

## HEAT TRANSFER BIBLIOGRAPHY

E. R. G. ECKERT, E. M. SPARROW, W. E. IBELE and R. J. GOLDSTEIN

Heat Transfer Laboratory, Department of Mechanical Engineering University of Minnesota,  
Minneapolis, Minnesota

(Received 23 July 1964)

### APPLICATIONS

- J. C. ARVESEN and F. M. HAMAKER, Effectiveness of Radiation Shields for Thermal Control of Vehicles on the Sunlit Side of the Moon, *NASA TN D-2130* (1964).
- G. D. BAHNKE and C. P. HOWARD, The Effect of Longitudinal Heat Conduction on Periodic-Flow Heat Exchanger Performance, *J. Engng Power* **A86**, No. 2, 105 (1964).
- E. BAUM, Re-Entry Observables in the Near Wake of a Slender Ablating Teflon Body, *EOS-RN-22*; *AD-429512*, Electro-Optical Systems, Inc., Pasadena, Calif. (1964).
- M. H. BERTRAM and M. M. WIGGS, Effect of Surface Distortions on the Heat Transfer to a Wing at Hypersonic Speeds, *AIAA J.* **1**, No. 6, 1313 (1963).
- Blades that Breathe up Turbine Engine Performance, *SAE J.* **72**, No. 5, 65 (1964).
- J. P. BOLAND, L. A. SCHLAGEL and W. A. COMPTON, Development of Manufacturing Methods for Lightweight Metal Foil Heat Exchangers, *ER-1245-8*; *AD-427224*, Solar, San Diego, Calif. (1963).
- R. C. L. BOSWORTH and C. M. GRODEN, Optimum Thermal Efficiency in Countercurrent Heat Exchangers, *Aust. J. Phys.* **17**, No. 1, 37 (1964).
- R. C. L. BOSWORTH and C. M. GRODEN, Thermal Properties of Systems Exhibiting Optimum Countercurrent Heat Exchange, *Aust. J. Phys.* **17**, No. 1, 26 (1964).
- T. R. BOTT and M. R. SHEIKH, Effects of Blade Design in Scraped Surface Heat Transfer, *Brit. Chem. Engng* **9**, No. 4, 229 (1964).
- M. BRANGER, Veil Cooling of Radial-Flow Turbines, *K-518*; *AD-430571*, AiResearch Manufacturing Co., Los Angeles, Calif. (1964).
- H. BRAUER, Strömungswiderstand und Wärmeübergang bei quer angeströmten Wärmeaustauschern, *Chem.-Ing.-Tech.* **36**, No. 3, 247 (1964).
- D. E. BRIGGS, D. L. KATZ and E. H. YOUNG, How to Design Finned-Tube Heat Exchangers, *Chem. Engng Progr.* **59**, No. 11, 59 (1963).
- C. E. BROOKLEY, Measurement of Heat Flux in Solid Propellant Rocketry, *ABL/Z-60*; *AD-432472*, Hercules Powder Co., Cumberland, Md., Alleghany Ballistics Lab. (1964).
- A. BROWN and E. MARKLUNG, Temperature Distribution in Cooled Turbine Disks, *Int. J. Heat Mass Transfer* **7**, No. 3, 327 (1964).
- S. C. BROWNING, Aerodynamic Heating and Structural Response, *ABL/EPA 11*; *AD-428616*, Hercules Powder Co., Cumberland, Md. (1963).
- J. D. CAMP and N. W. NOWLIN, Investigation of the Calorimetric Efficiency of a Split-Rib Umbrella-Type Paraboloidal Solar Energy Concentrator, *NASA TN D-2015* (1964).
- D. L. COMPTON and G. T. CHAPMAN, Two New Free-Flight Methods for Obtaining Convective Heat-Transfer Data, *N64-17013 09-01*, AIAA, NASA, Ames Research Center, Moffett Field, Calif. (1964).
- R. R. CULLOM, W. H. ROBBINS and C. A. TODD, One-Dimensional Heat-Transfer Analysis of Thermal-Energy Storage for Solar Direction-Energy-Conversion Systems, *NASA TN D-2119* (1964).
- E. A. CZECK, Experimental Investigation of Heat Transfer to Nuclear Rocket Nozzles using Shock Tube Techniques, Phase II, *NASA CR-55713*; *HM-1650-Y-2*, Cornell Aeronautical Lab., Inc., Buffalo, N.Y. (1963).
- R. E. DEVINE and M. S. PLESSET, Temperature Effects in Cavitation Damage, Report No. 85-27, Division of Engineering and Applied Science, California Institute of Technology, Pasadena, Calif. (1964).
- G. DINGLINGER, The Heat Transfer in the Scraped-Surface Heat Exchanger (in German), *VDI Z.* **106**, No. 10, 401 (1964).
- G. N. DUL'NEV and E. M. SEMYASHKIN, Heat Conditions in Radio and Electric Perforated Apparatus, *N64-13565 05-01*, Joint Publications Service, Washington, D.C. (1963).
- M. EBERSOLT, Étude d'un échangeur à ailettes transversales en écoulement longitudinal, Publication No. 180, Centre National de la Recherche Scientifique Laboratoire d'Aérothermique, Revue Generale de Thermique, Juillet (1963).
- J. R. FAGAN and J. O. MINGLE, The Effect of Axial Heat Conduction in Fuel Plates on Maximum Heat Flow Rates and Temperatures, *Nucl. Sci. Engng* **18**, No. 4, 443 (1964).
- E. A. FARBER, Theoretical Effective Reflectivities, Absorptivities, and Transmissivities of Draperies as a Function of Geometric Configuration, *Solar Energy* **7**, No. 4, 176 (1963).
- M. E. FINDLEY and M. W. MALONEY, Dynamics of a Radiant Dryer with Countercurrent Air Flow, *Industr. Engng Chem.* **3**, No. 2, 89 (1964).
- M. GRABAU, H. K. SMITHSON and WANDA J. LITTLE, A Data Reduction Program for Hotshot Tunnels

- Based on the Fay-Riddell Heat-Transfer Rate using Nitrogen at Stagnation Temperatures from 1500 to 5000°K, *AEDC-TDR-64-50*, Arnold Engineering Development Center, Air Force Systems Command, USAF (1964).
- V. H. GRAY, Prediction of Aerodynamic Penalties Caused by Ice Formation on Various Airfoils, *NASA TN D-2166* (1964).
- R. GREGORIG, Einige Sonderprobleme beim Entwurf der Wärmeaustauscher mit Phasenänderung, *Chem.-Ing.-Tech.* **36**, No. 3, 261 (1964).
- O. G. GRIFFIN and C. M. STRINGFIELD, A Dew-Point Meter Based on Thermoelectric Cooling, *J. Sci. Instrum.* **41**, No. 4, 241 (1964).
- H. C. HALLER, S. LIEBLEIN and G. C. WESLING, Heat-Rejection and Weight Characteristics of Fin-Tube Space Radiators with Tapered Fins, *NASA TN D-2168* (1964).
- E. L. HANSEN, Self-Supporting High Temperature Heater, *Rev. Sci. Instrum.* **35**, No. 2, 242 (1964).
- G. HELKE, A Closed Formula for the Calculation of Cross-Current Heat Transmitters (in German), *VDI Z.* **106**, No. 11, 442 (1964).
- H. HIDALGO and L. P. KADANOFF, Comparison between Theory and Flight Ablation Data, *AIAA J.* **1**, No. 1, 41 (1963).
- L. E. HOOKS, Choosing Optical Properties of Noncharring Ablators, *AIAA J.* **1**, No. 11, 2640 (1963).
- P. HRYCAK, Calculation of Satellite Surface Temperature Distribution, *Astronaut. Acta* **9**, No. 2, 115 (1963).
- C. J. HSU, Analytical Study of Heat Transfer to Liquid Metals in Cross-Flow Through Rod Bundles, *Int. J. Heat Mass Transfer* **7**, No. 4, 431 (1964).
- F. HUNEIDI, Temperature Control of a Space Vehicle Instrument Unit, *ASHRAE J.* **6**, No. 5, 80 (1964).
- C. L. JOHNSON and D. J. HOLLWEGGER, Non-Evacuated Cryogenic Insulation, Rept. 0782-01-1; *AD-429089*, Aerojet-General Corp., Azusa, Calif., Structural Materials Div. (1963).
- R. M. KENDALL and R. A. RINDAL, Analytical Evaluation of Rocket Nozzle Ablation, *AIAA Paper* 64-101, Itek Corp., Vidya Div., Palo Alto, Calif. (1964).
- A. C. KENT and R. G. NEVINS, Heat Losses from Horizontal Ducts Carrying High Velocity Air, *ASHRAE J.* **6**, No. 3, 45 (1964).
- D. A. Labuntzov, Generalized Dependencies for Heat Emission During Blistered Boiling of Liquids, *RSIC-101*; *AD-425717*, Army Missile Command, Huntsville, Ala. (1963).
- S. LIEBLEIN, Heat-Transfer Aspects of Space Radiators, Presented at AIChE/ASME 6th National Heat Transfer Conference, Boston, Mass., August (1963).
- G. H. LINDSEY and M. L. WILLIAMS, The Structural Integrity of an Ablating Rocket Subjected to Axial Acceleration, *AIAA Paper* 64-151, California Institute of Technology, Pasadena (1964).
- A. L. LONDIN, Compact Heat Exchangers. Part I—Design Theory, *Mech. Engng* **86**, No. 5, 47 (1964).
- A. L. LONDIN, D. F. SAMPSELL and J. E. MCGOWAN, The Transient Response of Gas Turbine Plant Heat Exchangers—Additional Solutions for Regenerators of the Periodic-Flow and Direct-Transfer Types, *J. Engng Power* **A86**, No. 2, 127 (1964).
- R. D. MATHIEU, Theoretical Analysis for the Mechanical Spallation of a Typical Charring Ablator During Re-Entry, *R63SD53*, *AD-428046*, General Electric Co., King of Prussia, Pa., Space Sciences Lab. (1963).
- A. J. METZLER and J. R. BRANSTETTER, Fast Response, Blackbody Furnace for Temperatures up to 3000°K, *NASA RP-121* (1963).
- J. T. MILLER, Revised Course in Industrial Instrument Technology. Chapter 10, Radiation Pattern Thermometers or Pyrometers, *Instrum. Pract.* **18**, No. 2, 153 (1964).
- M. L. MINGES, Thermal Insulations for Aerospace Applications—423° to +3000°F, Presented at the ASD Scientific and Engineering Symposium, Wright-Patterson AFB, Ohio, September (1963).
- J. R. MONDT, Vehicular Gas Turbine Periodic-Flow Heat Exchanger Solid and Fluid Temperature Distribution, *J. Engng Power* **A86**, No. 2, 121 (1964).
- H. G. MYER and A. AMBROSIO, Area-Integrated Heat Rates for Several Axisymmetric Vehicles, *AIAA J.* **1**, No. 8, 1904 (1963).
- J. F. OSTERLE and S. W. ANGRIST, The Thermoelectric-Hydromagnetic Pump, *J. Heat Transfer* **C86**, No. 2, 166 (1964).
- R. L. PHILLIPS, Fundamental Consideration in the Design of an AC Arc Heater, *ARL-64-9*, *AD-431185*, Michigan University, Ann Arbor (1964).
- D. Y. POTTER and C. W. SOMERS, Heat Shield Honeycomb Panels, *NASA CR-53315*, *ER-764*, Aeronca Manufacturing Corp., Middletown, Ohio (1964).
- R. G. RAGSDALE and T. H. EINSTEIN, Two-Dimensional Gray-Gas Radiant Heat Transfer in a Coaxial-Flow Gaseous Reactor, *NASA TN D-2124* (1964).
- H. E. RULING, Ablation Shield Development Testing—Adhesive Evaluation and Elevated Temperature Properties, *A472*, *AD-431509*, McDonnell Aircraft Corp., St. Louis, Mo. (1964).
- H. E. RULING, Shield Development Testing—Surface Preparation of Beryllium for Adhesive Bonding, *A471*, *AD-431621*, McDonnell Aircraft Corp., St. Louis, Mo. (1964).
- M. SCHACH and R. E. KIDWELL, Thermodynamics of Space Flight (Heat Transfer Phenomena in Space), *NASA TM X-51282*, *X-51282*, Goddard Space Flight Center, Greenbelt, Md. (1963).
- S. SCHREIER, A Comparison of Five Methods of Calculating Aerodynamic Stagnation-Point Heat Transfer at Velocities of 25,000 to 40,000 fps, *J. Appl. Mech.* **3**, p. 430 (1963).
- S. J. SCOTT, Subsonic Aerodynamic Heat Transfer to a Surface Recessed Within a Forward Stagnation Region Slit, *NASA TN D-2034* (1963).
- M. K. SELCUK, Flat-Plate Solar Collector Performance at High Temperatures, *Solar Energy* **8**, No. 2, 57 (1964).
- D. F. TARTAKOVSKII, Computation of the Thermal Inertia of Commercial Thermal Detectors, *Measurement Techniques*, No. 11, p. 922 (1964).

- H. THAL-LARSEN and W. V. LOSCUTOFF, Fluid Temperature Transients in a Dual-Heat-Exchanger System, *J. Basic Engng* **D86**, No. 1, 23 (1963).
- R. K. THOMASSON, Frequency Response of Linear Counterflow Heat Exchangers, *J. Mech. Engng Sci.* **6**, No. 1, 13 (1964).
- C. P. WELCH and H. N. FAIRCHILD, Individual Row Heat Transfer in a Crossflow In-Line Tube Bank, *J. Heat Transfer* **C86**, No. 2, 143 (1964).
- What You Should Know About Air Preheater Testing, *Power Engng* **68**, No. 4, 47 (1964).
- W. J. YANG, Transient Heat Transfer in a Vapor-Heated Heat Exchanger with Arbitrary Timewise-Variant Flow Perturbation, *J. Heat Transfer* **C86**, No. 2, 133 (1964).

## BOOKS

- W. J. LICK and H. W. EMMONS, *Thermodynamic Properties of Helium to 50,000°K.* Harvard University Press, Cambridge, Mass. (1962).
- L. ROSENHEAD (Editor), *Laminar Boundary Layers.* Oxford University Press, England (1963).
- A. ROSHKO, B. STURTEVANT and D. R. BARTZ (Editors), Proceedings of the 1963 Heat Transfer and Fluid Mechanics Institute, Stanford University Press, California (1963).
- P. J. SCHNEIDER, *Temperature Response Charts.* John Wiley, New York (1963).
- S. S. ZABRODSKY, *Hydrodynamics and Heat Transfer in Fluidized Beds.* Gosenergoizdat, Moscow (1963).

## BOUNDARY-LAYER FLOW

- D. E. ADAMS and B. GEBHART, Transient Forced Convection from a Flat Plate Subjected to a Step Energy Input, *J. Heat Transfer* **C86**, No. 2, 253 (1964).
- R. T. DAVIS and I. FLÜGGE-LOTZ, The Laminar Compressible Boundary-Layer in the Stagnation-Point of an Axisymmetric Blunt Body Including the Second-Order Effect of Vorticity Interaction, *Int. J. Heat Mass Transfer* **7**, No. 3, 341 (1964).
- M. G. DUNN, Effects of Three-Dimensional Roughness Elements on Boundary-Layer Transition and Aerodynamic Heating, *J. Spacecraft Rockets* **1**, 68 (1964).
- K. R. ENKENHUS, Effect of Variable Lewis Number on Heat Transfer in a Binary Gas, *AIAA J.* **2**, No. 4, 747 (1964).
- H. FOX and P. A. LIBBY, Helium Injection into the Boundary Layer at an Axisymmetric Stagnation Point, *J. Aero. Space Sci.* **29**, 921 (1962).
- B. J. GRIFFITH and C. H. LEWIS, Laminar Heat Transfer to Spherically Blunted Cones at Hypersonic Conditions, *AIAA J.* **2**, No. 3, 438 (1964).
- M. E. HILLSAMER and J. P. RHUDY, Heat-Transfer and Shadowgraph Tests of Several Elliptical Lifting Bodies at Mach 10, *AEDC-TDR-64-19; AD-429931*, Aro, Inc., Arnold Air Force Station, Tenn. (1964).
- E. L. KNUTH, A. Preliminary Study on the Use of Reference States in Predicting Transport Rates in Flows with Chemical Reactions, *Int. J. Heat Mass Transfer* **6**, No. 12, 1083 (1963).
- P. A. LIBBY and M. PIERUCCI, The Laminar Boundary

Layer with Hydrogen Injection Including Multi-Component Diffusion, *ARL 64-40*, Aerospace Research Laboratories, Office of Aerospace Research, USAF (1964).

- V. LEVIN, Thermal Effects of Shock Wave Turbulent Boundary-Layer Interaction at Mach Numbers 3 and 5, Bureau of Naval Weapons Proceedings of the 6th U.S. Navy Symposium on Aeroballistics (1963).
- B. J. NOONEN and J. L. RAND, Recent Heat-Transfer Measurements at High-Stagnation Enthalpy and High Reynolds Number, Bureau of Naval Weapons Proceedings of the 6th U.S. Navy Symposium on Aeroballistics (1963).
- L. PASIUK, Comparison between the Experimental and Theoretical Heat Transfer to a Yawed Sphere-Cone Model at Supersonic Speeds, Bureau of Naval Weapons Proceedings of the 6th U.S. Navy Symposium on Aeroballistics (1963).
- J. RAAT, On the Effect of Transverse Curvature in Compressible Laminar Boundary Layer Flow Over Slender Bodies of Revolution, *NOLTR 63-68*, U.S. Naval Ordnance Laboratory, White Oak, Md. (1964).
- W. C. ROCHELLE, Prandtl Number Distribution in a Turbulent Boundary Layer with Heat Transfer at Supersonic Speeds, *AD-427156*, Defense Research Lab., Texas University, Austin (1963).
- E. M. SPARROW, W. J. MINKOWYCZ and E. R. G. ECKERT, Diffusion-Thermo Effects in Stagnation-Point Flow of Air with Injection of Gases of Various Molecular Weights into the Boundary Layer, *AIAA J.* **2**, No. 4, 652 (1964).
- B. STEVERDING, Surface Activity and Preferential Ablation, *AIAA J.* **2**, No. 3, 549 (1964).
- S. P. SUTERA, P. F. MAEDER and J. KESTIN, On the Sensitivity of Heat Transfer in the Stagnation-Point Boundary Layer to Free-Stream Vorticity, *J. Fluid Mech.* **16**, No. 4, 497 (1963).
- L. TERN, Integrated Laminar Heat Transfer in the Windward Plane of Yawed Blunt Cones, *AIAA J.* **1**, No. 7, 1668 (1963).
- M. WOLFHTEIN and A. STOTTER, Heat Transfer between Impinging Jet and a Flat Surface, *Israel J. Tech.* **2**, No. 1, 131 (1964).

## CHANGE OF PHASE

- S. G. BANKOFF, Asymptotic Growth of a Bubble in a Liquid with Uniform Initial Superheat, *Appl. Sci. Res.* **12**, No. 3, 267 (1963/1964).
- T. A. BLATT and R. R. ADT, An Experimental Investigation of Boiling Heat Transfer and Pressure Drop Characteristics of Freon 11 and Freon 113 Refrigerants, *J. Amer. Inst. Chem. Engrs* **10**, No. 3, 369 (1964).
- P. M. BRDLIK and A. KAKABAEV, An Experimental Investigation of the Condensation of Steam in Coils, *Int. Chem. Engng* **4**, No. 2, 236 (1964).
- B. P. BREEN and G. BURNET, Peak Heat Flux in Nucleate Boiling Heat Transfer, *IS-810*, Ames Lab., Iowa State University of Science and Technology, Ames (1964).
- Burnout Limits for Boiling-Water Reactors, *Power Reactor Tech.* **7**, No. 1, 14 (1964).

- J. W. CAREY, An Evaporation Experiment and its Irreversible Thermodynamics, *Int. J. Heat Mass Transfer* **7**, No. 5, 531 (1964).
- J. O. CERMAK, J. J. JICHA and R. G. LIGHTNER, Two-Phase Pressure Drop across Vertically Mounted Thick Plate Restrictions, *J. Heat Transfer* **C86**, No. 2, 227 (1964).
- R. G. CLODFELTER, Low-Gravity Pool-Boiling Heat Transfer, *APL-TDR-64-19*, Air Force Aero Propulsion Lab., Research and Technology Div., Air Force Systems Command, Wright-Patterson AFB, Ohio (1964).
- R. DARBY, The Dynamics of Vapour Bubble in Nucleate Boiling, *Chem. Engng Sci.* **19**, No. 1, 39 (1964).
- E. J. DAVIS and M. M. DAVID, Two-Phase Gas-Liquid Convection Heat Transfer—A Correlation, *I & EC Fundamentals* **3**, No. 2, 111 (1964).
- L. R. DELANEY, R. W. HOUSTON and L. C. EAGLETON, The Rate of Vaporization of Water and Ice, *Chem. Engng Sci.* **19**, No. 2, 105 (1964).
- R. S. DOUGALL and W. M. ROHSENOW, Film Boiling on the Inside of Vertical Tubes with Upward Flow of the Fluid at Low Qualities, *MIT-TR-9079-26*, Massachusetts Institute of Technology, Cambridge (1963).
- D. E. DOUGHERTY and H. H. RUBIN, The Growth and Collapse of Vapour Bubbles on a Boiling Surface, Proceedings of Heat Transfer Fluid Mechanics Institute, Pasadena, Stanford University Press, California (1963).
- T. H. K. FREDERKING, Laminar Two-Phase Boundary Layers in Natural Convection Film Boiling, *Z. Angew. Math. Phys.* **14**, No. 3, 207 (1963).
- R. GOLDSTEIN, Study of Water Vapor Condensation on Shock-Tube Walls, *J. Chem. Phys.* **40**, No. 10, 2793 (1964).
- T. D. HAMILL and S. G. BANKOFF, Maximum and Minimum Bounds for the Growth of a Vapour Film at the Surface of a Rapidly Heated Plate, *Chem. Eng. Sci.* **19**, No. 1, 59 (1964).
- S. HAYAMA, A Study on the Hydrodynamic Instability in Boiling Channels, *Bull. Japan Soc. Mech. Engrs* **7**, No. 25, 129 (1964).
- G. F. HEWITT, R. D. KING, and P. C. LOVEGROVE, Liquid Film and Pressure Drop Studies, *Chem. Process Engng* **45**, No. 4, 191 (1964).
- A. W. D. HILLS and J. SZEKELY, Notes on Vaporization into Much Colder Surroundings, *Chem. Engng Sci.* **19**, No. 1, 79 (1964).
- A. A. IVASHKEVICH, Heat Transfer Coefficient in the Transition Region from Convection to Boiling for Forced Convection of Liquids in Channels (in Russian), *Teploenergetika, Moscow* **10**, No. 10, 76 (1963).
- J. A. JACOWITZ and R. S. BRODKEY, An Analysis of Geometry and Pressure Drop for the Horizontal, Annular, Two-Phase Flow of Water and Air in the Entrance Region of a Pipe, *Chem. Engng Sci.* **19**, No. 1, 261 (1964).
- S. S. KATTI, S. B. KULKARNI, M. K. GHARPUREY and A. B. BISWAS, Evaporimeter Studies on Water Evaporation Reduction due to Monomolecular Films During Day and Night, *Indian J. Tech.* **2**, No. 3, 81 (1964).
- R. R. KEPPLER and T. V. TUNG, Two-Phase (Gas-Liquid) System: Heat Transfer and Hydraulics, *ANL-6734*, Argonne National Lab., Argonne, Illinois (1964).
- C. D. KING and W. J. MOODLE, Biphenyl Liquid Heat Transfer and Vapor Deposition Studies at 700° and 800°F, *AEC-IDO-11006*, Monsanto Research Corp., Dayton, Ohio (1963).
- G. L. KINGTON and P. S. SMITH, Thermodynamics of Adsorption in Capillary Systems. Part 1, Origin of Irreversibility, *Trans. of the Faraday Soc.* **60**, No. 496, 705 (1964).
- G. L. KINGTON and P. S. SMITH, Thermodynamics of Adsorption in Capillary Systems. Part 2, Heats of Capillary Condensation and Pore Shape, *Trans. Faraday Soc.* **60**, No. 496, 721 (1964).
- S. S. KUTATELADZE, Critical Heat Fluxes During Flow of a Wetting Liquid with a Nucleus Underheated to the Temperature of Saturation, *RSIC-129; AD-432295*, Army Missile Command, Huntsville, Ala. (1964).
- J. H. LIENHARD and P. T. Y. WONG, The Dominant Unstable Wavelength and Minimum Heat Flux During Film Boiling on a Horizontal Cylinder, *J. Heat Transfer* **C86**, No. 2, 220 (1964).
- J. MAYERSAK, S. D. RAEZER and E. A. BUNT, Confirmation of Gambill-Greene Straight-Flow Burnout Heat Flux Equation at Higher Flow Velocity, *J. Heat Transfer* **C86**, No. 2, 297 (1964).
- R. W. PIKE and H. C. WARD, Adiabatic, Evaporating, Two-Phase Flow of Steam and Water in Horizontal Pipe, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 206 (1964).
- M. L. POMERANTZ, Film Boiling on a Horizontal Tube in Increased Gravity Fields, *J. Heat Transfer* **C86**, No. 2, 213 (1964).
- V. P. SKRIPOV and G. V. ERMAKOV, Pressure Dependence of the Ultimate Super-heating of a Liquid (in Russian), *Zh. Fiz. Khim.* **38**, No. 2, 396 (1964).
- V. I. SUBBOTIN, B. A. ZENKEVICH and G. V. ALEKSEEV, Critical Heat Flux in Annular Channels (in Russian), *Teploenergetika, Moscow* **10**, No. 10, 72 (1963).
- T. TERANO, et al., Hydraulic Instability in Boiling Water Reactors, *Bull. Japan Soc. Mech. Engrs* **6**, No. 23, 539 (1963).
- T. VENKATARAM and N. R. KULLOOR, Condensation of Steam on Stainless Steel, *Indian J. Tech.* **2**, No. 3, 73 (1964).
- P. P. WEGENER and A. A. POURING, Experiments on Condensation of Water Vapor by Homogeneous Nucleation in Nozzles, *Phys. Fluids* **7**, No. 3, 352 (1964).
- S. Whitaker, Effect of Surface Active Agents on the Stability of Falling Liquid Films, *I & EC Fundamentals* **3**, No. 2, 132 (1964).
- W. J. YANG and J. A. CLARK, On the Application of the Source Theory to the Solution of Problems Involving Phase Change. Part I, Growth and Collapse of Bubbles, *J. Heat Transfer* **C86**, No. 2, 207 (1964).
- V. I. YASHNOV, The Effect of Certain Surface Properties on the Boiling Crisis, *N64-17189 09-13*, Foreign Technology Div., Air Force Systems Command, Wright-Patterson AFB, Ohio (1964).

- S. M. ZIVI, Estimation of Steady-State Steam Void-Fraction by Means of the Principle of Minimum Entropy Production, *J. Heat Transfer* **C86**, No. 2, 247 (1964).

## CHANNEL FLOW

- L. H. BACK, P. F. MASSIER and H. L. GIER, Convective Heat Transfer in a Convergent-Divergent Nozzle, *Int. J. Heat Mass Transfer* **7**, No. 5, 549 (1964).
- H. BARROW and Y. LEE, A Note on the Determination of Shearing Stress and Heat Flux Around the Perimeter of a Duct, *NASA TN D-1742* (1963).
- H. BARROW and Y. LEE, Heat Transfer with Unsymmetrical Thermal Boundary Conditions, *Int. J. Heat Mass Transfer* **7**, No. 5, 580 (1964).
- E. F. BROCHER, Hot Flow Length and Testing Time in Real Shock Tube Flow, *Phys. Fluids* **7**, No. 3, 347 (1964).
- J. P. DELPONT, Influence du flux de chaleur e de la nature du gaz sur les coefficients d'echange dans un tube cylindrique lisse, *Int. J. Heat Mass Transfer* **7**, No. 5, 517 (1964).
- O. E. DWYER, Bilateral Heat Transfer in Annuli for Slug and Laminar Flows, *Nucl. Sci. Engng* **19**, No. 1, 48 (1964).
- F. P. FORABOSCHI and I. DiFEDERICO, Heat Transfer in Laminar Flow of Non-Newtonian Heat-Generating Fluids, *Int. J. Heat Mass Transfer* **7**, No. 3, 315 (1964).
- H. P. HATTAN, Heat Transfer in the Thermal Entrance Region with Turbulent Flow between Parallel Plates at Unequal Temperatures, *Appl. Sci. Res.* **12**, No. 3, 249 (1963/1964).
- V. KUBAIR and N. R. KULLOOR, Some Aspects of Flow of Fluids and Heat Transfer through Coiled Pipes: Non-Newtonian Fluids, *J. Sci. Industr. Res.* **23**, No. 2, 49 (1964).
- C. LACKME, Echanges de chaleur transversaux dans un canal rectangulaire chauffe non uniformement application au calcul des temperatures dans une cellule du reacteur siloe, Rapport C.E.A.-R2422, Centre d'etudes, Nucleaires de Grenoble (1964).
- J. LEE and R. S. BRODKEY, Turbulent Motion and Mixing in a Pipe, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 187 (1964).
- C. ORTLOFF, Wall Roughness Effects on Inviscid Non-equilibrium Flow in Ducts, *SSD-TDR-64-28*, Ballistic Systems and Space Systems Div., Air Force Systems Command, El Segundo, Calif. (1964).
- B. S. PETUKHOV and L. I. ROIZEN, Heat Transfer in Circular Tubes (in Russian), *Inzhen.-Fiz. Zh.* **6**, No. 3, 3 (1963).
- S. RAJASEKHARAN, V. KUBAIR and N. R. KULLOOR, Isothermal Laminar Flow of Non-Newtonian Fluids in Spiral Tube Coils, *Ind. J. Tech.* **2**, No. 5, 149 (1964).
- R. SIEGEL and E. G. KESHOCK, Wall Temperatures in a Tube with Forced Convection, Internal Radiation Exchange, and Axial Wall Heat Conduction, *NASA TN D-2116* (1964).
- W. T. SNYDER, A Note on the Prediction of Wall Shear Stress Distribution in the Eccentric Annulus, *J. Amer. Inst. Chem. Engrs* **10**, No. 3, 418 (1964).
- M. S. RAO and N. R. KULLOOR, Heat Transfer Characteristics of Some Non-Newtonian Fluids, *Ind. J. Tech.* **2**, No. 4, 113 (1964).
- E. M. SPARROW, T. S. CHEN and V. K. JONSSON, Laminar Flow and Pressure Drop in Internally Finned Annular Ducts, *Int. J. Heat Mass Transfer* **7**, No. 5, 583 (1964).
- E. M. SPARROW, S. H. LIN and T. S. LUNDGREN, Flow Developments in the Hydrodynamic Entrance Region of Tubes and Ducts, *Phys. Fluids* **7**, No. 3, 338 (1964).
- M. R. STRUNK and F. F. TAO, A Numerical Method for the Solution of the Energy Equation for Steady Turbulent Heat Transfer, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 269 (1964).
- S. R. TAILBY and E. K. CLUTTERBUCK, Heat Transfer in Horizontal Town-Gas Immersion Tubes, *Trans. Instn. Chem. Engrs* **42**, No. 2, T 64 (1964).
- J. F. THORPE, Boundary Conditions for Parallel Channel Flow, *Nucl. Sci. Engng* **18**, No. 3, 329 (1964).
- Y. L. WANG and P. A. LONGWELL, Laminar Flow in the Inlet Section of Parallel Plates, *J. Amer. Inst. Chem. Engrs* **10**, No. 3, 323 (1964).
- R. D. WOOD and J. M. SMITH, Heat Transfer in the Critical Region—Temperature and Velocity Profiles in Turbulent Flow, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 180 (1964).

## CONDUCTION

- J. ALLARD, The Equation of a Square in Heat Transfer, *Int. J. Heat Mass Transfer* **7**, No. 5, 527 (1964).
- A. BELLENI-MORANTE, A Heat Transfer Problem in a Hollow Cylindrical Cell, *Energia Nucleare* **11**, No. 3, 134 (1964).
- J. R. CANNON, Determination of Certain Parameters in Heat Conduction Problems, *J. Math. Analysis and Applications* **8**, No. 3, 134 (1964).
- M. H. COBBLE, Nonlinear Fin Heat Transfer, *J. Franklin Inst.* **277**, No. 3, 206 (1964).
- T. D. HAMILL and S. G. BANKOFF, Similarity Solutions of the Plane Melting Problem with Temperature-Dependent Thermal Properties, *I & EC Fundamentals* **3**, No. 2, 177 (1964).
- G. HORVAY and M. DACOSTA, Temperature Distribution in a Cylindrical Rod Moving from a Chamber at One Temperature to a Chamber at Another Temperature, *J. Heat Transfer* **C86**, No. 2, 265 (1964).
- N. N. LEBEDEV and I. P. SKALSKAYA, Some Problems in the Theory of the Thermal Conductivity of the Wedge-Shaped Bodies (in Russian), *Zh. Tekhn. Fiz.* **34**, No. 5, 801 (1964).
- C. KIPPENHAN and D. F. SCHNELL, A Note on Heat Transfer Through Sheet Fins, *J. Heat Transfer* **C86**, No. 2, 293 (1964).
- E. J. NORMINTON and J. H. BLACKWELL, Transient Heat Flow from Constant Temperature Spheroids and the Thin Circular Disk, *Quart. J. Mech. and Appl. Math.* **17**, Part 1, 65 (1964).
- N. Y. ÖLÇER, On the Theory of Conductive Heat Transfer in Finite Regions, *Int. J. Heat Mass Transfer* **7**, No. 3, 307 (1964).

- S. D. PROBERT, T. THOMAS and D. WARMAN, Cryostat for Measurement of Heat Conduction under Mechanical Loads, *J. Sci. Instrum.* **41**, No. 2, 88 (1964).
- P. D. RICHARDSON, Unsteady One-Dimensional Heat Conduction with a Nonlinear Boundary Condition, *J. Heat Transfer* **C86**, No. 2, 298 (1964).
- Y. L. ROZENSHTOK, Temperature Field of an Infinite Plate when Temperature of Surrounding Medium and Heat Transfer Coefficient Depends on Time (in Russian), *Inzhen.-Fiz. Zh.* **6**, No. 3, 45 (1963).
- Y. P. SHYKOV and E. A. GANIN, Experimental Study of Contact Heat Exchange, *RSIC-128*; AD-430088, Army Missile Command, Huntsville, Ala. (1964).
- Y. P. SHYKOV, E. A. GANIN and N. B. DEMKIN, Analysis of Contact Heat Exchange, *RSIC-117*; AD-429831, Army Missile Command, Huntsville, Ala. (1964).
- L. SICARD, Conducteur Thermique Anistrophe, *Comptes Rendus Hebdomadaires Des Seances De L'Academie Des Sciences* **258**, No. 12, 3443 (1964).
- A. SOTIRIADES, Extension analogique des calculs de mécanique statique aux calculs de conduction vive en régime stationnaire, *Comptes Rendus Hebdomadaires Des Seances De L'Academie Des Sciences* **258**, No. 16, 3975 (1964).
- J. G. TORIAN and G. K. BENNETT, Two-Dimensional Analysis of Transient Heat Conduction in a Sector of a Hollow Circular Cylinder, *ASD-TDR-63-642*, Martin Co., Aeronautics Res., Lab., Orlando, Fla. (1963).

#### FLOW WITH SEPARATED REGIONS

- C. Y. HO, J. L. NARDACCI and A. H. NISSAN, Heat Transfer Characteristics of Fluid Moving in a Taylor System of Vortices, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 194 (1964).
- T. KUBOTA and C. F. DEWEY, Momentum Integral Methods for the Laminar Free Shear Layer, *AIAA J.* **2**, No. 4, 625 (1964).
- R. A. SEBAN, Heat Transfer to the Turbulent Separated Flow of Air Downstream of a Step in the Surface of a Plate, *J. Heat Transfer* **C86**, No. 2, 259 (1964).
- H. H. SOGIN, A Summary of Experiments on Local Heat Transfer from the Rear of Bluff Obstacles to a Low Speed Airstream, *J. Heat Transfers* **C86**, No. 2, 200 (1964).

#### HEAT AND MASS TRANSFER

- E. W. ADAMS, J. D. WARMBROD, C. LEE FOX and R. M. HUFFAKER, Heat and Mass Transfer in Binary Inert Gas Flow for Distributions of Temperature and Concentration Rendering the Properties Nearly Constant, *NASA TMX-54519*; *MTP-AERO-64-2*, Marshall Space Flight Center, Huntsville, Ala. (1963).
- D. H. CHO, Commentary on Heat and Mass Transfer in Boundary Layers; Review and Extension of Approximate Methods, *AD-430289*, Minnesota University, Minneapolis (1963).
- A. S. EMANUEL and D. R. OLANDER, High Flux Solid-Liquid Mass Transfer, *Int. J. Heat Mass Transfer* **7**, No. 5, 539 (1964).
- S. I. FREEDMAN and J. KAYE, Simultaneous Heat and Mass Transfer in the Compressible Laminar Boundary Layer of a Dissociating Gas, *Int. J. Heat Mass Transfer* **6**, No. 6, 425 (1963).
- T. R. GALLOWAY and B. H. SAGE, Thermal and Material Transfer in Turbulent Gas Streams—a Method of Prediction for Spheres, *Int. J. Heat Mass Transfer* **7**, No. 3, 283 (1964).
- W. HEINRICH, Problem der gleichzeitigen Wärme- und Stoffübertragung, *Chem.-Ing.-Tech.* **36**, No. 3, 269 (1964).
- E. KILLMANN, Eine neue Methode zur Schärfung der Grenzschicht in einer Diffusionsapparatur, *Chem.-Ing.-Tech.* **36**, No. 4, 378 (1964).
- T. Y. LI, A Simplified Analysis of Skin Friction and Heat Transfer in Binary Boundary-Layer Flow, *RM-2872-PR*; AD-418037, RAND Corp., Santa Monica, Calif. (1963).
- J. LIBRIZZI and R. J. CRESCI, Transpiration Cooling of a Turbulent Boundary Layer in an Axisymmetric Nozzle, *AIAA J.* **2**, No. 4, 617 (1964).
- G. A. MIKHAILOVSKY, Dynamic Processes which Accompany Mass Transfer, *Int. J. Heat Mass Transfer* **7**, No. 5, 569 (1964).
- E. MAYER and D. DIVOKY, Transpiration and Film Cooling Combined with External Cooling, *AIAA J.* **2**, No. 3, 578 (1964).
- C. C. PAPPAS and A. F. OKUNO, Measurement of Heat Transfer and Recovery Factor of a Compressible Turbulent Boundary Layer on a Sharp Cone with Foreign Gas Injection, *NASA TN D-2230* (1964).
- W. E. RANZ and P. E. DICKSON, Mass and Heat Transfer Rates for Large Gradients of Concentration and Temperature, *AD-430278*, University of Minnesota, Minneapolis (1963).
- J. P. SELLERS, Combined External and Internal Cooling, *AIAA J.* **1**, No. 9, 2152 (1963).
- C. SHEER, J. A. COONEY and D. L. ROTHACKER, Fluid Transpiration through Anodic Boundary of an Electric Arc, *AIAA J.* **2**, No. 3, 483 (1964).
- G. STANDART, The Mass, Momentum, and Energy Equations for Heterogeneous Flow Systems, *Chem. Engng Sci.* **19**, No. 3, 227 (1964).
- B. STEVERDING, Theory of Liquid Ablation, *RR-TR-63-24*; AD-427082, Physical Science Lab., Army Missile Command, Huntsville, Ala. (1963).
- O. E. TEWFIK, Discussion on the Effect of Transverse Mass Flow on Heat Transfer and Friction Drag in a Turbulent Flow of Compressible Gas Along an Arbitrarily Shaped Surface, *Int. J. Heat Mass Transfer* **7**, No. 3, 397 (1964).
- O. E. TEWFIK, One-Dimensional Mass and Heat Transfer and their Coupling, *Int. J. Heat Mass Transfer* **7**, No. 4, 409 (1964).
- O. E. TEWFIK, E. R. G. ECKERT and L. S. JUREWICZ, Diffusion-Thermo Effects on Heat Transfer from a Cylinder in Cross Flow, *AIAA J.* **1**, No. 7, 1537 (1963).
- G. A. TIRSKII, Determination of the Effective Coefficients of Diffusion in the Laminar Boundary Layer of Many Components (in Russian), *Dokl. Akad. Nauk SSSR* **155**, No. 6, 1278 (1964).

C. F. WARNER and D. L. EMMONS, Effects of Selected Gas Stream Parameters and Coolant Properties on Liquid Film Cooling, *J. Heat Transfer* **C86**, No. 2, 271 (1964).

#### LIQUID METALS

- V. M. BORISHANSKII and E. V. FIVSORA, Heat Exchange in the Longitudinal Flow of Metallic Sodium Past a Tube Bank, *Soviet J. Atomic Energy* **14**, No. 6, 614 (1964).
- V. M. BORISHANSKII, T. V. ZABLOTSKAYA and N. I. IVASHCHENKO, Heat Transfer to Molten Metals during Flow in Pipes, *Soviet J. Atomic Energy* **14**, No. 6, 318 (1964).
- R. D. BROOKS and C. F. BONILLA, Status of Liquid-Metal Heat Transfer in Space Systems, *Nucleonics* **22**, No. 3, 43 (1964).
- M. W. MARESCA and O. E. DWYER, Heat Transfer to Mercury Flowing In-Line Through a Bundle of Circular Rods, *J. Heat Transfer* **C86**, No. 2, 180 (1964).
- L. S. NELSON and N. L. RICHARDSON, The Use of Flash Heating to Study the Combustion of Liquid Metal Droplets, *J. Phys. Chem.* **68**, No. 5, 1268 (1964).

#### LOW DENSITY

- J. AROESTY, The Insensitivity of Heat Transfer to the Inclusion of First Order Slip Boundary Conditions for Similar Laminar Hypersonic Boundary Layers, *P-2780*, RAND Corp., Santa Monica, Calif. (1963).
- D. H. DAVIS, L. L. LEVENSON and N. MILLERON, Effect of "Rougher-than-Rough" Surfaces on Molecular Flow through Short Ducts, *J. Appl. Phys.* **35**, No. 3, 529 (1964).
- P. FEUER, Calculation of the Thermal Accommodation Coefficients of a Diatomic Gas, Tech. Rep. 63-2, School of Aeronautical Engineering, Purdue University, Lafayette, Ind. (1963).
- W. A. GUSTAFSON and R. R. KIEL, Free Molecule Density for Orifice Flow, *Phys. Fluids* **7**, No. 3, 472 (1964).
- J. D. HENDRY, Local Leading Edge Heat Transfer on a Flat Plate in Rarefied Hypersonic Flow, *AS-63-8*; *AD-431824*, Institute of Engineering Research, California University, Berkeley (1963).
- B. V. KUKSENKO, A Method for Calculating the Flow of a Rarefied Gas, *Soviet Fiz. Dokl.* **8**, No. 8, 750 (1964).
- S. D. PROBERT and T. THOMAS, Heat Leaks through Rarefied Gases, *J. Sci. Instrum.* **41**, No. 3, 182 (1964).
- S. L. SOO and Z. N. SARAF, Flow of Rarefied Gas Over an Enclosed Rotating Disk, *Z. Angew. Math. Phys.* **15**, No. 1, 21 (1964).
- E. M. SPARROW and R. B. KINNEY, Free Molecule Heat Transfer between Parallel Plates, *Phys. Fluids* **7**, No. 3, 473 (1964).

#### MAGNETOHYDRODYNAMICS

- V. P. BHATAGAR, An Ultrasonic Method for Determining Electron and Ion Temperatures of Plasma, *Ind. J. Pure & Appl. Phys.* **2**, No. 5, 160 (1964).
- F. J. HALE and J. L. KERREBROCK, Insulator Boundary Layers in Magnetohydrodynamic Channels, *AIAA J.* **No. 3**, 461 (1964).

- C. F. HANSEN, Collision Induced Dissociation Rates in Thermal Plasmas, *AIAA Paper 64-55*, Defense Research Labs., General Motors Corp., Santa Barbara, Calif. (1964).
- K. JAGADEESAN, Heat Transfer due to Hydromagnetic Channel Flow with Conducting Walls, *AIAA J.* **2**, No. 4, 756 (1964).
- K. MAKI, Effect of Magnetic Fields on Heat Transport in Superconductor, *Progress of Theoretical Physics* **31**, No. 3, 378 (1964).
- V. A. POLYANSKIY, Effect of Joule Heating on Heat Transmission at the Critical Point, *N64-17183*, Foreign Technology Div., Air Force Systems Command, Wright-Patterson AFB, Ohio (1964).
- D. E. ROSNER, Analysis of Air Arc-Tunnel Heat Transfer Data, *TP-76*; *AD-426382*, AeroChem Research Lab., Inc., Princeton, N.J. (1964).

#### MEASUREMENT TECHNIQUES

- W. R. ABEL, A. C. ANDERSON and J. C. WHEATLEY, Temperature Measurements Using Small Quantities of Cerium Magnesium Nitrate, *Rev. Sci. Instrum.* **35**, No. 4, 444 (1964).
- D. ALPERT, Theoretical and Experimental Studies of the Underlying Processes and Techniques of Low Pressure Measurement, *NASA CR-53198*, Coordinated Science Lab., Illinois University, Urbana (1964).
- G. S. AMBROK, Method for Calibrating Thermal Flow Detectors, *Measurement Techniques*, No. 11, 918 (1964).
- R. W. ASTHEIMER and S. W. WEINER, Solid-Backed Evaporated Thermopile Radiation Detectors, *Appl. Optics* **3**, No. 4, 493 (1964).
- C. R. BARBER, T. J. QUINN, E. B. POWER and W. J. HOLLOWAY, A Full-Radiator Lamp Designed to Replace the Tungsten Strip Lamp as a Pyrometric Standard, *Nature* **202**, No. 4933, 686 (1964).
- R. L. BATES and W. L. EISENMAN, Improved Black Radiation Detector, *NOLC-594*; *AD-426778*, Naval Ordnance Lab., Corona, Calif. (1963).
- A. F. BEGUNKOVA, Acalorimeters with Open Surfaces, *N64-13565 05-01*, Joint Publications Research Service, Washington, D.C. (1963).
- W. C. BLACK, W. R. ROACH and J. C. WHEATLEY, Speer Carbon Resistors as Thermometers for Use below 1°K, *Rev. Sci. Instrum.* **35**, No. 5, 587 (1964).
- L. BOGDAN, Measurement of Radiative Heat Transfer with Thin-Film Resistance Thermometers, *NASA CR-27* (1964).
- C. J. CHEN, Temperature Effect on Langmuir Probe Measurement, *J. Appl. Phys.* **35**, No. 4, 1130 (1964).
- M. CHOIGNOT, Une méthode de mesure de températures de surface utilisant la sensibilité thermique de la luminescence, *Int. J. Heat Mass Transfer* **7**, No. 5, 577 (1964).
- D. J. COLLINS and J. M. SPIEGEL, Effect of Gage Material on Convective Heat Transfer, *AIAA J.* **2**, No. 4, 777 (1964).
- J. W. COOKE, The Experimental Determination of the Thermal Conductivity of Molten Lithium from 600 to

- 1550 Degrees Fahrenheit, *ORNL-3390*, Oak Ridge National Lab., Tenn. (1964).
- J. A. COONEY, Method of Measuring the Velocity of a Continuously Flowing Plasma, *Rev. Sci. Instrum.* **35**, No. 4, 442 (1964).
- G. L. DENMAN, Thermal Diffusivity of Solids Utilizing Optical Laser Illumination, *ASD-TDR-63-882*; *AD-425614*, Air Force Systems Command, Wright-Patterson AFB, Ohio (1963).
- A. A. DOUGAL, Research on Plasma Diagnostic Methods for High Temperature Plasma Research, *ARL-64-6*; *AD-432170*, Texas University, Austin (1964).
- R. GALINARO and P. GOUGAT, Réalisation d'un anémomètre a fil chaud a résistance constante, *Journal de Recherches du C.N.R.S.*, No. 23, 243 (1963).
- S. A. GORDON, On the Limits on Wall-Thickness in the Thin-Wall Calorimeter Heat Flux Gauge, *J. Heat Transfer* **C86**, No. 2, 291 (1964).
- N. E. HAGER, Thin Heater Calorimeter, *Rev. Sci. Instrum.* **35**, No. 5, 618 (1964).
- M. A. KAGANOV, On the Accuracy of Differential Measurement Systems Using Semiconductor Thermal Resistors (in Russian), *Izmeritel. Tekhn.*, No. 3, 33 (1964).
- A. KASTLER, Sur la température locale qui peut être obtenue par concentration de la lumière d'un laser, *Comptes Rendus Hebdomadaires Des Seances De L'Académie Des Sciences* **258**, No. 2, 489 (1964).
- R. H. KIRCHHOFF, Calorimetric Heating-Rate Probe for Maximum-Response-Time Interval, *AIAA J.* **2**, No. 5, 966 (1964).
- C. A. KLEIN, M. P. LEPIC, W. D. STRAUB and S. M. ZALAR, Development of an Ultra-High Temperature Pyrolytic Graphite Thermocouple, *ASD-TDR-63-844*; *AD-431203*, Research Div., Raytheon Co., Waltham, Mass. (1964).
- A. KOVACS and R. H. MESLER, Making and Testing Small Surface Thermocouples for Fast Response, *Rev. Sci. Instrum.* **35**, No. 4, 485 (1964).
- R. H. KROPSCHOT, D. R. BECK and F. KREITH, A New Steady State Calorimeter for Measuring Heat Transfer through Cryogenic Insulation, *NASA Order R-45*, *NASA CR-55327*; *NBS-R-294*, Cryogenic Engineering Lab., National Bureau of Standards, Boulder, Colo. (1963).
- J. C. LAFRANCE, Pressure Measurement in Transition and Free Molecular Flows using Orifice Probes, *ARL-63-222*; *AD-428157*, Institute of Aerophysics, Toronto University, Canada (1963).
- M. R. LAUVER, Evaluation of Shock-Tube Heat-Transfer Experiments to Measure Thermal Conductivity of Argon from 700° to 8600°K, *NASA TN D-2117* (1964).
- N. N. MARKOV, G. B. KAINER and P. A. SATSERDOTOV, Effect of Temperatures on Errors of Instruments in the Course of Measurements, *Measurement Techniques*, No. 11, 893 (1964).
- J. MAULARD, High Heat Transfer Measurement. Calibration Systems (in French). *Rech. Aeronaut.*, No. 93, 29 (1963).
- Mass Flow by Temperature Measurement, *Instrum. & Control Systems* **37**, No. 3, 95 (1964).
- S. MASUDA and Y. MURAKAMI, Thermoelectric Cooling Element as Thermal Conductivity Meter, *Bull. Japan Soc. Mech. Engrs* **6**, No. 22, 251 (1963).
- R. V. G. RAO, C. D. DAS, H. V. KEER and A. B. BISWAS, Construction and Calibration of an Isothermal Low Temperature Calorimeter, *Ind. J. Pure & Appl. Phys.* **2**, No. 5, 166 (1964).
- P. D. RICHARDSON, A. Swinging Thermometer, *Amer. J. Phys.* **31**, No. 5, 395 (1963).
- V. A. RYZHOV, Upper Measuring Limit in Diaphragm-Capacitive Compensation Manometers, *Measurement Techniques*, No. 11, 906 (1964).
- S. M. SKURATOV and N. N. GOROSHKO, A Simple Bridge Circuit for the Measurement of Resistance of Platinum Thermometers (in Russian), *Izmeritel. Tekhn.*, No. 2, p. 6 (1964).
- W. E. SPENGLER and D. K. GRAHAM, Equations and Tables for Thermocouples 32°F Reference Junction. *AEDC-TDR-64-55*; *AD-432828*, ARO, Inc., Arnold Air Force Station, Tenn. (1964).
- F. C. STEMPEL and D. L. RALL, Direct Heat Transfer Measurements, *ISA J.* **11**, No. 4, 89 (1964).
- K. TERAQ, Flame Temperature Measurement Using the Double-Probe Method, *Jap. J. Appl. Phys.* **3**, No. 3, 169 (1964).
- L. L. VAN ZYL, An Isothermal Calorimeter with Sample Temperature Control, *J. Sci. Instrum.* **41**, No. 4, 197 (1964).
- A. B. VERZHINSKAYA, A. New Speed Method for the Determination of Heat Conductivity of Materials in the Form of Plates and Plating (in Russian). *Dokl. Akad. Nauk BSSR* **8**, No. 2, 101 (1964).
- R. P. VON HERZEN and A. E. MAXWELL, Measurements of Heat Flow at the Preliminary Mohole Site off Mexico, *J. Geophys. Res.* **69**, No. 4, 741 (1964).
- C. B. WELLS, Knife-Edge Controller for a Schlieren System, *AEDC-TDR-64-126*, Air Force Systems Command, Arnold Engineering Development Center, USAF (1964).
- W. J. WITTEMAN and T. WERKMAN, Cylindrical High Temperature, High Pressure Apparatus, *Rev. Sci. Instrum.* **35**, No. 4, 461 (1964).
- R. D. WOOD and R. LIAUGMINAS, Planetary Entry Simulation by Means of Combustion, Technical Report No. 32-614, Jet Propulsion Lab., California Institute of Technology, Pasadena (1964).
- L. A. YOUNG, Infrared Temperature Measurement of the Laminar Wake of a Hypersonic Sphere, Research Report 179, AVCO-Everett Research Lab. (1964).
- C. A. ZIEGLER, L. L. BIRD and K. H. OLSON, Technique for Determining Density Distribution in Low Pressure High Temperature Gases, *Rev. Sci. Instrum.* **35**, No. 4, 450 (1964).
- H. ZIERFUSS, An Apparatus for the Rapid Determination of the Heat Conductivity of Poor Conductors, *J. Sci. Instrum.* **40**, No. 2, 69 (1963).

#### NATURAL CONVECTION

- V. D. BLANKENSHIP and J. A. CLARK, Effects of Oscillation on Free Convection from a Vertical, Finite Plate, *J. Heat Transfer* **C86**, No. 2, 149 (1964).



- V. D. BLANKENSHIP and J. A. CLARK, Experimental Effects of Transverse Oscillations on Free Convection of a Vertical, Finite Plate, *J. Heat Transfer* **C86**, No. 2, 159 (1964).
- P. BODY, Contribution to the Calculation of Heat Transfer, by Free Convection, Between Geometrically Simple Metallic Bodies and Gases (in German), *Acta Tech. Acad. Sci. Hungaricae, Budapest* **4**, No. 3/4, 285 (1963).
- L. F. CARTER and W. N. GILL, Asymptotic Solutions for Combined Free and Forced Convection in Vertical and Horizontal Conduits with Uniform Suction and Blowing, *J. Amer. Inst. Chem. Engrs* **10**, No. 3, 330 (1964).
- D. DROPKIN and G. GELB, Heat Transfer by Natural Convection of Mercury in Enclosed Spaces when Heated from Below and Rotated, *J. Heat Transfer* **C86**, No. 2, 203 (1964).
- S. ESHGHY, Forced-Flow Effects on Free-Convection Flow and Heat Transfer, *J. Heat Transfer* **C86**, No. 2, 290 (1964).
- B. GEBHART, Natural Convection Cooling Transients, *Int. J. Heat Mass Transfer* **7**, No. 4, 479 (1964).
- O. JENSSEN, Note on the Influence of Variable Viscosity on the Critical Rayleigh Number, *Acta Polytech. Scandinavica Ph.* **24** (1963).
- R. H. KRAICHNAN, Direct-Interaction Approximation for Shear and Thermally-Driven Turbulence, *AD-425745*, Kraichnan, Peterborough, N.H. (1963).
- K. MAEDA, On the Acoustic Heating of the Polar Night Mesosphere, *J. Geophysical Res.* **69**, No. 7, 1381 (1964).
- G. E. McVEHIL, Wind and Temperature Profiles Near the Ground in Stable Stratification, *Quart. J. Roy. Met. Soc.* **90**, No. 384, 136 (1964).
- B. METAIS and E. R. G. ECKERT, Forced, Mixed, and Free Convection Regimes, *J. Heat Transfer* **C86**, No. 2, 295 (1964).
- N. RILEY, Magnetohydrodynamic Free Convection, *J. Fluid Mech.* **18**, No. 4, 577 (1964).
- M. G. SCHERBERG, Natural Convection from Wall Sections of Arbitrary Temperature Distribution by an Integral Method, *Int. J. Heat Mass Transfer* **7**, No. 5, 501 (1964).
- J. A. SCHETZ and R. EICHHORN, Natural Convection with Discontinuous Wall-Temperature Variations, *J. Fluid Mech.* **18**, No. 2, 167 (1964).
- L. A. SEGEL, The Nonlinear Interaction of a Finite Number of Disturbances to a Layer of Fluid Heated from Below, RPI Math. Report *N* 64, Rensselaer Polytechnic Institute, Troy, N.Y. (1964).
- E. M. SPARROW, R. J. GOLDSTEIN and V. K. JONSSON, Thermal Instability in a Horizontal Fluid Layer; Effect of Boundary Conditions and Non-Linear Temperature Profile, *J. Fluid Mech.* **18**, No. 4, 51 (1964).
- N. W. SPENCER, R. L. BOGGESS and D. R. TAEUSCH, Seasonal Variation of Density and Temperature over Churchill, Canada, During Solar Maximum, *J. Geophysical Res.* **69**, No. 7, 1367 (1964).
- E. A. SPIEGEL, The Effect of Radiative Transfer on Convective Growth Rates, *Astrophysical J.* **139**, No. 3, 959 (1964).
- J. J. STUART, On the Cellular Patterns in Thermal Convection, *J. Fluid Mech.* **18**, Part 4, 481 (1964).
- S. WEINBAUM, Natural Convection in a Horizontal Circular Cylinder, *J. Fluid Mech.* **18**, Part 3, 409 (1964).
- K. T. YANG, Laminar Free Convection Wake Above a Heated Vertical Plate, *J. Appl. Mech.* **E31**, No. 1, 131 (1964).

#### PACKED AND FLUIDIZED BEDS

- A. P. BASKAKOV, The Mechanism of Heat Transfer between a Fluidized Bed and a Surface, *Int. Chem. Engrg* **4**, No. 2, 320 (1964).
- G. N. BHAT and A. B. WHITEHEAD, Heat Transfer in Sub-Atmospheric Fluidized Beds, *Aust. J. Appl. Sci.* **14**, No. 3, 198 (1963).
- J. S. M. BOTTERILL and J. R. WILLIAMS, The Mechanism of Heat Transfer to Gas-Fluidized Beds, *Trans. Instn. Chem. Engrs* **41**, No. 5, 217 (1963).
- R. D. BRADSHAW and J. E. MYERS, Heat and Mass Transfer in Fixed and Fluidized Beds of Large Particles, *J. Amer. Inst. Chem. Engrs* **9**, No. 5, 590 (1963).
- A. H. EMERY and M. LORENZ, Thermal Diffusion in a Packed Column, *J. Amer. Inst. Chem. Engrs* **9**, No. 5, 660 (1963).
- R. H. HARDING, Heat Transfer through Low-Density Cellular Materials, *Industr. Engrg Chem.* **3**, No. 2, 117 (1964).
- D. PNUELI, Thermal Stability in Porous Insulating Materials, *Israel J. of Tech.* **2**, No. 1, 33 (1964).
- R. PRUSCHEK, The Transport of Heat and Mass in the Turbulent Flow through Packed Columns. Part 2, The Effect of Turbulent Heat Transport in a Fixed Bed, with Heat Producing Solids—Nuclear Bed Reactor (in German), *Forsch. Geb. Ingen-Wes.* **29**, No. 2, 57 (1963).
- A. SUGAWARA, Heat Transfer Accompanying Fluid Flow in Porous Materials, *Aust. J. Appl. Sci.* **14**, No. 2, 109 (1963).
- S. YAGI, D. KUNII and K. ENDO, Heat Transfer in Packed Beds through which Water is Flowing, *Int. J. Heat Mass Transfer* **7**, No. 3, 333 (1964).
- E. N. ZIEGLER and W. T. BRAZELTON, Mechanism of Heat Transfer to a Fixed Surface in a Fluidized Bed, *I & EC Fundamentals* **3**, No. 2, 94 (1964).

#### RADIATION

- C. M. ASKEY *et al.*, A Study of the Radiative Characteristics of Shielded Infrared Sources, *TRECOM-TR-63-45*; *AD-426787*; *ER-649*, Hayes International Corp., Birmingham, Ala. (1963).
- H. E. BENNETT, Specular Reflectance of Aluminized Ground Glass and the Height Distribution of Surface Irregularities, *J. Opt. Soc. of Amer.* **53**, No. 12, 1389 (1963).
- J. M. BENNETT, Precise Method for Measuring the Absolute Phase Change on Reflection, *J. Opt. Soc. of Amer.* **54**, No. 5, 612 (1964).
- R. C. BIRKEBAK, R. C. BIRKEBAK and D. W. WARNER, A Note on Total Emittance of Animal Integuments, *J. Heat Transfer* **C86**, No. 2, 253 (1964).
- R. C. BIRKEBAK, E. M. SPARROW, E. R. G. ECKERT and

- J. W. RAMSEY, Effect of Surface Roughness on the Total Hemispherical and Specular Reflectance of Metallic Surfaces, *J. Heat Transfer* **C86**, No. 2, 193 (1964).
- W. R. BRADFORD, C. B. FARMER and S. J. TODD, Absolute Solar Spectra 3.5-5.5 Microns. II, Theoretical Spectra for Altitude Range 15-30 km. *Appl. Optics* **3**, No. 4, 459 (1964).
- B. J. BRINKWORTH, Radiative Transport Properties of Fogs, *Quart. J. Roy. Met. Soc.* **90**, No. 384, 204 (1964).
- R. D. CESS, Adiabatic-Wall Temperature for Flow of a Radiation-Absorbing Gas, *J. Heat Transfer* **C86**, No. 2, 288 (1964).
- J. C. CHEN, Simultaneous Radiative and Convective Heat Transfer in an Absorbing, Emitting, and Scattering Medium in Slug Flow between Parallel Plates, *J. Amer. Inst. Chem. Engrs* **10**, No. 2, 253 (1964).
- J. H. CHIN, Radiation from Isotropic Volume Source with Interposing Aperture, *J. Heat Transfer* **C86**, No. 2, 289 (1964).
- M. H. COBBLE, Heating a Fluid by Solar Radiation, *Solar Energy* **8**, No. 2, 65 (1964).
- W. O. DAVIES, Emissivity of Carbon Dioxide at 4.3  $\mu$ , *J. Opt. Soc. Amer.* **54**, No. 4, 467 (1964).
- R. G. DESSLER, Diffusion Approximation for Thermal Radiation in Gases with Jump Boundary Condition, *J. Heat Transfer* **C86**, No. 2, 240 (1964).
- D. K. EDWARDS and W. A. MENARD, Comparison of Models for Correlation of Total Band Absorption, *Appl. Optics* **3**, No. 5, 621 (1964).
- C. B. FARMER and S. J. TODD, Absolute Solar Spectra 3.5-5.5 Microns. I, Experimental Spectra for Altitude Range 0-15 km, *Appl. Optics* **3**, No. 4, 453.
- C. C. FERRISO and C. B. LUDWIG, Spectral Emissivities and Integrated Intensities of the 2.7- $\mu$ CO<sub>2</sub> Band between 1200° and 1800°K, *J. Opt. Soc. Amer.* **54**, No. 5, 657 (1964).
- C. C. FERRISO, C. B. LUDWIG and C. N. ABEYTA, High Temperature Emissivities and Intensities of the 1.87  $\mu$  Band of H<sub>2</sub>O between 1000°K and 2200°K, *GDA63-1219; ADO428798*, General Dynamics/Astronautics, San Diego, Calif. (1963).
- W. M. HALL, The Application of Temperature Rate Measurements to the Determination of Thermal Emission, Technical Report No. 32-596, Jet Propulsion Lab., California Institute of Technology, Pasadena (1964).
- H. C. HALLER, G. C. WESLING and S. LIEBLEIN, Heat-Rejection and Weight Characteristics of Fin-Tube Space Radiators with Tapered Fins, *NASA TN D-2168* (1964).
- C. F. HANSEN, A Radiation Model for Nonequilibrium Molecular Gases, *AIAA J.* **2**, No. 4, 611 (1964).
- W. N. HARRISON, J. C. RICHMOND, F. J. SHORTEN and H. M. JOSEPH, Standardization of Thermal Emission Measurements. Part IV, Normal Spectral Emittance, 800°-1400°K, *WADC-TR-59-510; AD-426842* National Bureau of Standards, Washington, D.C. (1963).
- C. S. JAMES, Experimental Study of Radiative Transport from Hot Gases Simulating in Composition the Atmospheres of Mars and Venus, *AIAA J.* **2**, No. 3, 470 (1964).
- W. P. JONES, Radiative Heat Transfer between Planar Surfaces with Filleted Junctions, *NASA TR R-157* (1963).
- M. KOVARIK, Flow of Heat in an Irradiated Protective Cover, *Nature* **201**, No. 4924, 1085 (1964).
- R. H. C. LEE and J. HAPPEL, Thermal Radiation of Methane Gas, *I & EC Fundamentals* **3**, No. 2, 167 (1964).
- W. J. LICK, The Propagation of Small Disturbances in a Radiating Gas, *J. Fluid Mech.* **18**, Part 2, 274 (1964).
- I. R. MIKK, Approximation Calculation of Radiant Heat Transfer in a Duct of Rectangular Cross Section, *Int. J. Heat Mass Transfer* **7**, No. 3, 293 (1964).
- D. B. OLFE and S. S. PENNER, Some Comments on "Radiation Slip", Journal of Quantitative Spectroscopy and Radiative Transfer, Pergamon Press, Oxford, England (1964).
- E. D. PALIK, A Far Infrared Bibliography, *NRL-Bibl.21; AD-407047*, Solid State Div., Naval Research Lab., Washington, D.C. (1963).
- M. PERLMUTTER and J. R. HOWELL, Radiant Transfer through a Gray Gas Between Concentric Cylinders Using Monte Carlo, *J. Heat Transfer* **C86**, No. 2, 169 (1964).
- R. PETELA, Energy of Heat Radiation, *J. Heat Transfer* **C86**, No. 2, 187 (1964).
- G. N. PLASS, Transmittance of Carbon Dioxide and Water Vapor over Stratospheric Slant Paths, *Appl. Optics* **3**, No. 4, 479 (1964).
- J. O. PORTEUS, Relation between the Height Distribution of a Rough Surface and the Reflectance at Normal Incidence, *J. Opt. Soc. Amer.* **53**, No. 12, 1394 (1963).
- T. R. ROWEN, Blackbody Radiation Tables, *TN-AMSMI-RNR-1-63; AD-418979*, Army Missile Command, Huntsville, Ala. (1963).
- P. S. RUDOLPH and S. C. LIND, Energy Transfer from Carbon Dioxide in the Radiation Induced Synthesis of Water, *J. Chem. Phys.* **40**, No. 9, 2601 (1964).
- R. W. RUTOWSKI and D. BERSHADER, Shock Tube Studies of Radiative Transport in an Argon Plasma, *Phys. Fluids* **7**, No. 4, 568 (1964).
- W. S. SEITZ and D. V. LUNDHOLM, Elsasser Model for Band Absorption; Series Representation of a Useful Integral, *J. Opt. Soc. Amer.* **54**, No. 3, 315 (1964).
- E. M. SPARROW and V. K. JONSSON, The Effect of Asymmetrical Thermal Boundary Conditions on Radiating-Fin Heat Transfer **C86**, No. 2, 299 (1964).
- D. W. STOPS, Heat Transfer by Simultaneous Conduction and Radiation through a Non-Absorbing Medium, *Brit. J. Appl. Phys.* **15**, No. 3, 311 (1964).
- P. M. STORZA, Radiating Laminar Boundary Layer of a Gray Gas over a Flat Plate, *PIBAL-812; AD-430312*, Polytechnic Institute of Brooklyn, N.Y. (1963).
- M. T. SURH and M. G. WHYBRA, Theoretical Studies of Radiation-Balance, *NASA TN D-2246* (1964).
- Thermal Radiation Characteristics of Transparent, Semi-Transparent, and Translucent Materials under Non-Isothermal Conditions, *ASD-TDR-62-719*, Research and Technology Division, Air Force Systems Command, Wright-Patterson AFB, Ohio (1964).
- C. L. TIEN and M. M. ABU-ROMIA, Radiative Energy

Transfer to the Outer Base Region of a Semi-Infinite Cylindrical Gas Body, *AIAA Paper-64-60*, California University, Berkeley (1964).

B. A. TINSLEY, J. J. TAIT and C. D. ELLYETT, A Search for Thermal Radiation from Meteor Trails, *J. Geophysical Res.* **69**, No. 7, 1359 (1964).

#### ROTATING SURFACES

A. WHITE, Flow of a Fluid in an Axially Rotating Pipe, *J. Mech. Engng Sci.* **6**, No. 1, 47 (1964).

#### THERMODYNAMIC AND TRANSPORT PROPERTIES

M. Y. AZBEL, A. V. VORENEL and M. S. GITERMAN, Contribution to the Theory of the Critical Point (in Russian), *Zh. Eksp. Teor. Fiz.* **46**, No. 2, 673 (1964).

H. D. BAEHR and E. F. SCHMIDT, Die Berechnung der Exergie von Verbrennungsgasern unter Berücksichtigung der Dissoziation, *Brennstoff-Wärme-Kraft* **16**, No. 2, 62 (1964).

H. D. BAEHR and E. F. SCHMIDT, Die Berechnung der Gleichgewichtszusammensetzung chemisch reagierender Gasgemische, insbesondere dissoziierender Verbrennungsgase, *Brennstoff-Wärme-Kraft* **16**, No. 1, 8 (1964).

C. E. BAKER and R. S. BROKAW, Thermal Conductivities of Gaseous H<sub>2</sub>O, D<sub>2</sub>O and the Equimolar H<sub>2</sub>O-D<sub>2</sub>O Mixture, *J. Chem. Phys.* **40**, No. 6, 1523 (1964).

S. C. BANERJEE and L. K. DORAISWAMY, Thermodynamic Properties of Organic Compounds: Part 1, Normal Symmetrical Aliphatic Ethers, *Brit. Chem. Engng* **9**, No. 5, 311 (1964).

C. F. BONILLA and G. SHULMAN, Selenium: Possible Rankine-Cycle Fluid, *Nucleonics* **22**, No. 3, 58 (1964).

M. BOTTEMA, W. PLUMMER and J. STRONG, Water Vapor in the Atmosphere of Venus, *Astrophysical J.* **139**, No. 3, 1021 (1964).

G. A. BOTTOMLEY and T. H. SPURLING, Measurement of the Temperature Variation of Virial Coefficients. I, Application to the Second Virial Coefficient of n-Butane, *Austr. J. Chem.* **17**, No. 5, 501 (1964).

O. C. BRIDGEMAN and E. W. ALDRICH, Vapor Pressure Tables for Water, *J. Heat Transfer* **C86**, No. 2, 279 (1964).

R. BROWNING and J. W. FOX, The Coefficient of Viscosity of Atomic Hydrogen and the Coefficient of Mutual Diffusion for Atomic and Molecular Hydrogen, *Proc. Roy. Soc.* **278**, No. 1373, 274 (1964).

A. BÜCHLER, Study of High Temperature Thermodynamics of Light Metal Compounds, C-64362; AD-425826, Little (Arthur D.), Inc., Cambridge, Mass. (1963).

E. G. BUTCHER and R. S. DADSON, The Virial Coefficients of the Carbon Dioxide-Ethylene System. I, Pure Gases, *Proc. Roy. Soc.* **277**, No. 1371, 448 (1964).

J. M. CARROLL *et al.*, The Thermal Conductivity of "M-31" Coating Material, *NASA CR-56007*, Southern Research Institute, Birmingham, Ala. (1963).

R. CHANDRA and V. S. NANDA, Thermodynamic Properties of He<sup>3</sup> and He<sup>4</sup> Solutions. II, Temperatures

above the Superfluid Transition in Solution, *Phys. Fluids* **7**, No. 1, 7 (1964).

E. A. DIMARZIO and F. H. STILLINGER, Residual Entropy of Ice, *J. Chem. Phys.* **40**, No. 6, 1564 (1964).

K. S. DRELLISHAK, Partition Functions and Thermodynamic Properties of High Temperature Gases, *AEDC-TDR-64-22*; AD-428210, Northwestern University, Evanston, Ill. (1964).

K. S. DRELLISHAK, D. P. AESCHLIMAN and A. B. CAMEL, Tables of Thermodynamic Properties of Argon, Nitrogen, and Oxygen Plasmas, *AEDC-TDR-64-12*; AD-427839, Northwestern University, Evanston, Ill. (1964).

A. G. ENGELHARDT and A. V. PHELPS, Transport Coefficients and Cross Sections in Argon and Hydrogen-Argon Mixtures, *Physical Rev.* **133**, No. 1A, A 375 (1964).

I. FRUCHTMAN, Temperature Measurement of Hot Gas Streams, *AIAA J.* **1**, No. 8, 1909 (1963).

R. S. GAMBHIR and S. C. SAXENA, Translational Thermal Conductivity and Viscosity of Multi-component Gas Mixtures, *Trans. Faraday Soc.* **60**, No. 493, 38 (1964).

R. D. GOODWIN, D. E. DILLER, H. M. RODER and L. A. WEBER, Second and Third Virial Coefficients for Hydrogen, *J. Res. Natl. Bur. Stands.* **68A**, No. 1, 121 (1964).

B. J. GUDZINOWICZ, R. H. CAMPBELL and J. S. ADAMS, Thermal Conductivity Measurements of Complex Saturated Hydrocarbons, *J. Chem. Engng Data* **9**, No. 1, 79 (1964).

R. E. HANSEN, Critical Temperature and the Equation of State, *Chem. Engng Progr.* **60**, No. 4, 49 (1964).

J. C. HESTER and K. G. SEWELL, Effect of Partition Function Cutoff upon the Thermodynamic Properties of Atomic Hydrogen and Helium to 100 000°K, *J. Appl. Phys.* **35**, No. 3, 729 (1964).

J. H. HILDEBRAND, Intermolecular Forces between Molecules of Different Species, *Journal de Chimie Physique et de Physical Chimie Biologique* **61**, No. 1-2, 53 (1964).

J. N. HOLSEN and M. R. STRUNK, Binary Diffusion Coefficients in Nonpolar Gases, *I & EC Fundamentals* **3**, No. 2, 143 (1964).

C. C. HSU and J. J. MCKETTA, Pressure-Volume-Temperature Properties of Methyl Chloride, *J. Chem. Engng Data* **9**, No. 1, 45 (1964).

J. G. HUST and A. L. GOSMAN, Functions for the Calculation of Entropy, Enthalpy, and Internal Energy for Real Fluids Using Equations of State and Specific Heats, *NASA CR-55325*; *NBS-R-301*, Cryogenic Engineering Lab., National Bureau of Standards, Boulder, Colo. (1963).

H. TWASAKI, J. KESTIN and A. NAGASHIMA, Viscosity of Argon-Ammonia Mixtures, *J. Chem. Phys.* **40**, No. 10, 2988 (1964).

R. KALIDAS and G. S. LADDHA, Viscosity of Ternary Liquid Mixtures, *J. Chem. Engng Data* **9**, No. 1, 142 (1964).

J. KESTIN and A. NAGASHIMA, Viscosity of the Isotopes

- of Hydrogen and their Intermolecular Force Potentials, *Phys. Fluids* **7**, No. 5, 730 (1964).
- J. KESTIN, J. ROSS, J. H. WHITELAW, A. NAGASHIMA, R. DIPIPPA *et al.*, Research on Thermo dynamic and Transport Properties of Gases at High Temperatures and Pressures, N64-13476 05-01, Brown University, Providence, R.I. (1963).
- J. KESTIN and J. H. WHITELAW, The Viscosity of Dry and Humid Air, *TR-BRN-12-P*; AD-429500, Brown University, Providence, R.I. (1964).
- F. J. KRIEGER, The Thermodynamics of the Phenol-Formaldehyde Resins: Carbon-Hydrogen-Oxygen Vapor System, AD-428583, RAND Corp., Santa Monica, Calif. (1964).
- I. KUDMAN and E. F. STEIGMEIER, Thermal Conductivity and Seebeck Coefficient of InP, *Phys. Rev.* **133**, No. 6 A, A 1665 (1964).
- G. B. LAPP and D. I. POPOVA, Certain Thermometric Properties of Tungsten-Rhenium Thermoelectrodes, *Measurement Techniques*, No. 11, 917 (1964).
- K. C. LAPWORTH, Investigation of the Physical Properties of Gases at High Temperatures, *J. Roy. Aero. Soc.* **68**, No. 639, 189 (1964).
- S. A. LEBEDEF, Determination of the Lennard-Jones Parameters from Total Scattering Cross-Section Measurements, *J. Chem. Phys.* **40**, No. 9, 2716 (1964).
- W. LEIDENFROST, An Attempt to Measure the Thermal Conductivity of Liquids, Gases, and Vapors with a High Degree of Accuracy over Wide Ranges of Temperature ( $-180$  to  $500^{\circ}\text{C}$ ) and Pressure (Vacuum to 500 atm), *Int. J. Heat Mass Transfer* **7**, No. 4, 447 (1964).
- C. H. LEWIS, Specific Heat and Speed of Sound Data for Imperfect Air, *AEDC-TDR-64-36*, Air Force Systems Command, Arnold Engineering Development Center, USAF (1964).
- C. H. LEWIS, Specific Heat and Speed of Sound for Imperfect Nitrogen. I.  $T - 2000$  to  $15,000^{\circ}\text{K}$ , *AEDC-TDR-64-113*, Air Force Systems Command, Arnold Engineering Development Center, USAF (1964).
- C. H. LEWIS and C. A. NEEL, Specific Heat and Speed of Sound Data for Imperfect Nitrogen. II.  $T - 100$  to  $2200^{\circ}\text{K}$ , *AEDC-TDR-64-114*, Air Force Systems Command, Arnold Engineering Development Center, USAF (1964).
- E. A. MASON, S. WEISSMAN and R. P. WENDT, Composition Dependence of Gaseous Thermal Diffusion Factors and Mutual Diffusion Coefficients, *Phys. Fluids* **7**, No. 2, 174 (1964).
- A. MCALLISTER and C. OR, Thermal Conductivities of Aluminum and Zinc Powder Suspensions, *J. Chem. Engng Data* **9**, No. 1, 71 (1964).
- D. G. MILLER, Estimating Vapor Pressures—A Comparison of Equations. *Industr. Engng Chem.* **56**, No. 3, 46 (1964).
- R. C. MILLIKAN, Carbon Monoxide Vibrational Relaxation in Mixtures with Helium, Neon and Krypton, *J. Chem. Phys.* **40**, No. 9, 2594 (1964).
- E. A. MOELWYN-HUGHES and P. L. THORPE, The Physical and Thermodynamic Properties of Some Associated Solutions. II. Heat Capacities and Compressibilities, *Proc. Roy. Soc.* **A278**, No. 1375, 574 (1964).
- K. OHKI and L. S. KOWALCZYK, Thermal Conductivity of Some Organic Compounds at their Melting Points, *J. Chem. Engng Data* **9**, No. 2, 220 (1964).
- I. PETKER and D. M. MASON, Viscosity of the  $\text{N}_2\text{O}_4\text{-NO}_2$  Gas System, *J. Chem. Engng Data* **9**, No. 2, 280 (1964).
- H. RITTWAGEN, On the Calculation of the Thermodynamic Functions of Mixtures of Real Gases (in German), *DVL-299*, Vereinigte Universitäts-U, Fachbuchhandlungen, R.-Wagner-Str. 1, Cologne, W. Germany (1964).
- W. C. SCHIEVE and B. LEAF, Correlation Function Calculation of the Lattice Thermal Conductivity by Classical Liouville Methods, *USNRDL-TR-694*; AD-426394, Naval Radiological Defense Lab., San Francisco, Calif. (1963).
- E. U. SCHLÜNDER, Messung der Wärmeleitfähigkeit von Gas/Dampf-Gemischen mit einem Kurzzeitverfahren, *Chem.-Ing. Tech.* **36**, No. 2, 115 (1964).
- R. G. SCURLOCK and E. M. WRAY, An Empirical Equation for the Helium-4 Vapour Pressure Scale between  $1.36$  and  $2.16^{\circ}\text{K}$ , *Cryogenics* **4**, No. 2, 104 (1964).
- R. J. SMIALEK and G. THODOS, A Simple Vapor Pressure Relationship for the Normal Paraffins, *J. Chem. Engng Data* **9**, No. 1, 52 (1964).
- R. D. STEPHENS, High Temperature Thermal Conductivity, *UCRL-7605*, Lawrence Radiation Lab., California University, Livermore (1964).
- S. W. STRAUSS, The Temperature Dependence of the Density of Liquid Metals, *Nucl. Sci. Engng* **18**, No. 2, 280 (1964).
- M. K. SUNDARESAN and T. Y. WU, Thermal Conductivity of a Fully-Ionized Gas, *Canad. J. Phys.* **42**, No. 4, 794 (1964).
- A. G. TABACHNIKOV, Calculating Thermodynamic Properties of Real Gases at High Temperatures, *J. Engng Phys.* **5**, No. 9, 1 (1964).
- R. E. TAYLOR and M. M. NAKATA, Thermal Properties of Refractory Materials, *WADD TR 60-581*, Atomic International, Canoga Park, Calif. (1963).
- L. WALDMANN, The Basic Kinetic Equations for Par-Ortho-Hydrogen Mixtures, *Physica* **30**, No. 1, 17 (1964).
- T. WAINWRIGHT, Calculation of Hard-Sphere Viscosity by Means of Correlation Functions, *J. Chem. Phys.* **40**, No. 10, 2932 (1964).
- S. J. YOSIM, Calculation of Heat Capacities and Compressibilities of Liquids from a Rigid Sphere Equation of State, *J. Chem. Phys.* **40**, No. 10, 3069 (1964).
- S. D. ZAALISHVILI and Z. S. BELOUSOVA, The Second Virial Coefficient of Vapors and Their Mixtures (in Russian), *Zh. Fiz. Khim.* **38**, No. 2, 503 (1964).

#### TRANSFER MECHANISMS

- I. T. ELPERIN, A Relationship between Intensity and Irreversibility of the Heat-Transfer Process (in Russian), *Inzhen.-Fiz. Zh.* **6**, No. 3, 40 (1963).
- J. FOX, Velocity Correlations in Weak Turbulent Shear Flow, *Phys. Fluids* **7**, No. 4, 562 (1964).

- J. GREY and P. F. JACOBS, Experiments on Turbulent Mixing in a Partially Ionized Gas, *AIAA J.* **2**, No. 3, 433 (1964).
- A. A. HAYDAY, On Axioms for Heterogeneous Continua, NR-098-038, Research Institute, University of Alabama (1964).
- W. M. JONES and I. B. WILLIAMS, Relaxation Effects in the Transition from Streamline to Turbulent Flow in Tubes and in Micropores, *Brit. J. Appl. Phys.* **14**, No. 12, 877 (1963).
- L. S. KOKOREV, Turbulent Diffusion of Heat and Momentum in a Homogeneous and Isotropic Turbulent Stream, AID Report T-64-22, Aerospace Information Division, Library of Congress, Washington, D.C. (1964).
- J. A. MILLER and A. A. FEJER, Transition Phenomena in Oscillating Boundary-Layer Flows, *J. Fluid Mech.* **18**, Part 3, 438 (1964).
- D. E. ROSNER, Convective Diffusion as an Intruder in Kinetic Studies of Surface Catalyzed Reactions, *AIAA J.* **2**, No. 4, 593 (1964).
- A. C. SRIVASTAVA, Flow of Second-Order Fluids with Heat Transfer, *AIAA J.* **2**, No. 4, 749 (1964).
- C. L. TIEN, A Note on Distributions of Temperature and Eddy Diffusivity for Heat in Turbulent Flow Near a Wall, *Z. Angew. Math. Phys.* **15**, No. 1, 63 (1964).
- S. C. TRAUGOTT, Shock Structure in a Radiating, Heat Conducting, and Viscous Gas, RR-57, Aerophysics Research Section of the Research Dept., The Martin Co., Baltimore, Md. (1964).
- H. WEINSTEIN and C. A. TODD, Analysis of Mixing of Coaxial Streams of Dissimilar Fluids Including Energy-Generation Terms, *NASA TN D-2123* (1963).
- V. ZAKKAY, E. KRAUSE and S. WOO, Turbulent Transport Properties for Axisymmetric Heterogeneous Mixing, PIBAL Report No. 813, Aerospace Research Labs., Office of Aerospace Research, USAF (1964).