JOURNAL OF SPACECRAFT AND ROCKETS
Vol. 29, No. 1, January–February 1992

Editorial

I WELCOME two new Associate Editors to the *Journal of Spacecraft and Rockets*. Ron Clark of NASA Langley will cover materials and coatings, and Mike Tauber of NASA Ames will handle papers in spacecraft and transatmospheric flight. I look forward to working with both in important areas for *JSR*. Paul Mizera of The Aerospace Corporation has completed his tenure with *JSR* and we thank him for his contribution to the journal. Photographs and biographical sketches of the active Associate Editors follow this editorial.

Peer reviewers are a vital part of any journal, and a list of reviewers for the period October 1990 to October 1991 follows the information on Associate Editors. Much of the credit for improvement in technical quality of *JSR* is due to the peer review process.

Again in 1992, I encourage authors to submit papers to *JSR* that fall under the scope which appears on the inside front cover of each issue. We need your papers to make *JSR* the applications journal for spacecraft and missiles for the AIAA.

Clark H. Lewis
Editor-in-Chief

Editor-in-Chief

CLARK H. LEWIS is President of VRA, Inc., in Blacksburg, Virginia. He received his B.S.M.E., M.S., and Ph.D. in Engineering Science from the University of Tennessee. From 1951 to 1968 he was at the von Kármán Gas Dynamics Facility at the Arnold Engineering Development Center in Tennessee. From 1968 to 1985 he was Professor of Aerospace Engineering at Virginia Polytechnic Institute and State University. He started VRA, Inc., in 1984, developing computational fluid dynamics codes for the government and the aerospace industry. He has over 200 publications and technical reports to his credit, mainly in the areas of supersonic/hypersonic aerothermodynamics, thermophysical gas properties, high-speed vehicle performance, ablation, and mass transfer. Dr. Lewis is an Associate Fellow of AIAA and a member of ASME and APS. He was an Associate Editor of the *Journal of Spacecraft and Rockets* from 1983–1989 and has served on the AIAA Fluid Dynamics, Thermophysics and Applied Aerodynamics Technical Committees.

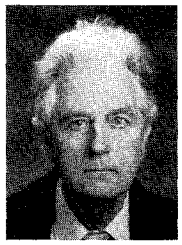
Associate Editors

GERALD T. CHRUSCIEL started with the Lockheed Aircraft Corp. in 1955 and has been associated with the Lockheed Missiles and Space Co., Inc., since 1958. He received his B.S. degree in Aeronautical Engineering from the University of Illinois at Urbana. He supervised the groups responsible for aerodynamic design and dynamic analysis of re-entry systems for the Polaris and Poseidon Fleet Ballistic Missiles. He was responsible for development of technology basic to the design, flight test analysis, and performance modeling of the re-entry vehicles utilized for the Trident I and II Fleet Ballistic Missiles. Included in these developments were coupled effects of outgassing and dynamics on high α aerodynamics, analysis techniques for extracting transient aero behavior, and rarefield flow slip effects applicable to continuum analysis. He is a senior staff engineer in the Aero-Thermodynamics Department, a past member of the AIAA Applied Aerodynamics Technical Committee and a current member of the Atmospheric Flight Mechanics Technical Committee, and an Associate Fellow of the AIAA.

RONALD K. CLARK is a senior research engineer in the Materials Division at NASA Langley Research Center. He is Group Leader for the High Temperature Materials Coatings and Environmental Effect Group, which performs research on oxidation characteristics and hydrogen-materials interaction characteristics of advanced titanium-aluminum alloys, and oxygen/hydrogen and thermal control coatings for materials in hypersonic flight vehicle applications. He received his B.S.M.E. from the University of Florida in 1962, his M.A.E. from the University of Virginia in 1968, and his Ph.D. in Mechanical Engineering from Virginia Polytechnic Institute and State University in 1972. He is author or co-author of more than 70 refereed journal articles and conference proceedings. He is the holder of two patents. He has served on the AIAA Materials Technical Committee.

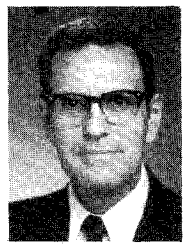
JAMES E. DAYWITT joined GE Re-Entry Systems in 1978 as a research engineer in the Aerothermophysics Unit. Prior to that he held computational fluid dynamic research positions at NASA Ames Research Center and ICASE at NASA Langley. He received B.S. (1970), M.S. (1974), and Ph.D. (1977) degrees in Aerospace Engineering from Iowa State University. His work at GE involves the development and application of numerical methods for supersonic and hypersonic flows, coupled with techniques for their theoretical and experimental validation. He has developed, documented, and applied flowfield techniques for the analysis of a variety of ballistic and maneuvering re-entry vehicles and hypersonic projectiles. Currently he is developing algorithms to improve the accuracy and capability of parabolized Navier-Stokes codes to treat high lift-to-drag vehicles, chemically reacting body-and-wake flowfields, and aero-optic effects on sensor performance. Since 1985 he has headed the Aerodynamics Group, which is responsible for the aerodynamic analysis of all GE re-entry vehicles and hypersonic projectiles. He has authored numerous publications and reports and served as an Adjunct Professor in the Mechanical Engineering Departments at Drexel University and the University of Pennsylvania. Dr. Daywitt is a past member of the AIAA Fluid and Plasmadynamics and the Applied Aerodynamics Technical Committees and is currently Chairman of the AIAA Greater Philadelphia Section.

SUSAN E. FUHS is a senior development engineer at Allied-Signal Aerospace Company, AiResearch Los Angeles Division. She has a B.S. in Chemical Engineering and a Ph.D. in Mechanical Engineering from the California Institute of Technology. She currently works on advanced life support for future manned space missions. Her AIAA activities include serving as secretary of the Space Systems Technical Committee.



ANTONI K. JAKUBOWSKI received an M.S. degree in Mechanical Engineering from the Cracow Technical University in Poland in 1949. During his 15 years at the Aeronautical Institute (Instytut Lotnictwa, Warsaw), he designed and supervised construction of three high-speed wind tunnels and various instrumentation for aerodynamic research. His last four years in Poland included serving as the Head of the Aerodynamic Department and a long fellowship at SIBNIA (Siberian Aerospace Research Institute) in Novosibirsk, Russia, where he was involved in supersonic diffuser studies. (He was there as one of the first foreign fellows admitted to a Soviet aerospace research facility.) After coming to the United States in 1965, he joined the faculty at Virginia Tech and received a Ph.D. degree in Aerospace Engineering from the North Carolina State University in 1970. Dr. Jakubowski participated in and directed sponsored research projects, and published and presented papers in the fields of fluid dynamics and power systems. Throughout his tenure, he maintained and cultivated his interest in the design field by designing models for NASA, designing installations for aerodynamic studies, and, more recently, doing conceptual studies of space systems such as radioisotope Stirling engine, orbital transfer vehicles using laser propulsion, and solar sail. His students participating in AIAA and other design competitions have won numerous awards and prizes during the last 12 years. He is an Associate Fellow of the AIAA and currently a member of the Space Systems Technical Committee.

JAMES A. MARTIN graduated from West Virginia University in 1966 with a B.S. in Aerospace Engineering. He completed his M.S. in Aeronautics and Astronautics in 1967 at the Massachusetts Institute of Technology and returned for the Engineer of Aeronautics and Astronautics professional degree in 1969. He completed his D.Sc. in Flight Sciences from George Washington University in January 1982. His work at NASA Langley Research Center has been on advanced Earth-to-orbit transportation, including trajectory analysis, vehicle sizing, rocket and air-breathing propulsion, and cost estimation. Dr. Martin recently became Associate Professor of Aerospace Engineering at the University of Alabama, where he teaches design and propulsion.



MICHAEL TAUBER received B.S. (1958) and M.S. (1959) degrees in Aeronautical Engineering from the Universityof Washington and Standord University, respectively. After working at Boeing for several years, primarily on the hypersonic flowfield of the Dyna Soar vehicle, he joined NASA Ames Research Center in 1962. He spent the next 10 years working on hypersonic aerodynamic, heating, and trajectory problems associated with high-speed entry into planetary atmospheres. He determined the feasibility of a probe surviving Jupiter atmospheric entry at 50 km/s in 1968 and defined minimum heating shapes, trajectories, and thermal protection requirements. This work eventually led to the building of the Galileo probe vehicle. Following an internal reorganization, he participated in the development of a large aircraft conceptual design computer program and performed studies of the effect of new weapons and tactics on aircraft design. Subsequently, he led the development and demon-

strated the application of three-dimensional transonic flow computer codes to rotary wing design with emphasis on reducing high-speed drag and noise. In recognition of this work, he received the American Helicopter Society's Howard Hughes Award in 1985. Since joining the Aerothermodynamics Branch at Ames in 1985, he has performed extensive research on transatmospheric flight and manned Mars entry and return vehicles and, also, planetary probes. He is on the faculty of Stanford University and North Carolina State University. At Stanford, he has been teaching a graduate course entitled Atmospheric Entry since 1986; he received the AIAA Student Chapter's Excellence in Teaching Award in 1987. He has authored, or co-authored, over 60 scientific and technical papers. He has been an Associate Fellow of the AIAA since 1969.

EARL A. THORNTON assumed the position of Professor of Mechanical and Aerospace Engineering at the University of Virginia in the fall of 1989. Prior to that time, he was a visiting scholar at the Texas Institute of Computational Mechanics at the University of Texas at Austin, a position he had held since 1987. He received a B.S. degree in Engineering Mechanics from Virginia Polytechnic Institute and State University in 1959, an M.S. degree from the University of Illinois in Theoretical and Applied Mechanics in 1961, and a Ph.D. degree in Engineering Mechanics from VPI & SU in 1968. From 1969 to 1987 he was a professor in the Mechanical Engineering and Mechanics Department at Old Dominion University. At ODU, Professor Thornton had a long association with the NASA Langley Research Center where he was engaged in a variety of projects. Since 1978 he has been heavily involved in interdisciplinary research on flow, thermal and structural behavior of space structures, and high-speed flight vehicles. Professor Thornton is an Associate Fellow of the AIAA, a past member of the Thermophysics Technical Committee, and is currently a member of the Structures Technical Committee. The author of over 100 engineering publications, he is co-author of the text *The Finite Element Method for Engineers.* He is also currently the director of short courses on thermal stresses and thermoviscoplasticity for the AIAA.

ALFRED L. VAMPOLA received a Ph.D. in Physics in 1961 from St. Louis University in the field of low energy nuclear physics. For 28 years, he was active in space research at the Space Sciences Laboratory of The Aerospace Corporation, flying 34 experiments on 18 satellites and three rockets during that period, including an electron spectrometer on the CRRES satellite that was launched last July. He has been engaged in experimental studies of magnetospheric particle morphology, wave-particle interactions, modeling, and environmental effects on satellites. From 1984 to 1988 he served as an Associate Editor of the *Journal of Spacecraft and Rockets.* Prior to and subsequent to his tenure as Associate Editor, he also organized and edited special topical issues for *JSR* covering Spacelab experiment results, spacecraft charging, SCATHA spacecraft engineering results, and, most recently, solar cycle effects on the space environment. In 1986 he was a Visiting Fellow on the staff of the University of Otago in Dunedin, New Zealand. He has published approximately 50 papers in refereed journals and conference proceedings, is a member of the American Geophysical Union, and is an Associate Fellow of AIAA. He has served on a number of committees in the field of spacecraft interactions and the space environment, including AIAA, Air Force, and NASA ad hoc committees. He has retired from The Aerospace Corporation and is now an independent consultant.

ERNEST V. ZOBY is employed by NASA and has been at the Langley Research Center since 1962. He received his B.S.M.E. from Virginia Polytechnic Institute and State University and an M.S. in Thermal Engineering from Old Dominion University. Mr. Zoby has been responsible for developing and demonstrating the applicability of approximate codes that define the aerothermal environment about spacecraft at both Earth and planetary entry conditions. This work encompassed preliminary design and post-flight heating calculations for the RAM C, Re-Entry F, Shuttle, and Venusian and Galileo vehicles. He has over 70 publications in the area of hypersonic aerothermodynamics to his credit, including studies for computing the equilibrium high temperature properties of gas mixtures and for the heat shield performance of entry probes. He is currently the Co-Principal Technologist for the Shuttle Infrared Leeside Temperature Sensing experiment, which provides a detailed mapping of the Shuttle leeside heat rates, and he is a member of the Aerodynamic Technology panel for the National Aerospace Plane. Mr. Zoby served on the AIAA Thermophysics Technical Committee and is an Associate Fellow of the AIAA.