

88 ENROLL FOR GRADUATE STUDY

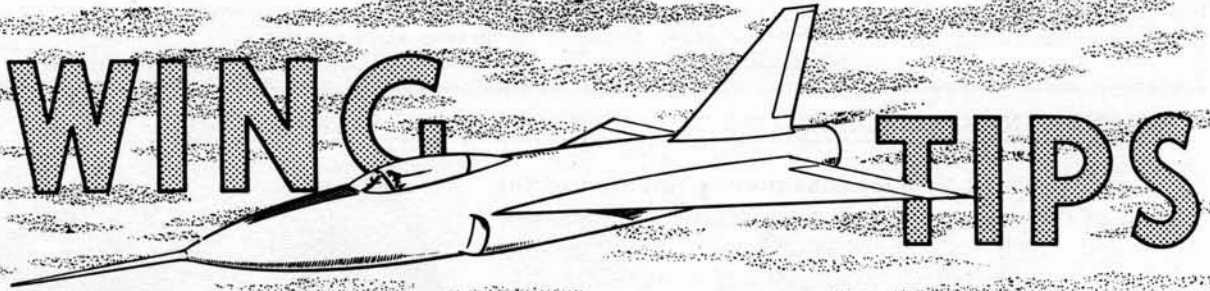
A total of 88 employees have enrolled for the non-credit graduate courses to be offered here starting the week of Nov. 12.

The three courses and the instructors are: Aerodynamics of Supersonic Flight - Herbert S. Ribner; Heat Transfer - Simon Ostrach and Robert G. Deissler; and Mathematical Analysis - John N.B. Livingood.

Wing Tips

November 9, 1951

WING TIPS



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No. 23

NACA HONORS LEWIS SCIENTISTS

"The important things are the people and their ideas - these men are the NACA." So stated Dr. Hugh L. Dryden, Director of the NACA, as he conferred upon Robert G. Deissler and Seymour Lieblein the NACA's Exceptional Service Medal.



Robert G. Deissler, head, Heat Transfer Branch of the Nuclear Reactor Division, received the award for achieving significant scientific results in the solution of fluid flow and heat-transfer problems associated with aircraft nuclear propulsion. He simplified the mathematical treatment so that it could be checked experimentally and used with modern high-speed computers for design application. Today, Deissler's work is standard reference in all high-temperature literature.



Seymour Lieblein, aeronautical research scientist in the Nuclear Reactor Division, achieved significant scientific results in the field of axial-flow compressors. He pioneered in the design of multi-stage transonic compressors, and as a direct result of his work, compressor weight and cost have been reduced appreciably. His concepts are being incorporated in all aircraft compressors now being developed. To quote from Mr. Lieblein's citation: "The results of his performance are of exceptional value to aeronautics."



Deissler and Lieblein received the high NACA award during ceremonies in the auditorium Monday, October 28th. Dr. Sharp and Abe Silverstein commended both men for their individual contributions and the part each has played in organized research. Leroy Humble and Oscar Schey briefly discussed the work of Deissler and Lieblein.

The NACA has many scientists deserving of recognition in his field of research. The Exceptional Service Medal will be a continuing recognition of those whose contributions advance technology on a nation-wide scale.

his desk is in the kitchen

Expansion goes hand-in-hand with progress, a familiar story at Lewis.

Continued growth of the Center requires planning for future facilities and land on which to build them. So it was that Congress granted us the privilege of purchasing 115 acres of land adjacent to our main area, west and somewhat south of the Center off Grayton Road.

West of the South Gate, past much construction (Watch future issue of Orbit for this story) on top of the hill is part of this new area.

Utilizing existing buildings on this property, the main house is being used as offices for the Heat Transfer Branch of the Nuclear Reactor Division. Relocated in the Mitchell House, as it is presently referred to, branch head Robert Deissler has his office in the downstairs bedroom; Albert Loeffler and Alden Presler share the diningroom; Clive Usiskin, Joseph Savino and Robert Siegel have their desks in the livingroom; Ephraim Sparrow's office is in one of the upstairs bedrooms; and Morris Perlmutter's desk is in the kitchen.

The Mitchell house is presently being redecorated to suitable office conditions.



The Mitchell house



M. Perlmutter - A. Presler



A. Presler - A. Loeffler



C. Usiskin - R. Siegel

November 27, 1964

Deissler To Be Presented ASME Heat Transfer Award

Robert G. Deissler, Chief of Lewis' Fundamental Heat Transfer Branch, has been selected to receive the Heat Transfer Division Memorial Award of the American Society of Mechanical Engineers.

The presentation will be made by Dr. E. O. Bergman, society president, at the Winter Annual Meeting of the ASME's Heat Transfer Division in New York City on Dec. 1.

The memorial award, consisting of a citation, was established by the Division in memory of distinguished colleagues and serves as the principle means of recognition

for excellence that the Division can award.

Deissler is being honored for his contribution to the science of turbulent flow heat transfer.

He has specialized in heat transfer and fluid mechanics since joining the Lewis staff in 1947. He has authored 40 technical papers in those fields.

Deissler was awarded the NACA Exceptional Service Medal in 1957.

A native of Greenville, Pa., he received a bachelor of science degree in mechanical engineering from Carnegie Institute of Technology in 1943 and a master of science degree from Case Institute of Technology in 1948.

He is a member of ASME and has served on its Aircraft and Astronautical Heat Transfer Committee. He also holds membership in the American Institute of Aeronautics and Astronautics and the American Physical Society.

He and his wife, June, live at 4540 W. 213th Street, Fairview Park. They are the parents of four children.



Robert G. Deissler

Physics & Chemistry Division reorganizes

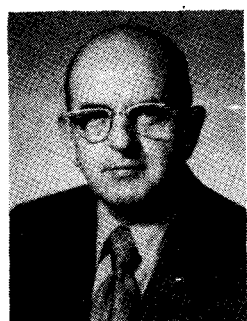
Since the appointment of Dr. Richard S. Brokaw as Chief of the Physics and Chemistry Division last month, a number of organizational adjustments have been made within the division.

Frank E. Belles, formerly Chief of the Kinetics Section, became Chief of the Propulsion Chemistry Branch, Dr. Brokaw's former position. The Kinetics Section was dissolved and its members were absorbed by the two other sections in the branch.

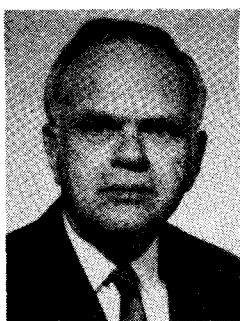
Robert G. Deissler, former Chief of the Fundamental Heat Transfer Branch, was named Senior Fluid Physicist at division level. Robert Siegel becomes Chief of the Fluid Mechanic and Thermal Science Branch. Richard T. Gedney has been appointed as Head of the branch's Analytical Section.

The Chemical Physics Branch, with Dr. Robert A. Lad as Chief, has been renamed the Materials Science Branch.

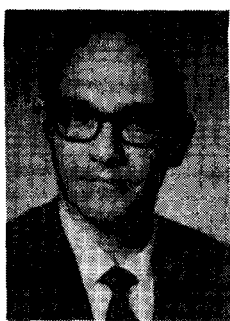
In the Radiation Physics Branch, Howard C. Volkin's Theoretical Physics Section has been absorbed by the two other branch sections, and Volkin has been appointed Branch Consultant to Dr. James W. Blue, Chief of the Branch.



Belles



Deissler



Siegel

Deissler earns high Technical Society award

An impressive record of work in the heat transfer area has earned Robert G. Deissler of Lewis the honor of being named to receive the 1975 Max Jakob Memorial Award.

Deissler will be honored at the Awards Luncheon, August 10, 1976 at the Sixteenth National Heat Transfer Conference being held at the Chase-Park Plaza Hotel, St. Louis, Missouri from August 8 to 11.

The Max Jakob Memorial Award was established in 1961 and is sponsored by the American Society for Mechanical Engineering and the American Institute for Chemical Engineering.

The award is presented annually in recognition of eminent achievement of distinguished service in the area of heat transfer. The award, which in previous years has been given to individuals from Switzerland, Germany, Russia, Japan, as well as the United States, consists of a bronze plaque, an honorarium and a certificate. Jakob was a pioneer in the science of heat transmission.

Deissler's citation reads, "for his outstanding contributions to the theory of turbulence and turbulent transport contained in the technical literature and authoritative text books on turbulent heat transfer; for his ability to perceive and derive the fundamental theory required to advance applied research and development in convective heat transfer."

While at the Conference

ment of Science and the Society for Natural Philosophy.

He received the NACA (NASA's predecessor) Exceptional Service Award in 1957, the ASME Heat Transfer Division Memorial Award in 1964, and an AIAA best paper award in 1975.

Deissler is a member of



in St. Louis, Deissler will be giving a lecture entitled, "Tornadoes and Other Atmospheric Vortices."

Deissler holds a B.S. degree in engineering from Carnegie Tech and an M.S. in engineering from Case Western Reserve University. He joined Lewis in 1947 and first specialized in fluid flow research and heat transfer. He gained early recognition in fluid flow research and heat transfer. He gained early recognition in his field for a series of outstanding papers dealing with turbulent flow and heat transfer of variable property fluids in pipes or tubes. He quickly advanced to a position at Lewis of section head and then chief of the Heat Transfer Branch. In 1972 he was appointed Technical Consultant in Fluid Physics for the Physical Science Division.

In addition to being an active member of ASME, he belongs to the American Institute of Aeronautics and Astronautics, American Physical Society, American Association for Advance-

(Continued on page 7)

(Continued from page 1)

the Honorary Editorial Advisory Board for the International Journal of Heat and Mass Transfer and for Letters in Heat and Mass Transfer.

Deissler has authored about 70 technical papers and his biography has appeared in the following pub-

ASME gives Deissler its highest honor

The American Society of Mechanical Engineers (ASME) has awarded its highest honor of Fellow to Robert G. Deissler of the Physical Science Division.

A technical consultant in fluid mechanics, Deissler is noted for his contributions to the theory of statistical turbulence and for an analytical model of turbulent heat transfer in tubes and channels that earned him world recognition.

In 1962 Deissler was awarded ASME's Heat Transfer Division Memorial A-



ward. In 1976, he received ASME's prestigious Max Jakob Memorial Award in recognition of eminent achievement in the area of heat transfer.

Deissler earned a Bachelor's degree in mechanical engineering from Carnegie Institute of Technology and a Master's degree from Case Western Reserve University.

Agency awards...

(Continued from page 1)

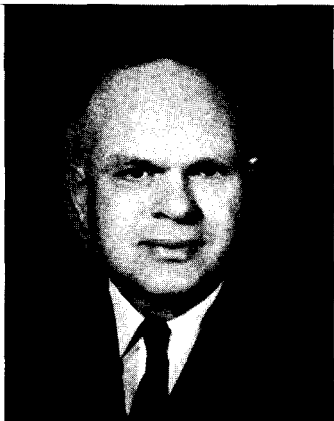
using new aircraft fuels that could be refined from petroleum, oil, shale or coal.”

● **Warner L. Stewart**, Strongsville. Stewart is Director of Aeronautics. His citation reads: “For exceptional contributions to the advancement of aeronautical propulsion technology both as an individual researcher and as a manager.”

● **Steven V. Szabo, Jr.**, Avon. Szabo is Associate Chief, Vehicles Engineering Division. His citation reads: “For exceptional project management skill and leadership in establishing and directing the launch vehicle system support for Project SEASAT. His efforts led to the solution of weight and payload capability problems on schedule and below budget estimates.”

In addition to winners of the Exceptional Service Medal, Marvin E. Goldstein, Willis H. Braun and John J. Adamczyk divided a \$1,000 monetary award for writing one of the two top technical papers at Lewis for this year. Their paper is entitled “Unsteady Flow in a Supersonic Cascade With Strong In-Passage Shocks.” The other award-winning paper was written by Robert G. Deisler who also received \$1,000. His paper is entitled “Models for Some Aspects of Atmospheric Vortices.”

Frederick L. Taylor of the Test Installations Division was honored for 40 years of federal service and received a 40-year service emblem and a framed certificate signed by NASA Administrator Dr. Robert A. Frosch.



Deissler

Lewis employees Robert G. Deissler and Marian J. Cmok were honored recently by the Northern Ohio Section of the American Institute of Aeronautics and Astronautics.

Deissler, a consultant in the Fluid Mechanics and Acoustics Division, earned the Section's Technical Achievement Award "in recognition of his sustained contributions of basic importance to the field of fluid



Cmok

dynamics and for his recent, significant work in applying numerical methods to turbulence theory."

Cmok, of the Computer Services Division, was presented a Special Service Citation "for her meritorious service, and exceptionally enthusiastic dedication to the Institute and the Northern Ohio Section."

HAPPENINGS

New AIAA fellow

Robert G. Deissler, Fluid Mechanics and Acoustics Division, was honored recently with an appointment to an AIAA fellowship.

Deissler's appointment was in recognition of his "outstanding contributions to the theories and understanding of turbulence, forced convection heat transfer and meteorological and astrophysical flows."

He joined Lewis after graduating from Case Institute of Technology in 1948 with a M.S. in mechanical engineering. Since then, he has returned to Case on several occasions to pursue advanced study in his field.

His primary research efforts have been in the areas of fluid mechanics, fluid turbulence and heat transfer. Today, Deissler is working on the numerical analysis of turbulence with the aid of fluid dynamics computer.

Sick leave miser

Louis Sliman, forms management officer for Lewis, has accumulated 3,000 hours of sick leave up to this month. That is equivalent to 17 months of federal service.

At one stretch, Sliman did not take sick leave for 9 years! He can't remember when he last took eight hours of sick leave at one time, although he has taken an hour here and there.

... Honor Awards

recognition of improvements to the research productivity and safe operation of the Lewis Flight Operations Office through superior management."

■ **Jeanette M. Biby**—"In recognition of outstanding leadership and service in the administration of employee health and life insurance programs."

■ **Arthur G. Birchenough**—"For exceptional contributions to the successful design and development of electrical control and safety systems for large, megawatt-scale wind energy conversion systems for utility applications."

■ **Richard D. Clapper**—"In recognition of outstanding achievements in employee training and development which have contributed significantly to the programs of NASA."

■ **John J. Gulan**—"For dedicated service and leadership in directing the Lewis Research Center's health and occupational medicine programs to unprecedented levels of excellence."

■ **Daniel J. Keliher**—"For contributions to NASA in providing outstanding leadership as Chief of the Facilities Engineering Division, Lewis Research Center."

■ **David J. Poferl**—"In recognition of outstanding contributions in management of the Lewis Research Center's aeronautics program."

■ **Peter Ramins**—"In recognition of outstanding efforts in developing the multi-staged depressed collector into a practical device of enormous value for high-power microwave transmission in space, on Earth and in the air."

■ **Harold E. Sliney**—"For outstanding achievements in the advancement of lubrication science and technology resulting in truly exceptional contributions to NASA aeronautics and space-flight endeavors."

Two Exceptional Scientific Achievement Medals were awarded:

■ **Robert C. Hendricks**—"In recognition of outstanding research in heat transfer, fluid mechanics and thermophysical properties of cryogenic fluids which has contributed immeasurably to NASA's hydrogen-oxygen chemical rocket technology."

■ **Frank K. Moore (Cornell University)**—"In recognition of numerous scientific contributions to the understanding of the fluid mechanics of aeronautics and space propulsion systems."

And three Lewis staffers received the Exceptional Engineering Achievement Medal:

■ **Ira T. Myers**—"For outstanding leadership in the development of the electrical power component technology which has made possible the large

(Continued From Page 1)
space power systems essential to the development of the space station and to the national defense."

■ **John L. Shannon, Jr.**—"For research leadership in development of the technology base in applied fracture mechanics and for outstanding contributions to the solution of practical problems concerning the safety and reliability of aerospace structures."

■ **Edward A. Willis**—"For keen engineering insight, foresight and persistence in leading the technology development of the stratified-charge rotary engine for aircraft applications."

Certificates of Appreciation were awarded to:

■ **Wojciech Rostafinski**—"For extensive and enthusiastic advocacy of the NASA aerospace program to a wide variety of hard-to-reach audiences in the United States and other countries."

■ **Beverly F. Sage**—"In recognition of extraordinary efforts and valuable contributions toward meeting the transportation needs of Lewis Research Center."

The 1985 Lewis Distinguished Paper Award was presented to **Robert A. Miller** for *An Oxidation-Based Model for Thermal Barrier Coating Life*. The paper deals with a new model that successfully predicts the life of



Wojciech Rostafinski



Beverly F. Sage



Robert A. Miller

thermal barrier coatings. Because thermal barrier coatings are finding use not only on gas turbine engines but also in industrial applications, the usefulness of this model will be much broader than just the aircraft industry.

Recipient of the 55-Year Service Award was **Isidore Warshawsky**, Instrumentation and Control Technology Office. "In recognition of 55 years of distinguished service with NACA/NASA and outstanding contributions in aerospace instrumentation research which have been recognized both nationally and internationally."

Presented with the 45-Year Service Emblem was **C. Robert Morse** of the Aeropropulsion Facilities and Experiments

Division.

And 40-Year Service Emblems were presented to:

■ **Sam Calamia**, Engineering Design Division

■ **Richard H. Cavicchi**, Internal Fluid Mechanics Division

■ **Robert G. Deissler**, Office of Research and Technology Assessment

■ **Sheldon Heimel**, Instrumentation and Control Technology Office

■ **Herman Mark**, Office of Research and Technology Assessment

■ **Mike A. Minichiello**, Engineering Design Division

■ **William H. Robbins**, Shuttle/Centaur Project Office

■ **Louis J. Sliman**, Technical Information Services Division. □

Two Lewis Employees Receive Ph.D Degrees

Robert Deissler and Christopher Dellacorte recently received doctorate degrees from Case Western Reserve University.

Deissler, a Fellow and scientific consultant in the Office of the Chief Scientist, earned his degree in the field of fluid and thermal science. His dissertation was entitled, "On the Nature of Navier-Stokes Turbulence."



Deissler



Dellacorte

Deissler, who took advantage of Lewis' graduate study plan to earn his doctorate, said, "Most people get their doctorate near the beginning of their career. But I am at an age where people think about retirement. I guess the only explanation is that in earlier years I did not notice that something significant was missing from my background."

Currently doing research on fluid turbulence, turbulent transport processes, and nonlinear dynamics and chaos, Deissler, who began working at Lewis in 1947, has enjoyed a wide and varied career here. He has served as a senior research scientist and consultant for fluid mechanics and heat transfer; was chief of the Fundamental Heat Transfer Branch; and headed the Heat Transfer Section.

Dellacorte, Surface Science Branch, received his degree in the field of mechanical and aerospace engineering. His dissertation was entitled, "The Experimental Evaluation and Application of High-Temperature Solid Lubricants."

Dellacorte began working at Lewis in 1985.

**The next issue of the Lewis News
will be August 18**

Research Academy Offers Valuable Exchange of Ideas

The prestigious Lewis Research Academy provides a cross-fertilization of research activities at the Center and is a valuable tool for recruiting quality researchers.

Chief Scientist Dr. Marvin Goldstein, who heads up this unique seven-member group under the Office of University Programs, outlines the Academy's activities and goals.

Q. What is the Lewis Research Academy?

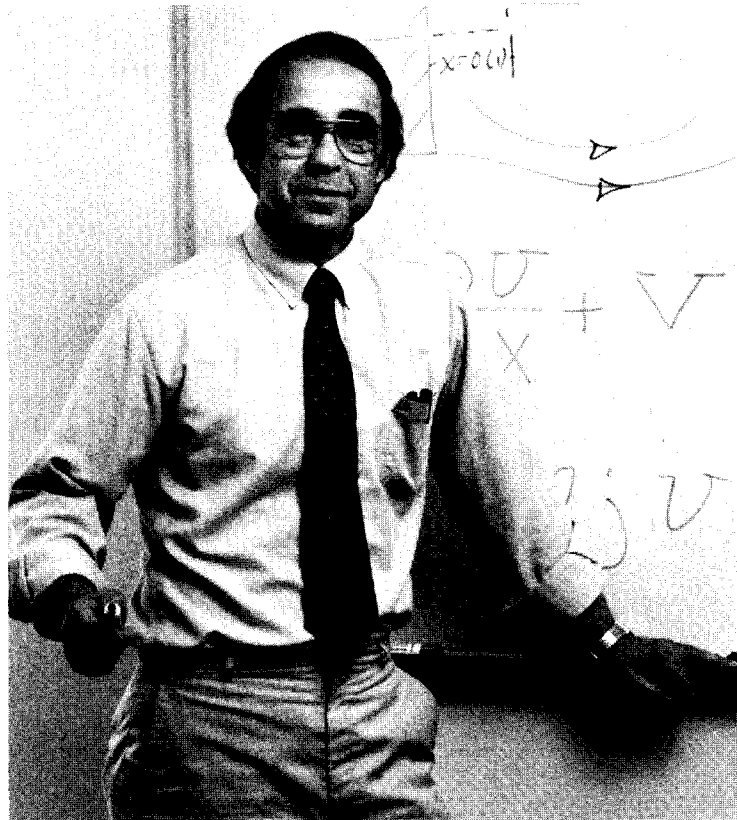
A. The Academy consists of a core group of recognized basic researchers who spend about 80 percent of their time conducting their own research and 20 percent applying their knowledge to research programs throughout Lewis. The group was formed in 1985.

Q. Can you tell us about the members?

A. Members of the Academy are internationally recognized researchers in their areas of expertise who have published extensively in referred journals, received numerous national awards, and presented many invited and keynote lectures at national and international meetings. Our seven full-time members are joined by visiting researchers who, in most cases, are university professors on a sabbatical or other type of academic leave.

Q. Who is eligible for membership?

A. The number and skill mix of



Dr. Marvin Goldstein leads Lewis' prestigious research team.

the Academy Fellows are established by the Director, with consideration of the research needs of the Center. Any full-time Lewis employee may request membership in the Academy, but must possess outstanding credentials. Bob Deissler, for example, who is one of our members, has won two national awards from the American Society of Mechanical Engineers (ASME), has achieved distinction in other technical societies, and is listed in *Who's Who in America* and *Who's Who in the*

World.

Q. How does the Academy benefit its members?

A. Members of the Academy have the opportunity to pursue their individual research. Each one is actually the head of his or her own research area. They come to me as the head of the Academy only when they encounter obstacles, but, basically, they are on their own. Because the members work independently, they are responsible for the outcome of their

projects. They set up their own programs and frequently find the appropriate Lewis program managers to support them.

Q. How does the Academy benefit Lewis?

A. We try to ensure that the programs at Lewis will get the maximum benefit from our basic research activities. Our members do the research, keep abreast of current technological activities, and pass that expertise on to the more applied research programs throughout Lewis. The Academy also attracts quality researchers to Lewis, such as university professors on sabbaticals. These visitors frequently bring knowledge that will benefit the entire Center. Because our members are high-profile researchers, they attract attention to Lewis and help with our recruiting efforts.

We also help out in advocating new programs. For example, John Adamczyk, who, incidentally, has recently been made a senior research scientist at Lewis, spent quite a number of years advocating the low-speed high-compressor rig that was recently built at Lewis.

Q. What kinds of research does the Academy undertake?

A. We try to pursue research programs that are related to the current technological needs at Lewis. My own research has been concerned with obtaining a better understanding of turbulent mixing. Our hope is that

this will lead to improved combustion chamber and mixing nozzle designs. We are also developing the "tools" to study noise reduction mechanisms for the High-Speed Civil Transport.

Q. What research areas are you looking to pursue in the future?

A. We are very anxious to pursue research that is more closely related to Lewis space activities. Our expertise is primarily in the areas of fluid mechanics, heat transfer, and solid-state physics. Researchers with additional expertise and sufficiently broad experience and reputation who become available could petition the Director to appoint them to the Academy. His or her reputation would then attract outside people as well.

Q. How has the Academy changed in the past five years?

A. I believe that the Academy has helped Lewis improve its research image in the scientific community and throughout NASA. No other NASA center has a research group like ours.

Research Academy Members

John J. Adamczyk
Robert G. Deissler
John Ferrante
Marvin E. Goldstein
Lennart S. Hultgren
Reda R. Mankbadi
Robert Siegel

Admiral Richard Truly Is Guest Speaker

1991 NASA Lewis Honor Awards Roll Call

OUTSTANDING LEADERSHIP MEDAL

Neal T. Saunders, director of Aeronautics.

EXCEPTIONAL SCIENTIFIC ACHIEVEMENT

Dr. Khairul Zaman B.M.Q., Inlet, Duct and Nozzle Flow Physics Branch, Internal Fluid Mechanics Division.

DISTINGUISHED PUBLICATION AWARD

Rebecca A. MacKay and Michael V. Nathal, Advanced Metallics Branch, Materials Division, for: "Coarsening in High Volume Fraction Nickel-Base Alloys."

EXCEPTIONAL SERVICE AWARDS

Robert Baumbick, Engine Sensor Technology Branch, Instrumentation and Control Technology Division; Harvey Bloomfield, Power Systems Integration Office, Power Technology Division; Frank Brady, Electrical Systems Branch; Raymond Burns, Systems Engineering and Analysis Branch, Systems Engineering and Integration Division; Jean Chapman, Office of Chief Scientist; Russell Corso, Fluid Systems Branch, Propulsion and Fluid Systems Division; James Davis, Facility Planning Office; Dr. John W. Dunning, Jr., deputy chief, Systems Engineering and Integration; Robert Evans, Terrestrial Propulsion Office, Propulsion Systems Division; Thomas Finnegan, Management Information Systems Branch, Computer Service Division; Phyllis Geffert, Telecommunications and Networking Branch, Computer Services Division; Steve Goncezy, Electronic Systems Branch, Aeropropulsion Facilities and Experiments Division; William Groesbeck, Thermal and Fluids Analysis Branch, Propulsion and Fluid Systems Division; Louis Ignaczak,

Flight Projects Branch, Space Experiments Division; Kenneth Jensen, Communications and Electronics Branch, Test Installations Division; Bonnie McBride, Aerothermochemistry Branch, Internal Fluid Mechanics Division; Carl Monnin, Software Engineering Office, Engineering Support Division; Monica Palivoda, Office of the Director; Patricia Parker, Office of the Comptroller; Paul Prokopius, Electro-Chemical Technology Branch, Power Technology Division; Gary Sagerman, Mission and Vehicle Integration Office, Launch Vehicle Project Office; Bobby Sanders, deputy chief, Inlets Technology Branch, Propulsion Systems Division; Charles Slauter, deputy chief, Fabrication Support Division; Joseph Stephens, Engine Materials Project Office, Materials Division; Eugene Symons, chief, Cryogenic Fluids Technology Office; and Dr. Fred Teren, chief, Electrical Systems Division.

EXCEPTIONAL ACHIEVEMENT MEDALS

Henry Geringer, Materials Development Branch, Test Installations Division; Arthur Laufman, Photographic and Printing Branch; Donald Packe, deputy chief, Computer Services Division; Vernon Parrish, Environmental Compliance Office, Office of Environmental Programs;

Laurence Petraus, chief, Materials and Engine Components Branch, Test Installations Division; Robert Schneider, chief, Project Control Office; and Thomas Tokmenko, Space Systems Branch, Procurement Division.

EXCEPTIONAL ENGINEERING ACHIEVEMENT

Leo Franciscus, Mission Analysis Branch, Aeropropulsion Analysis Office; Dr. Patri-

berg, Carl F. Lorenzo, John J. Reinmann, Charles J. Trefny. Employees from other organizations include: Charles J. Bauer and John L. Leingang, USAF Wright Laboratories; Robert L. Berrier, Ernest A. Mackley, and Charles R. McClinton, NASA Langley Research Center; Victor Corsiglia, NASA Ames Research Center; Robert Dobrowolski, Guy Mangano, and Ed Stawski, Naval Air Propulsion Center; James L. Keirse and Paul J. Waltrup, JHU/Applied Physics Laboratory; James Loudigan and C. Franklin Markarian, Naval Weapons Center; William Rose, Rose Engineering; Raymond Shreeve, Naval Postgraduate School.

Solid Surface Combustion Experiment Team:

In recognition of the

sustained superior effort and achievement in the design, development, and flight of the Solid Surface Combustion Experiment. Team members include: Ralph J. Zavesky (project manager), Frank J. Barina, Kenneth M. Beno, William J. Bifano, Michael H. Brace, Daniel W. Buttler, James E. Cake, William M. Foster II, Christopher A. Gallo, Gary E. Gorecki, Daniel H. Haas, Robert L. Hauer, Thomas V. Hudach, Louis R. Ignaczak, Jean M. Johnson, Poppy Kalis, Gary N. Kotch, John M. Koudelka, John J. Logan Jr., William J. Masica, Richard D. Meden, Daniel P. Morilak, Eric S. Neumeann,

Scott A. Numbers, Sandra L. Olson, Angel M. Otero, Kimlan T. Pham, Howard D. Ross, Neil D. Rowe, Kurt R. Sacksteder, Jack A. Salzman, Raymond G. Sotos, Donald R. Striebing, Kenneth G. Ulicny, Daniel M. Vanto, James C. Williams, and William J. Wolf. Lewis contractor employees include: Robert E. Bryan, Michael Shuty, John C. Sturman, and Dan Williston, Analex Corporation; Jay C. Owens, Cortez III Service Corporation; Mark Brezenski, David J. Haydu, James H. McKim, and John J. Merry. Employees from other organizations include: Robert A. Altenkirch, Mississippi State University; Thomas D. Akers, Charles E. Chassay, Kyle Fairchild, and Dawn A. Thomas, NASA Lyndon B. Johnson Space Center; Willie S. Beckham and Gary Deardorf, Lockheed; Richard Bradfield, The Bionetics Corporation; Bradley Carpenter, Warren G. Hodges, and James F. McGuire, NASA Headquarters; Beth A. Cerrato, Glenn C. Chin, Deborah J. Moates, and William J. Paton, NASA John F. Kennedy Space Center; Susan Freeman, Rockwell.

FORTY-FIVE-YEAR SERVICE EMBLEM

Robert G. Deissler, staff scientist for Fluid Physics, Office of the Chief Scientist.

FORTY-YEAR SERVICE EMBLEM

William P. Hassett, mechanical engineering technician, Facilities Operations Division; Leonard V. Pelka, electronics equipment specialist, Logistics Management Division; and Frank A. Zelko, lead electronics engineering technician, Test Installations Division.

GROUP ACHIEVEMENT AWARD

Lewis FY 1990 Construction of Facilities Team: In recognition of outstanding implementation of the Construction of Facilities FY 1990 Minor Program resulting in substantial increases in mission capability and quality of life. The team includes: Daniel J. Keliher (team leader), Louis F. Bernhardt, Frances M. Borato, John Chovan, Pedro I. Colon, David S. Ebner, William D. Guthrie, Thomas J. Hinshaw, Robert F. Houk, William F. Hyde, Robert P. Jones, Paul A. Karla, Daniel F. Larson, Dallas Lauderdale Jr., Gene Pinali, Hugh A. Schoeffler, Michael C. Seaver, Paul B. Starner, Ronald A. Zurawski.

Low-Speed Propulsion Team: In recognition of an exceptional effort in low-speed propulsion technologies crucial for the National Aero-Space Plane Program. The team includes: Edward T. Meleson (team leader), John C. Aydelott, Bernard J. Blaha, David N. Bowditch, Robert E. Coltrin, Richard L. DeWitt, Ned P. Hannum, Erwin A. Lez-



Director of Aeronautics, Neal T. Saunders (center), received the Outstanding Leadership Medal. Center Director Larry Ross (left) and NASA Administrator Richard Truly (right) look on.

Photos by Quentin Schwinn



Rebecca A. MacKay and Michael V. Nathal (center) received the Distinguished Publication Award. Center Director Larry Ross (left) and NASA Administrator Richard Truly look on.



Khairul Zaman (center), Inlet, Duct and Nozzle Flow Physics Branch, received the Exceptional Scientific Achievement Medal. Center Director Larry Ross (left) and NASA Administrator Richard Truly (right) look on.

Buyouts/early outs**Retirements put NASA closer to FTE reduction goal**

Due to the large number of recent retirements, through buyouts and early outs, most retirees were unable to schedule a photograph. In order to publicize the listing in a timely manner, the Lewis News will be running only the retirees' information. There were a total of 199 civil servants who took buyout/early out options.

Kaleel Abdalla, an aerospace engineer in the Propulsion Systems Division, retired on May 3, 1994, with 38 years of NASA service.

Gordon Allen, an aerospace engineer in the Structures Division, retired on May 3, 1994, with 41 years of NASA service.

Rose Andrew, an accounting technician in the Financial Management Division, retired on May 31, 1994, with 24 years of NASA service.

Paul Aron, an electrical engineer in the Power Technology Division, retired on May 3, 1994, with 31 years of NASA service.

Dale Arpasi, an aerospace engineer in the Internal Fluid Mechanics Division, retired on May 3, 1994, with 31 years of NASA service.

Thomas Banus, a project management specialist in the Launch Vehicle Project Office, retired on May 3, 1994, with 31 years of NASA service.

Richard Barrows, a mechanical engineer in the Propulsion Systems Division, retired on May 3, 1994, with 30 years of NASA service.

Byron Batthauer, an aerospace engineer in the Aeropropulsion Facilities and Experiments Division, retired on May 3, 1994, with 31 years of NASA service.

Kenneth Baud, an aerospace engineer in the Launch Vehicle Project Office, retired on May 3, 1994, with 31 years of NASA service.

David Bittker, an AST in the Internal Fluid Mechanics Division, retired on May 3, 1994, with 42 years of NASA service.

Peter Bizon, an AST in the Structures Division, retired on May 3, 1994, with 35 years of NASA service.

Irene Blanchard, a secretary in the Aerospace Technology Directorate, retired on May 3, 1994, with 29 years of NASA service.

Donald Boldman, an aerospace engineer in the Propulsion Systems Division, retired on May 3, 1994, with 40 years of NASA service.

Glen Boltz, an electrical engineering technician in the Facilities Operations Division, retired on May 3, 1994, with 24 years of NASA service.

Charles Boros, a research laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 33 years of NASA service.

Marilyn Bozek, an industrial property officer in the Logistics Management Division, retired on May 3, 1994, with 32 years of NASA service.

William Brainard, an AST, technical management, in the Office of the Director, retired on May 3, 1994, with 31 years of NASA service.

Rose Brown, a research laboratory mechanic in the Test Installations Division, retired on May 3, 1994, with 28 years of NASA service.

George Brucher, an electrician in the Test Installations Division, retired on May 3, 1994, with 29 years of NASA service.

John Burke, an electrical systems mechanic in the Test Installations Division, retired on May 3, 1994, with 30 years of NASA service.

Richard Burley, an aerospace engineer in the Propulsion Systems Division, retired on May 3, 1994, with 43 years of NASA service.

Marian Cmok, a program analyst in the Computer Services Division, retired May 3, 1994, with 30 years of NASA service.

Howard Cobb, III, a research laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 32 years of NASA service.

Robert Collins, a mechanical engineering technician in the Facilities Operations Division, retired May 3, 1994, with 40 years of NASA service.

Mary Lynn Cook, a program analyst in the Space Experiments Division, retired May 3, 1994, with 24 years of NASA service.

Russell Corso, a supervisory AST in the Propulsion and Fluid Systems Division, retired May 3, 1994, with 31 years of NASA service.

William Costakis, an AST in the Propulsion Systems Division, retired May 3, 1994, with 31 years of NASA service.

Harry Craddock, a facilities maintenance manager in the Facilities Operations Division, retired May 3, 1994, with 28 years of NASA service.

Walter Cunnan, an AST in the Aeropropulsion Facilities and Experiments Division, retired May 3, 1994, with 33 years of NASA service.

John Dagleish, a research facility service manager in the Test Installations Division, retired May 3, 1994, with 29 years of NASA service.

Richard Danielson, an agreement specialist in the Office of Interagency and Industry Programs, retired on May 3, 1994, with 31 years of NASA service.

Robert Davies, a supervisory maintenance engineer in the Materials Division, retired May 3, 1994, with 32 years of NASA service.

Robert Deissler, a staff scientist in the Lewis Research Academy, retired April 29, 1994, with 46 years of NASA service.

James DePauw, a supervisory electrical engineer in the Power Systems Project Office, retired May 3, 1994, with 32 years of NASA service.

Anthony Dolence, an instrument maker in the Fabrication Support Division, retired May 3, 1994, with 32 years of NASA service.

John Dorner, Jr., a research laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 33 years of NASA service.

Robert Dorrance, a mechanical engineering technician in the Fabrication Support Division, retired May 3, 1994, with 30 years of NASA service.

Rudolph Duscha, a supervisory electrical engineer in the Power

Technology Division, retired May 3, 1994, with 36 years of NASA service.

Patricia Eckenfels, a mail service control monitor in the Logistics Management Division, retired May 3, 1994, with 24 years of NASA service.

Marilyn Edwards, a supervisory public affairs specialist in the Office of Community and Media Relations, retired May 3, 1994, with 32 years of NASA service.

Linda Ellis, a public affairs specialist in the Office of Community and Media Relations, retired May 3, 1994, with 32 years of NASA service.

Richard Fabik, an electrical engineer in the Space Propulsion Technology Division, retired May 3, 1994, with 30 years of NASA service.

Ralph Faigen, a product controller in the Facilities Operations Division, retired May 3, 1994, with 26 years of NASA service.

Ralph Fallert, a research laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 30 years of NASA service.

James Fear, an aerospace engineer in the Propulsion Systems Division, retired May 3, 1994, with 31 years of NASA service.

Willie Fleming, a control specialist in the Procurement Division, retired May 3, 1994, with 31 years of NASA service.

Leo Franciscus, an aerospace engineer in the Aeropropulsion Analysis Office, retired May 3, 1994, with 32 years of NASA service.

Ronald Frimel, an electrical systems mechanic in the Test Installations Division, retired May 3, 1994, with 41 years of NASA service.

Marjorie Fuller, a secretary in the Office of Mission Safety and Assurance, retired May 3, 1994, with 10 years of NASA service.

Lawrence Gertsma, an aerospace engineer in the Propulsion Systems Division, retired May 3, 1994, with 37 years of NASA service.

Anita Graham, an EEO specialist in the Office of Equal Opportunity Programs, retired May 3, 1994, with 6 years of NASA service.

Thomas Hacha, an aerospace engineer in the Space Experiments Division, retired April 29, 1994, with 7 years of NASA service.

William Harris, a laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 31 years of NASA service.

Joseph Harrold, a supervisory computer engineer in the Space Electronics Division, retired April 29, 1994, with 30 years of NASA service.

Edward Hejnal, a research facility service manager in the Test Installations Division, retired May 3, 1994, with 31 years of NASA service.

Jack Herman, a program analyst in the Resources Analysis and Management Office, retired May 3, 1994, with 31 years of NASA service.

Marvin Hirschberg, a supervisory aerospace engineer in the Structures Division, retired May 3, 1994, with 43 years of NASA service.

Anthony Hoffman, an aerospace

engineer in the Propulsion Systems Division, retired May 3, 1994, with 32 years of NASA service.

Lyle Hoffman, a senior product controller in the Fabrication Support Division, retired May 3, 1994, with 32 years of NASA service.

Raymond Holanda, an electrical engineer in the Instrumentation and Control Technology Division, retired May 3, 1994, with 36 years of NASA service.

David Hubeny, Jr., an electronic systems mechanic in the Test Installations Division, retired May 3, 1994, with 32 years of NASA service.

William Ice, an environmental program manager in the Facilities Engineering Division, retired May 3, 1994, with 31 years of NASA service.

Kent Jeffries, an electrical engineer in the Power Systems Project Office, retired May 3, 1994, with 32 years of NASA service.

Larry Jones, a mechanical engineering technician in the Test Installations Division, retired May 3, 1994, with 30 years of NASA service.

Daniel Jurkovich, a mechanical engineering technician in the Fabrication Support Division, retired May 3, 1994, with 35 years of NASA service.

Richard Kalo, a supervisory electrical engineer in the Electronic and Control Systems Division, retired May 3, 1994, with 28 years of NASA service.

Thomas Kascak, a physicist in the Space Electronics Division, retired May 3, 1994, with 28 years of NASA service.

Christine Kazan, a secretary in the Aeropropulsion Facilities and Experiments Division, retired May 3, 1994, with 25 years of NASA service.

Arthur Kieffer, an AST in the Electronic and Control Systems Division, retired May 3, 1994, with 32 years of NASA service.

Howard Kilpatrick, a mechanical engineering technician in the Test Installations Division, retired May 3, 1994, with 29 years of NASA service.

Joseph Klebau, an electrician in the Test Installations Division, retired May 3, 1994, with 32 years of NASA service.

Charles Klein, a research laboratory mechanic in the Test Installations Division, retired May 3, 1994, with 28 years of NASA service.

Thomas Klucher, an electrical engineer in the ACTS Project Office, retired May 3, 1994, with 31 years of NASA service.

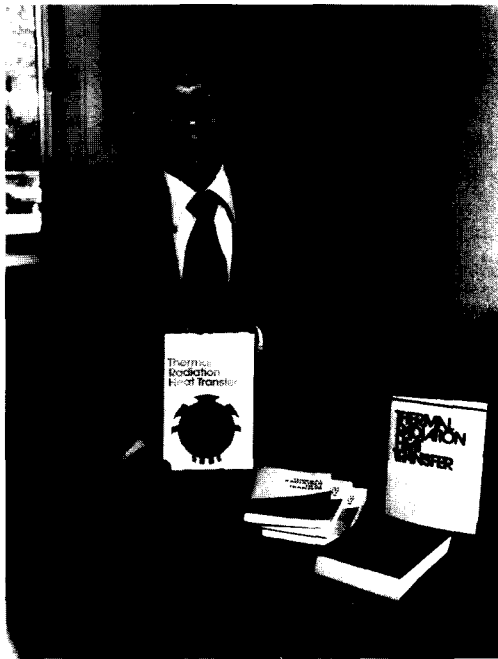
Robert Klypchak, an electronic systems mechanic in the Test Installations Division, retired May 3, 1994, with 32 years of NASA service.

Gerald Knip, Jr., an aerospace engineer in the Aeropropulsion Analysis Office, retired May 3, 1994, with 37 years of NASA service.

John Kobak, a supervisory electrical engineer in the Aerospace Technology and Facilities Division, retired May 3, 1994, with 36 years of NASA service.

John Koch, a mechanical engineering (continued on page 4)

Siegel's legacy to future ex



NASA Glenn archive image

Dr. Robert Siegel poses with several versions of the textbook *Thermal Radiation Heat Transfer*, which he co-authored with J. R. Howell.

A native of Cleveland's eastside, Siegel earned his bachelor and master degrees at Case Institute of Technology and 2 years later a doctorate of science at the Massachusetts Institute of Technology. He arrived at NACA in 1955 when Dr. Abe Silverstein, the Lab's chief engineer, was building up a pool of academicians to pair their theoretical skills with the comparable mechanical ingenuity necessary to build new engines.

Siegel's master and doctoral theses on heat transfer, coupled with his experience in cooling nuclear reactors during a 2-year stint at General Electric, made him an ideal addition to the prominent heat transfer group where he worked on applications for aircraft nuclear propulsion. The group was composed of experts in their field, many of whom did a great deal of independent research headed by Robert Deissler, considered a giant in the field of heat transfer.

Later, Siegel became head of the Analytical Heat Transfer Section at the Lab that was recognized as the hub for basic research on the problems of radiation, convection, and conduction. His collaboration with Ephraim Sparrow and William "Red" Robbins—the "bird" group—on a proposed design for a rocket engine is remembered fondly.

BY S. JENISE VERIS

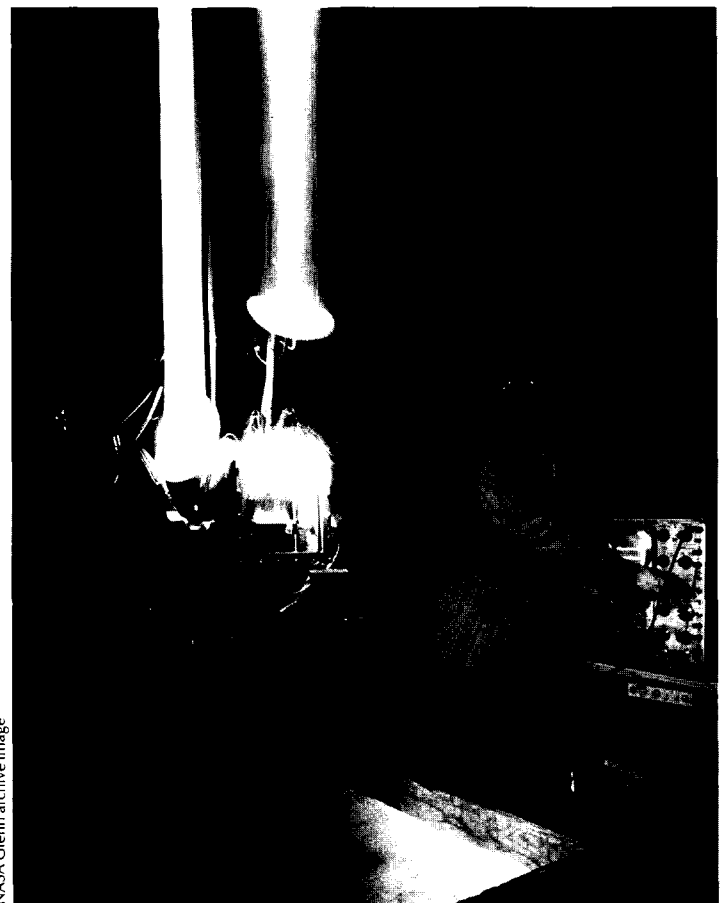
"THEIR presence at the laboratory was due in no small measure to Abe Silverstein's commitment to basic research. Like Dryden and Vannevar Bush, he believed that basic research was the nation's technical capital." (*Engines and Innovation*, p. 104)

On May 31, Dr. Robert Siegel, one of 10 senior technologists at NASA Glenn, retired after 44 years of service to NASA and its predecessor NACA. His legacy as designer of the first drop tower and co-author of the textbook *Thermal Radiation Heat Transfer*, however, will have a lasting impact on future generations of engineers as they push the boundaries of space exploration.

According to NASA Glenn's Chief Scientist Dr. Marvin Goldstein much of the fundamental science and technology that underlies the work done at the Center comes from the contributions made by senior technologists like Siegel.

"Their work requires a high level of creativity—which very few are able to attain—a great deal of personal motivation, and perhaps a bit of luck as well. This enables them to make some extraordinary breakthroughs that most people cannot even anticipate," Goldstein said. "Siegel is an example of that rare combination. He leaves behind substantial contributions resulting from his role as a researcher, teacher, and consultant. There can be no doubt that he has increased the intellectual level of the next generation workforce in the area of heat transfer, particularly radiation and boiling heat transfer."

Dr. Robert Siegel conducts a boiling experiment on the world's first drop tower that he designed in 1957.



NASA Glenn archive image

y gives flight xploration

"I was working on heat transfer to rocket nozzles and really didn't know how to go about it," Robbins said. "Siegel was simply a genius and enormously helpful during that time."

Such genius later led him to investigate heat transfer for conditions in space and ultimately to design the world's first drop tower in 1957. The tower was a free-fall device—about 12 feet tall—that allowed him to test zero gravity for a short duration boiling experiment using a high-speed camera to film the process. A few years later he built a second tower with counterweights to conduct research at various levels of microgravity. His efforts were recognized in 1970 when he received the American Society of Mechanical Engineer's (ASME) Heat Transfer Memorial Award. In 1993 he received a NASA Space Act Award for original research work on the drop tower.

Siegel is also known for his work in radiation heat transfer because of the textbook that he co-authored in 1968 with J. R. Howell who is presently a professor in the mechanical engineering department at the University of Texas-Austin. The text originated from three NASA special publications prepared from personal research and notes for short courses in radiation heat transfer given at the Lab.

At the time, more information was needed on radiation, which was the only mechanism for cooling satellites and spacecraft. Chemical engineers were studying radiation for hot gases in furnaces and combustors, but more information was needed for space applications.

"Siegel is one of the top leaders in development of the fundamentals of radiation heat transfer for engineering applications. But putting aside his technical genius and scholarly accomplishments, Bob has been a true gentleman throughout the years I've known him," Howell said. "I certainly have enjoyed our long association—a testament to the collaboration on the book revisions we've accomplished over the years."

The book now published as a third edition has been widely used for nearly 3 decades as a graduate level college textbook, and has been translated into three other languages.

While Siegel's recognition comes largely in

the areas of radiation and low gravity heat transfer, he has done research on many other subjects such as freezing, phase change processes, transient thermal behavior, thermal behavior in semitransparent ceramics, porous media heat flow, and transient forced and free convection processes.

"We collaborated on a special project under Civil Aviation to determine the number of cooling fins necessary to enhance engine performance," said Dr. Robert Graham. "Siegel calculated the number of fins and I performed the tests to improve performance."

Siegel has been at the forefront of such research and technology and has written more than 170 journal papers and articles. He has served both ASME and American Institute of Aeronautics and Astronautics (AIAA) as a journal editor. He was an editor for the *Journal of Heat Transfer* for 11 years, and was an editor for the *Journal of Thermophysics and Heat Transfers* since its inception in 1986 until the close of 1998. He currently serves on the Honorary Editorial Advisory Boards of the *International Journal of Heat and Mass Transfer*, *International Communications in Heat and Mass Transfer*, and the *Journal of Thermophysics and Heat Transfer*.

A Fellow of the ASME and the AIAA, he has also received the NASA Exceptional Scientific Achievement Medal (1986) and the AIAA Thermophysics Award (1993). The ASME and American Institute of Chemical Engineers presented the Max Jakob Memorial Award to Siegel in 1996 in recognition of his eminence in the field of heat transfer and his distinguished service as a research worker, educator, and author.

Not the type to let grass grow under his feet,



Photo by Tom Jares

Dr. Siegel pays his respects to Dr. Abe Silverstein, his former boss and longtime friend, following the 1997 ceremony at which Silverstein was presented the prestigious Cuggenheim Medal.

Siegel currently serves on a committee for ASME, which will require him to undertake projects and attend a few meetings each year starting with the 1999 National Heat Transfer Conference to be held this month in Albuquerque, NM.

"I don't like to think of leaving the Lab as retirement, rather I'm setting a little different pace," Siegel said. "I often find now that the projects I used to save for Saturdays, like gardening, are interchanged with reviewing or finishing a paper on my computer."

When free time presents itself, Siegel said he hopes to see a few of the interesting places he has looked forward to visiting. In the meantime, he enjoys kicking up his heels several times a week with his wife and partner of 48 years, Elaine. They both share a love of ballroom dance and the joy of instructing others on the finer points of social dance—something they have done since 1974. ♦



Dr. Siegel and his wife, Elaine, share a passion for dance.

Photo courtesy of Shaker Heights JCC