Day

Sometimes it is profitable to ask ourselves such simple questions as-

"Do I leave behind peace in lives - or turmoil?"

"Do I leave behind forgiveness - or bitterness?"

"Do I leave behind contentment - or conflict?"

"Do I leave behind flowers of joy - or frustration?"

"Do I leave behind love - or rancor?"

Author Unknown

Thanks

Anna Lockard, Property Management Branch, writes "To each of you who gave blood on behalf of my husband, Bill Lockard, at the Bloodmobile visit November 9, a heartfelt thanks - you are a special people."

Happenings

HAPPY HOUR, the last one for this year, will be held today from 4 to 7 p.m. in the Activities Center.

VIRGINIA OPERA ASSOCIATION features "Gianni Schicchi and Svor Angelica" Friday, December 9, and Sunday, December 11 (matinee). Discount tickets are available at the Activities Office.

TIDEWATER DINNER THEATER. "Applause" is playing through December 4 at the Tidewater Dinner Theater in Norfolk. Discount tickets are available at the Activities Office.

LAA OFFICE will be closed December 27-30.

NEW YEAR'S EVE DANCE tickets are now available at the Activities Office for $20/couple, which includes favors. "Virginia Reelin" (formerly "Terry and the Pirates") will provide the music.

NTF WORKERS. LAA will honor those employees who worked on NTF with a special toast at 5 p.m. December 6. All employees are invited to attend as these employees are honored.

BINGO will be held December 15 beginning with the "early bird" at 7:10 p.m.; regular games start at 7:30. This will be the last bingo night for 1983.

THE NASA COUNTRY-WESTERN DANCE CLUB will have a dance Friday, December 9, at the NASA cafeteria. Free dance lessons are available Monday nights. For further information, contact Sam Sokol, Mail Stop 488.

CHILDREN'S CHRISTMAS PARTY will be held Sunday, December 11, at 2 p.m. in the Activities Center. Tickets are available from the Activities Office.

COMPUTER SCIENCE SEMINAR. On Friday, December 9, 1983, Dr. Stephen K. Park, recipient of the 1983 H. J. E. Reid Award, will speak on "Digital Image Processing Techniques." The seminar will be held in the Activities Center (1222) at 3 p.m.

SKI IN NEW YORK. Gore Mountain, in the beautiful snow covered Adirondacks, has eight lifts serving 25 ski slopes of up to two miles long. Gore is famous for its glade skiing and long cruising slopes. The gondola offers a comfortable ride to the top to begin a picturesque two-mile cruise to the bottom down a variety of trails. This trip offers three ski days (Friday-Sunday, January 13-15, 1984), transportation, lodging, meals and lift tickets at a total cost of $180. The bus leaves Thursday night (January 12) from mid-town Newport News and returns late Sunday night. For additional information and reservations contact Joe Drewry at 722-4443 after 5 p.m.

Johnson to Head NASA's Public Affairs Division

Frank S. Johnson, Jr. has been named NASA's Director of Public Affairs. He succeeds Brian M. Duff, who has been reassigned to the position of Associate Director for Special Projects.

Johnson will be responsible for planning and directing the full range of NASA's activities in providing information to and responding to inquiries from the public and the media. Reporting to him will be the Deputy Directors for Media Services, Public Services and Academic Services.

Before joining NASA, he was president and chief executive of Frank Johnson & Associates, Ltd., New York, a company he founded in 1981. This firm provided consulting assistance to a number of major corporations including Newport News Shipbuilding and Dry Dock Company, a Tenneco company for which he was also vice president of public relations.

Key Positions

Clyde L. W. Edwards has been designated Technical Assistant to Director for Aeronautics.

Brantley R. Hanks has been selected Assistant Head, Structural Dynamics Branch, Structures and Dynamics Division, under CPP 83-60.

Clemans A. Powell has been selected Head, Structural Acoustics Branch, Acoustics and Noise Reduction Division, under CPP 83-68.

Car Pool Winners Announced

Robert W. Buchan, Space Systems Division, and **Stewart Ocheltree,** Instrument Research Division, are the October and November winners of $20, given to car pool participants by the Langley Exchange Council.

The sixth graduating class of the Peninsula Joint Apprenticeship Training Committee for Maintenance Crafts received their journeyman certificates at a dinner meeting held at the Hampton Holiday Inn recently. Wallace E. Marshall, Apprentice Field Supervisor, was the guest speaker and presented the certificates. Front row graduates (from left) are Gerald Parnell, pipefitter; Mark Cannon, carpenter; Joseph Stodghill, A/C and refrigeration mechanic. Second row are Stanley Cannon, carpenter; Matthew Nortness, carpenter; Richard Burnett, rigger; and Michael Grow, A/C and refrigeration mechanic. The Apprentice Program is a joint venture of Klate Holt Company and the International Brotherhood of Electrical Workers.

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Retirees Die

Charles N. Brooks, Jr., who retired in June 1973 from the Research Aircraft Flight Division died November 9. He was 68.

James P. Shivers, 64, died Novmeber 2. He worked as an aeronautical engineer at Langley from July 1951 until February 1977.

Polhamus Addresses AIAA

Edward C. Polhamus, a Distinguished Research Associate and Head of Langley's Fluid Dynamics Branch at the time of his retirement in 1981, will be the guest speaker at the December 12 meeting of the American Institute of Aeronautics and Astronautics.

Polhamus, who received the 1983 AIAA Wright Brothers Medal, will repeat the associate Wright Brothers Lecture that he presented at the AIAA/AHA Aircraft Design Systems and Technology meeting held October 17 in Fort Worth.

The lecture reviews some of the past and current research at Langley related to the application of slender wing aerodynamics benefits to high-speed tactical and strategic military aircraft. Several case histories of contributions to variable geometry and hybrid wing aircraft development are discussed, followed by a review of recent research directed towards optimization of "controlled separation" slender wing concepts.

The meeting will be held in the Activities Center at 5:15 p.m, preceded by refreshments at 4:30 p.m.

Langley Scientist to Speak at Visitor Center

Dr. Joel S. Levine will speak to the public on "The Earth's Atmosphere: Past, Present and Future" Dec. 12 at 8 p.m. The program will be held at the Visitor Center.

Recently, there has been concern over the CO_2 levels in our atmosphere due to pollution sources. Will the atmospheric temperature rise the few degrees necessary to melt the polar ice caps with water covering coastal areas? Realistic answeres to public concerns such as this must rely on accurate scientific data. Modern technology and NASA satellites have only recently been able to begin to provide some accurate data necessary to the unraveling of such complex scientific questions.

Levine, a noted authority on atmospheric chemistry, has been using the latest sophisticated measurements of our atmosphere to devise mathematical models that approximate, in a computer, the real atmosphere that surrounds us. By experimenting with the computer, one can run forward or backward in time to formulate hypotheses about the atmosphere.

Levine is a senior research scientist in the Atmospheric Sciences Division, where he performs research and directs the activities of a group studying the composition and chemistry of the atmosphere. On October 28 Levine received NASA's Exceptional Scientific Achievement Medal "in recognition of outstanding contributions to our understanding of planetary atmospheres and the evolution of the Earth's atmosphere through the development of theoretical photochemical models."

Swap and Shop

FOR SALE

Articles

Rocking horse on sturdy metal frame with springs, ideal for children 2-4 years old, EC, $15. Call 898-5113 after 5 p.m.

Ethan Allen furniture: Three cushion wing sofa, gold tones, like new, 80" x 32" x 32"H, $500; four drawer commode night table, antiqued pine, like new, 24" x 17" x 27½"H, $150; dough box magazine end table, antiqued pine, deep storage area under the drop lid, like new, $100; cabinet cocktail table, antiqued pine, like new, two doors simulating apothecary drawers on both sides; two shelves, 56" x 23" x 17"H, $150; Mrs. Swivel Rocker, like new, colonial print in blue, 29" x 35" x 38"H, $225; pine rocker, like new, 26" x 33" x 49"H, $75; Queen Anne Wing Chair by King Hickory Furniture Co., Williamsburg blue in velvet, like new, 27" x 25" x 43"H, $100. Phone 877-8263 between 6-8 p.m.

WANTED

Church organist, East Hampton United Methodist Church, one service. Call 723-0527 or 722-8324.

LOST

Totes umbrella: Left on Cafeteria coat rack Thursday, November 10. Black with carrying case and brown handle. Call Witcofski, ext. 3911.

cafeteria menu

WEEK OF DECEMBER 5-9

MONDAY: Cream of Broccoli Soup; Braised Beef and Vegetables; Fish Almondine; Beef Liver & Onions. Snack Bar: Hot Italian Sausage; Rib B.Q.

TUESDAY: Old Fashioned Bean Soup; Chopped Steak; Baked Ham w/Apples; Crab Cakes. Snack Bar: Chicken NASA; NASA Sub.

WEDNESDAY: Fresh Vegetable Soup; Chicken & Dumplings; Swiss Steak; Franks and Baked Beans. Snack Bar: Ham & Cheese Club; ¼ lb. Bacon Cheeseburger.

THURSDAY: Chicken Gumbo Soup; Beef Enchiladas; Turkey Breast Nuggets; Braised Chicken Livers. Snack Bar: Steak & Cheese Sub; Bean & Cheese Burrito.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Chicken & Spanish Rice; Roast Pork & Dressing. Snack Bar: Crab Cutlet Sandwich; Beef & Cheese Club.

WEEK OF DECEMBER 12-16

MONDAY: Corn Chowder; Roast Beef Au Jus; Fried Chicken Gizzards; Seafood Quiche. Snack Bar: BBQ Beef Sandwich; Turkey Club Sandwich.

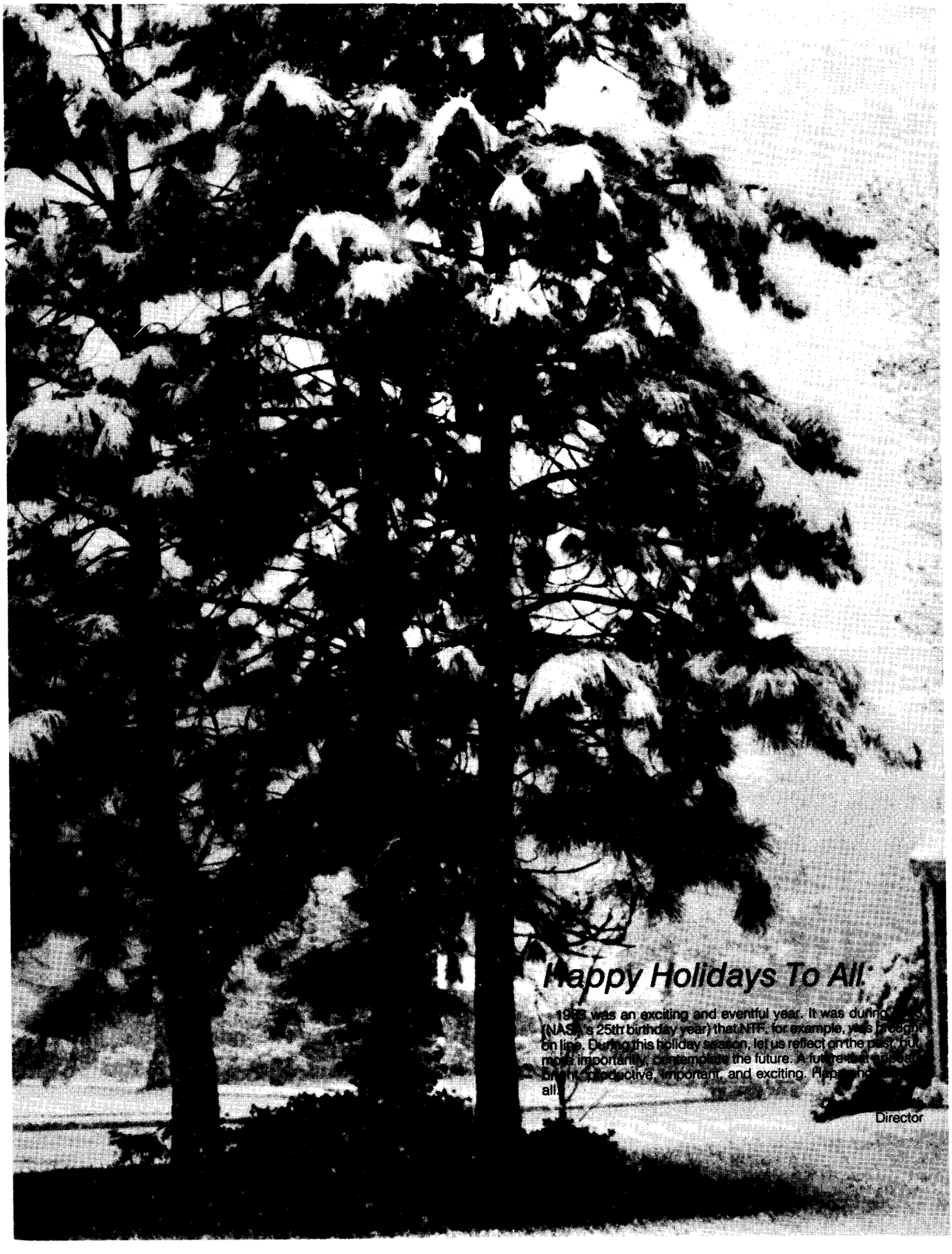
TUESDAY: Seafood Gumbo; Pepper Steak; Monte Cristo Sandwich; Baked Filet of Trout. Snack Bar: Chicken NASA; Bratwurst on Bun.

WEDNESDAY: Fresh Vegetable Soup; ½ BBQ Chicken; Burrito & Spanish Rice; Country Style Steak. Snack Bar: Corned Beef Reuben; ¼ lb. Bacon Cheeseburger.

THURSDAY: Cheddar Cheese Soup; Veal Parmesan; Sliced Pork BBQ; Braised Chicken Livers. Snack Bar: Italian Beef & Pepper Sub; Chicken NASA.

FRIDAY: Bull Island Clam Chowder; Fish Dinner; Knockwurst & Sauerkraut; Chicken Teriyaki. Snack Bar: Fried Oysters on Bun; Hot Italian Sausage.

...not a creature was stirring,
not even a mouse...



Happy Holidays To All:

1988 was an exciting and eventful year. It was during [illegible] (NASA's 25th birthday year) that NTF, for example, was brought on line. During this holiday season, let us reflect on the past, but, more importantly, contemplate the future. A future that [illegible] bright, productive, important, and exciting. Happy [illegible] all!

Director

NASA Probes 'Inner Space' With Ultrasonics

-by Keith Henry

Ultrasonic waves, passing through matter, can cause a barely perceptable change in the length of that matter, allowing important things to be learned about its physical properties, report Langley researchers.

High-frequency soundwaves—beyond the range of human hearing—when transmitted through a bolt that help hold together an airplane's landing gear, for instance, can reveal a structural weakness not seen on the surface of the bolt. The same soundwaves may reveal that a bolt scheduled for replacement could safely remain in place, saving time and money.

NASA has a long history of working with materials—improving existing materials or developing new ones—for the nation's aerospace industry. One research group at Langley is using ultrasonic waves to look inside a material without damaging or disturbing the material in any way, a process called non-destructive evaluation.

Whether a critical fastener, a composite airplane wing, a concrete bridge support or a wall of granite in a mine shaft, the principle remains the same: Transmit sound into an object at one end and measure how the soundwave has changed as it passes out the other end.

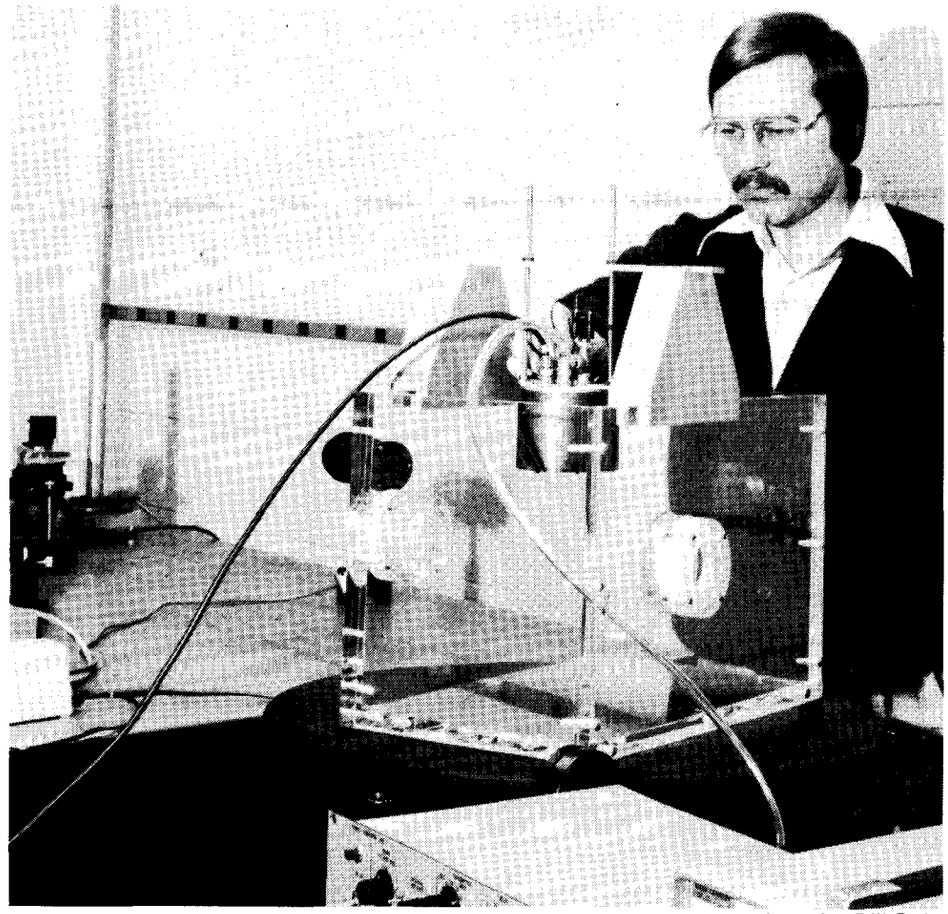
Subtle changes in an object's makeup anywhere along the sound path can be detected, according to Dr. John H. Cantrell, who explains that these changes may indicate an area of pent-up forces which, in some cases, means material defects. Cantrell is a physicist in the Instrument Research Divison.

The division's work in non-destructive evaluation has already produced an award-winning monitoring device that measures external stress applied to a material. The device, called a bolt monitor, was primarily designed to provide highly precise measurements of the stress that occurs when a bolt becomes elongated in the process of tightening, somewhat analogous to measuring tone changes in a violin string being tightened.

Cantress recently developed an analytical research tool that promises even broader uses for non-destructive evaluation. Dubbed a "nonlinear acoustic parameter," it mathematically links the behavior of a soundwave passing through a material to many significant properties of that material. For example, it links stress-induced changes in the speed of the soundwave to interatomic "binding" forces and naturally-occuring irregularities. In much the same way, distortion of the sound wave provides clues to the internal makeup of a material. He has shown, as part of this work, a connection between stress in the material and the dependence of the sound speed on changes in temperature.

Cantrell's newest finding builds on his earlier work. In a report to be published in a technical journal next year, Cantrell theoretically shows that a soundwave passing through a material produces a so-called "radiation pressure" similar to that produced by light waves falling on an object (as with the solar wind). Unlike light waves, however, acoustic radiation pressure is associated with distortion of the soundwave and production of harmonics (multiples of the original frequency) of the signal. The nonlinear acoustic parameter—which Cantrell had shown earlier to be tied to the inherent thermal properties of the material—enters dominantly in the calculations.

"The significance of this," Cantrell says, "is that it tends to link all these phenomona to a common origin, in a nice coherent way. It allows us to understand, more deeply, fundamental properties that can be exploited for practical applications." Continued on page 7.



-photo by Bill Salyer

Dr. John H. Cantrell uses a laser stand to calibrate the prototype of a new ultrasonic transducer he helped design. A laser beam, invisible here, is being transmitted through the round holes in the sides of the stand to perform the calibration. Cantrell's transducer, which he and a fellow researcher invented, is the first with the ability to measure sound wave amplitudes as small as atomic diameters while immersed in water, the preferred ultrasound test medium.

The *Langley Researcher* is an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665. It is published every other week in the interest of its employees. Address contributions to the Editor, Mail Stop 115, telephone 3006.

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.

'A Wonderful Research Tool' and 'A Perfect Symbol of Langley'

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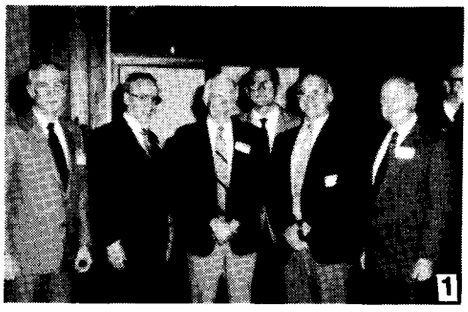
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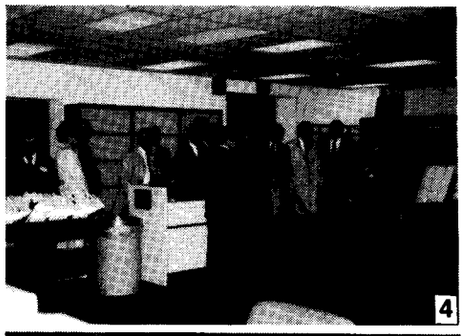
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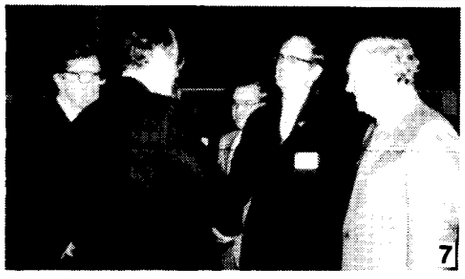
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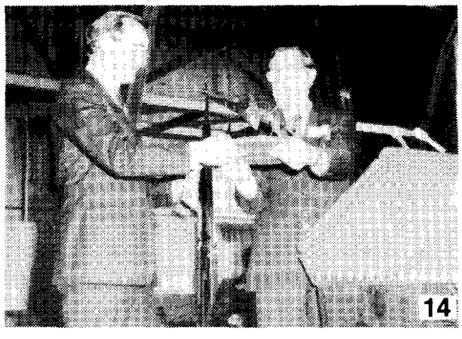
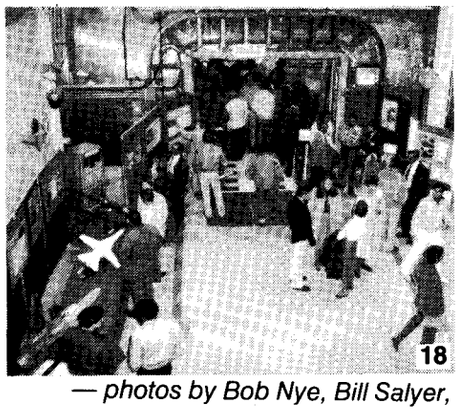




— photos by Bob Nye, Bill Salyer, Fred Jones and Don Ward

The National Transonic Facility were the most frequently spoken words last week at Langley. The NTF, a wind tunnel employing the cryogenic concept to achieve high Reynolds numbers at transonic speeds, was dedicated in a special ceremony December 6. Special events surrounding the dedication took place beginning December 5 with a Transonic Aerodynamics Division/NTF Symposium. (1) Among the attendees at the Aeronautics Banquet that evening were Robert Bower, Director for Aeronautics; Oran Nicks, former Deputy Director at Langley and now a research engineer in the Aerospace Engineering Department, Texas A & M University; Dr. Richard Whitcomb, retired Head, 8-Foot Tunnel; Wayne McKinney, Assistant Chief, TAD; Angelo Guastaferro, former Head of Large Space Structures at Langley and now Deputy Director at the Ames Research Center; and Donald D. Baals, a retired aeronautical wind tunnel expert and now a Distinguished Research Associate. (2) During a *Mini-Aero Inspection held December 6,* David Stephens, Assistant Chief of the Acoustics and Noise Reduction Division, explained the division's

noise research work to conference attendees. (3) Dr. Richard Barnwell, Head, NTF Aerodynamics Branch, explains the models on display at the facility; and (4) Dennis Fuller briefs participants on the data system complex during the TAD/NTF *Symposium tour.* (5) *Vice President Bush and his* wife, Barbara, arrive at the Langley hangar for the ceremony. (6) Bush is greeted by Langley Director and Mrs. Donald P. Hearth and James Beggs, NASA *Administrator.* (7) *Prior to the ceremony,* Bush toured the NTF. With Bush and Hearth are Moses Long, Head, NTF Project Office; Robert Swain, former Head, NTF, and now Director for Systems Engineering and Operations; and William Cofer, retired Head of NTF. (8) McKinney explains the tunnel layout and the cryogenic concept to Bush while inside the tunnel's test section. Looking on are Swain and Percy Bobbitt, Chief, TAD. (9) Bush adds his remarks concerning the unique national laboratory. (10) Bush examines the models on display outside the test section. (11) Deputy Director Richard Petersen, and his wife, Jodie, greet Bush at the Director's Reception held prior to the dedication. (12) Addressing approximately 1,000 specially invited guests were (top left) Senator Paul S. Trible; Sanford N. McDonnell, Chairman and Chief Executive Officer, McDonnell Douglas Corporation; Beggs; (lower left) Under Secretary of the Air Force, Edward C. Aldridge; Congressman Dan Glickman, Chairman of the Sub Committee on Transportation, Aviation and

Materials; and Congressman Herbert H. Bateman. Hearth and Bush listen to speakers. (13) Vice *President Bush gives the keynote address, stating* that the NTF is a "wonderful research tool..... The wind tunnel -- and all the aeronautical skills and genius it represents -- symbolizes that America can never again be an island in the world, set apart from the destinies of the larger world . . . This wind tunnel represents the fact that the United States -- and every nation -- is part of a single international community." (14) Hearth presents airplane models that have been tested in other Langley tunnels to Bush as a token of appreciation and (15) a NASA jogging suit. (16) Following the ceremony, Beggs, Glickman and Bateman cut the ribbon dedicating the facility. Looking on are former Congressman Thomas N. Downing; Roy Jackson, Senior Vice President, Operations, Northrop Corporation; Walter Olstad, former Chief, Space Systems Division, at Langley and now Vice President of Lockheed; Jack Kerrebrock, Professor and Head, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology; Hearth and Petersen. (17) That evening, the Langley Activities Association held a toast to all NTF workers at the facility. (18 and 19) On December 7 there was a NTF Open House for employees and retirees. Shown in these photographs are employees, retirees and families *looking at the test section and examining model* displays. This new and unique facility marks the beginning of an era where, for the first time in the history of modern flight, true aerodynamic *similarity can be obtained in a transonic ground* test facility. The users will include the Department of Defense, the aircraft industry, universities and NASA.

Home Computer Fair Tomorrow

If you would like to learn more about home computers and their varied uses, come to the Home Computer Fair at the Visitor Center Saturday, December 17. The Apple, Atari, Commodore 64, IBM P/C, Texas Instruments, Timex-Sinclair, TRS-80 and VIC-20 computer systems will be featured from 10 a.m. to 4 p.m. Programs will range in scope from educational and financial to just plain fun and entertainment.

Members of local home computer clubs and users groups will be available to demonstrate their computers' capabilities and to answer questions.

Welcome New Employees

Langley welcomes the following new employees to the center: (top row from left) Denise R. Jones, Flight Control Systems Division; Nancy Sessoms, Acquisition Division; Edna L. Baker, Pamela J. Zeiders and Kimberly L. Durham, Personnel Division; Daniel L. Aveleyra, Aeronautical Systems Office; (bottom row) Stuart E. Broyles, Materials Division; Erik L. Ellis and Barry L. Everett, Analysis and Computation Division; Penny L. Murphy, Fabrication Division; Charlene L. Keller, Atmospheric Sciences Division; and Katrina A. Walker, Transonic Aerodynamics Division.

Hampton Institute Expands Offerings

Hampton Institute announces a four-week Seminar/Workshop in Counseling Psychology: Mondays and four weekends: January 23 - February 20, 1984.

The seminar is open to persons interested in the topics for three, six, nine hours or non-credit (Application fee waived for non-credit enrollees.):

PSY 500: Abnormal Psychology (3 cr.)

PSY 515: Seminar in Psychological Evaluation (3 cr.)

EDU 619: Group Process in Guidance & Counseling (3 cr.)

EDU 7XX: Special Topics in Counseling Practices (3 cr.) Expert Witness; Stress Management; Depression; Personality Theory; Ethical Considerations; Industrial Management; Organizational Behavior; Human Sexuality; Marriage & Family Therapy.

Enrollees will attend classes and complete assignments relative to content and credit desired. Further details, call 851-3469.

Regular graduate offerings:

EDU 611: Techniques & Problems of Educational Research T 5-10 p.m.

EDU 612: Occupational & Educational Information W 5-10 p.m.

Additional offerings:

Elementary Russian, French, Spanish, German;

Geometry, Trigonometry, Calculus;

General Chemistry (Guided Study course); and

Courses in Business Management.

Thanks

I know that an awful lot of people at Langley put a great deal of effort into the NTF Dedication and Open House. It was a smashing success and the Center is indebted to each of you who contributed to that success.

Donald P. Hearth

Have a Fire - Safe Christmas

Keep your holidays bright by practicing fire safety; use candles with care, and keep them away from drapes and upholstered furniture.

As gifts are unwrapped, collect all the wrappings for quick disposal in a sealed metal or plastic container.

Turn off electric decorations when you leave the house. And take care to be sure your natural Christmas tree stays moist and green.

Being fire-wise can make the difference -- between a Christmas you'll always remember, and a tragedy you'll never forget.

What is COSMIC?

The Computer Software Management and Information Center (COSMIC) is NASA's computer library and distribution center for computer programs developed by NASA. All NASA employees are required by NMI to provide computer programs developed in-house or under NASA contract to COSMIC. Approximately 98 percent of the computer programs sent to COSMIC are published in the "NASA Tech Briefs" journal. All authors of programs published in the Tech Brief journal will receive $100.

Programs having good documentation and ready for general distribution should be provided to the Technology Utilization and Applications Office (TU&AO), Mail Stop 139A. The TU&AO has a booklet, "Software Submittal Guidelines," to aid in preparing an acceptable program package. The TU&AO will submit the program to COSMIC to add to their inventory and evaluate for Tech Brief publication. For more information, contact Charles J. Shoemaker or John Samos, ext. 3281.

'Inner Space'

Continued from page 3.

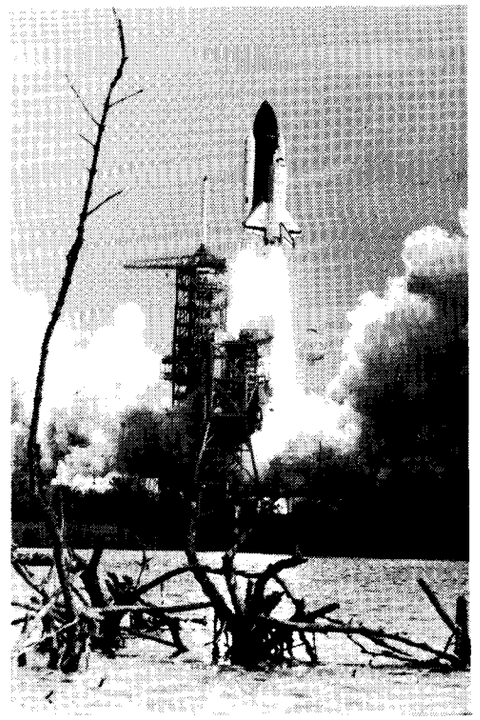
Researchers as far back as 1910 believed that distortion of a soundwave was of neglible importance in the consideration of radiation pressure and did not enter this factor in their studies of material properties. "This is one of the oldest and most controversial subjects in acoustics. There are still technical articles appearing today that attempt to resolve a lot of the conflict associated with it. That is why I made redundant calculations," says Cantrell, "based on two entirely different approaches, from which I got exactly the same answer."

In a measurement breakthrough, another physicist in IRD provided exciting verification of the nonlinear theory. Dr. William P. Winfree, achievd a significant research accomplishment—the first measurement of sound radiation pressure in practical engineering materials. He developed a series of exacting laboratory measurements that prove the predicted relationship between the distortion of soundwaves and radiation pressure.

For Cantrell's theory to be correct, all materials subjected to the radiation pressure of a soundwave must expand—even if barely perceptable and even if only for an instant—with one exception. The theory calls for glass, unlike all other known materials, to contract, and it was this knowledge that Winfree used to confirm his results. In the test, aluminum samples (representative of a typical type of material) expanded, and glass samples contracted, as predicted.

"The newly-derived radiation pressure equation is significantly different," says Cantrell, "from the equation that is generally used for 'radiation pressure' calibration techniques for transducers used in both non-destructive and medical ultrasound. I believe the studies of our group will lead to significant improvements in instrumentation for monitoring damage to materials of all types."

The group's ultrasonic research typically takes place in the 1 to 10 million cycle-per-second range. Proposed for the future is work in the lower part of the ultrasonic range—primarily between 50 to 100 thousand cycles-per-second—for an in-depth look at composite materials. Lightweight composites, which are becoming increasingly important as materials in aerospace use, lend themselves well to acoustic analysis because they produce a great deal of harmonic distortions.



— KSC photo

The maiden flight for Spacelab began on schedule at 11 a.m. EST November 28 as STS-9 lifted away from Launch Pad 39A. In addition to the European Space Agency-built laboratory that provides a shirtsleeve working environment in the orbiter's payload bay, the vehicle also carried a six-member crew, largest ever to fly in a U.S. spacecraft. Columbia landed at Edwards Air Force Base, Calif., December 8 at 6:47 p.m. EST, after an incredible 10-day mission.

Happenings

LAA OFFICE will be closed December 27-30.

MUSEUM CLOSED. The Syms-Eaton Museum and the Kecoughtan Indian Village will be closed December 24-26. Both will reopen on December 27 at 10 a.m.

NEW YEAR'S EVE DANCE tickets are now available at the Activities Office for $20/couple, which includes favors. "Virginia Reelin" (formerly "Terry and the Pirates") will provide the music.

SKI IN NEW YORK. Gore Mountain, in the beautiful snow covered Adirondacks, has eight lifts serving 25 ski slopes of up to two miles long. Gore is famous for its glade skiing and long cruising slopes. The gondola offers a comforatable ride to the top to begin a picturesque two-mile cruise to the bottom down a variety of trails. This trip offers three ski days (Friday-Sunday, January 13-15, 1984), transportation, lodging, meals and lift tickets at a total cost of $180. The bus leaves Thursday night (January 12) from mid-town Newport News and returns late Sunday night. For additional information and reservations contact Joe Drewry at 722-4443 after 5 p.m.

HISTORICAL SOCIETY. A joint meeting of the Fort Monroe, Langley and Fort Eustis Historical Societies will be held Thursday, December, 22 from 11:30 a.m. to 12:30 p.m. at the Fort Eustis Officers' Club. Parke Rouse will be the featured speaker. The luncheon will cost $5 per person. Reservations may be made by calling the U.S. Army Transportation Museum, 878-2830/3603/2904.

Retiree Dies

Luther Wesley Machen who retired from the Instrument Research Division in 1974, died December 7.

Retirement Party

A retirement party is being planned for **Charles G. Marple,** Instrument Research Division. For detailed information, please call Ralph Lewis, Bruce Flagge or Bucky Holmes, ext. 3446.

Thanks, Staff

The Langley Researcher staff thanks Wes Berryman and Ann Worth for contributing the cover and inside cover, respectively, for this Christmas issue, and to the Photo/Graphics Branch and the Publications Branch for their support all year.

Merry Christmas and Happy New Year!

LAA Board Elected

The second center-wide election for the Langley Activities Association Executive Board has been completed. Four of the nine executive board positions were filled for two-year terms.

Elected to serve were **William C. Henley, Jr.,** Vice President; **Pat Gates,** Treasurer; **D. Eugene Hicks,** Chairman, Social Committee; and **Betty B. Hughes,** Chairwoman, Arts and Crafts Committee.

National Aeronautics and
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cafeteria menu

WEEK OF DECEMBER 19-23

Monday: Beef & Vegetable Soup; Braised Beef Tips & Noodles; Broccoli & Cheddar Quiche; Beef Liver & Onions; Snack Bar: NASA Sub; 1/4 Lb. Cheeseburger.
Tuesday: Chicken Noodle Soup; Baked Ham & Apples; Chicken Chow Mein; Chopped Steak; Snack Bar: Chicken NASA; Ham & Cheese Club.
Wednesday: Fresh Vegetable Soup; Roast Turkey Dinner; Veal Parmesan; Franks & Baked Beans; Snack Bar: Steak & Cheese Sub; Polish Sausage on Bun.
Thursday: Ham & Lima Bean Soup; Beef, Macaroni & Tomatoes; Chuckwagon Steak; Braised Chicken Livers; Snack Bar: Turkey Club Sandwich; Knockwurst on Bun.
Friday: Bull Island Clam Chowder; Fish Dinner; Chopped Steak; Snack Bar: Crab Cutlet on Bun; Bean & Cheese Burrito.

Cafeteria Closed December 26-30

WEEK OF JANUARY 2-6

Tuesday: Cream of Mushroom Soup; Salmon Cakes; Knockwurst & Sauerkraut; Swiss Steak; Snack Bar: Chicken NASA; Polish Sausage.
Wednesday: Fresh Vegetable Soup; Chicken Croquettes; Spaghetti & Meat Sauce Dinner; Baked Filet of Trout; Snack Bar: NASA Sub; 1/4 lb. Cheeseburger.
Thursday: Corn Chowder; Roast Beef Hash; Quiche Lorraine; Braised Chicken Livers; Snack Bar: Ham & Cheese Club; Rib B.Q.
Friday: Bull Island Clam Chowder; Fish Dinner; Salisbury Steak; Grilled Ham Steak; Snack Bar: Italian Beef & Pepper Sub; Fried Oysters on Bun.

WEEK OF JANUARY 9-13

Monday: Turkey Noodle Soup; Beef Pot Pie; Beef Liver & Onions; Ham & Cheese Omelet; Snack Bar: Steak & Cheese Sub; Hot Italian Sausage.
Tuesday: Vegetable Beef Soup; Baked Lasagna; Rib Eye Steak Sandwich; Chicken A La King on Toast; Snack Bar: Chicken NASA; Grilled Cheese Sandwich.
Wednesday: Fresh Vegetable Soup; 1/2 Baked Chicken; Baked Meat Loaf; Baked New England Scrod; Snack Bar: Corned Beef Reuben; Beef & Cheese Sub.
Thursday: Chicken Gumbo Soup; Corned Beef & Cabbage; Tuna Noodle Casserole; Braised Chicken Livers; Snack Bar: 1/4 lb. Bacon Cheeseburger; NASA Sub.
Friday: Bull Island Clam Chowder; Fish Dinner; Beef Stew & Rice; Chopped Steak; Snack Bar: Crab Cutlet on Bun; BBQ Beef on Bun.

Christmas Love

Evergreen and holly,
Sprays of mistletoe
Friends about the hearthstone,
Hearts with love aglow.

Christmas stars are shining,
Love is king again;
Hark the Christmas carols,
Peace, good will to men.

— Author Unknown

Swap and Shop

FOR SALE

Articles

Refrigerator: Frigidaire 19 cu. ft., GC, $50. Stove: Frigidaire, electric, GC, $50. Rugs: Off-white shag rugs, two, each 6x9 ft. with foam pads, GC, $25 each. Call 877-4889 evenings or weekends.

Tires: Two 12.00 x 15 Grand Prix Wild Country, w/white wagon wheels, EC, $130. Call Brian Carpenter, 244-6627.

WANTED

One additional person to car pool from Norfolk to West area on 7:30 a.m. shift. Call Ed Hudgins, ext. 3072.

One additional person to car pool from Colonial Place/Riverview area of Norfolk (near ODU) to West area on 8 a.m. shift. Call Dan Giesy, ext. 4591 or 625-7558 (Norfolk).

Thanks

Cornelius B. Apple writes, "I would like to thank everyone who donated blood for my daughter, Teresa, during her recent illness."

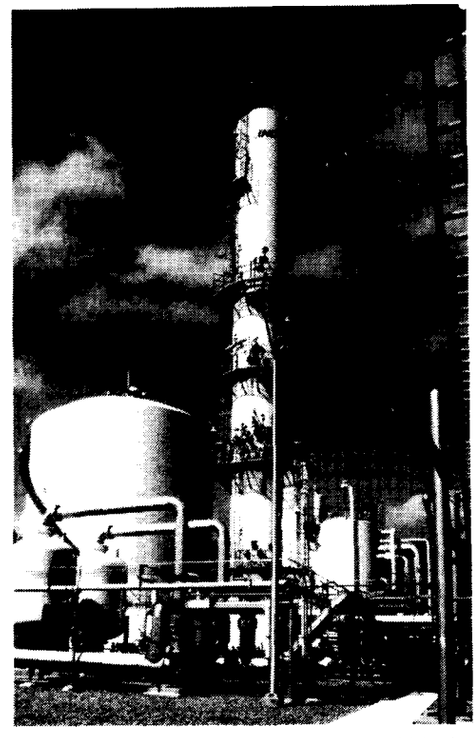
NASA Badges Required in ICO

Only NASA personnel will be allowed to carry out transactions in the Instrument Control Office, effective January 2. NASA identification badges must be presented at that time.

In addition, the NASA Equipment Management System (NEMS) requires that loanee/user(s) identified by employee number, which will be assigned prior to January 2.

'TIS THE SEASON for kindling the fire of hospitality in the hall, the genial fire of charity in the heart.

— Washington Irving



— photo courtesy of Linde

LINDE PLANT. This $17 million air separation plant, designed to supply liquid nitrogen to the National Transonic Facility, was dedicated December 6 by the Linde Division of Union Carbide Corporation.