*Int. J. Heat Mass Transfer.* Vol. 5, pp. 413–424. Pergamon Press 1962. Printed in Great Britain.

# HEAT TRANSFER BIBLIOGRAPHY

**E. R. G. ECKERT, E. M. SPARROW and W. E. IBELE**

Heat Transfer Laboratory, Department of Mechanical Engineering,
University of Minnesota, Minneapolis 14, Minnesota, U.S.A.

## APPLICATIONS

V. N. ADRIANOV and S. N. SHORIN, Investigation of the combined process of heat transfer in a combustion chamber. *Konvektivnyi i Luchistyi Teploobmen*, p. 107. Izd. stvo Akad. Nauk SSSR, Moskva (1960). (In Russian.)

D. R. BAKER and H. A. SHRYOCK, A comprehensive approach to the analysis of cooling tower performance. *J. Heat Transfer* C **83**, No. 3, 339 (1961).

J. L. BATES, Thermal conductivity of $UO_2$ improves at high temperatures (Instrumentation and Measurements). *Nucleonics* **19**, No. 6, 83 (1961).

V. A. BAUM, Thermal models for heat-producing elements of nuclear reactors. *Konvektivnyi i Luchistyi Teploobmen*, p. 176. Izd. stvo Akad. Nauk SSSR, Moskva (1960). (In Russian.)

M. J. BRUNNER, Aerodynamic and radiant heat input to space vehicles which re-enter at satellite and escape velocity. *J. Amer. Rocket Soc.* **31**, No. 8, 1102 (1961).

F. CHEERS and J. N. LILEY, Heat transfer from slotted finned tubes. *Int. J. Heat Mass Transfer* **2**, No. 3, 259 (1961).

J. G. COLLIER, *The Problem of Burnout in Liquid Cooled Nuclear Reactors.* Chemical Engineering Division, Atomic Energy Research Establishment, Harwell, Berkshire, AERE-R 3698 (1961).

I. G. DONALDSON, Temperature under steadily heated floors. *Brit. J. Appl. Phys.* **12**, No. 6, 300 (1961).

B. GEORGE, R. BIGOT and R. FAIVRE, Thermocinetique.—Etude experimentale du mecanisme de transfer de la chaleur dans les bains de trempe, par MM. *C.R. Acad. Sci., Paris* **252**, No. 13, 1916 (1961).

A. F. GOLLNICK, JR., *Heat Transfer Rates and Insulated Wall Temperatures for Transpiration Cooled Hemisphere.* Massachusetts Institute of Technology, Naval Supersonic Laboratory, AFOSR TR 60-1483, Tech. Rep. 433 (1960).

G. F. HEWITT, I. KING and P. C. LOVEGROVE, *Holdup and Pressure Drop Measurements in the Two-Phase Annular Flow of Air–Water Mixtures.* Chemical Engineering Division, Atomic Energy Research Establishment, Harwell, Berkshire, AERE-R 3764 (1961).

H. HURWICZ and J. D. BROWN, *Critical Aero-Thermodynamic Parameters in Thermal Protection Design of Space Re-Entry Bodies. Part I—Material, Ablation and Heating Effects.* Air Force Ballistic Systems Division, Air Force Systems Command, U.S.A.F., Inglewood, Calif., Tech. Rep. RAD-TR-61-18 (1961).

H. P. KIRCHNER and F. A. VASSALLO, Radiative transport cools rocket nozzles. *SAE J.* **69**, No. 7, 96 (1961).

Z. KOPAL, *Thermal History of the Moon and of the Terrestrial Planets.* Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., Tech. Rep. 32-108 (1961).

J. G. KRISILAS and J. E. BOBERG, Providing an effective thermal barrier with transpiration cooling. *ASHRAE J.* **3**, No. 8, 83 (1961).

R. LEMLICH, A musical heat exchanger. *J. Heat Transfer* C **83**, No. 3, 385 (1961).

R. H. LEVY, *Radiation Shielding of Space Vehicles by Means of Superconducting Coils.* AVCO-Everett Research Laboratory, Everett, Mass., Res. Rep. 106, AFBSD-TN-61-7 (1961).

A. L. LONDON, J. W. MITCHELL and W. A. SUTHERLAND, Heat-transfer and flow-friction characteristics of crossed-rod matrices. *J. Heat Transfer* C **82**, No. 3, 199 (1960).

E. MAYER, Analysis of convective heat transfer in rocket nozzles. *J. Amer. Rocket Soc.* **31**, No. 7, 911 (1961).

S. E. NEICE and R. W. RUTOWSKI, Calibration of hypersonic high temperature wind tunnels. *J. Amer. Rocket Soc.* **31**, No. 3, 372 (1961).

N. NISHIWAKI, *Studies on High Temperature Gas Turbine.* Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 21 (1961). (In Russian.)

N. NISHIWAKI, *Studies on High Temperature Gas Turbine Engines.* Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 14 (Summary Report) (1960). (In Japanese.)

N. NISHIWAKI, M. HIRATA and S. YAMAZAKI, *Studies on High Temperature and High Pressure Gas Turbine; 4th Report, On Film Cooling of Turbine Blades.* Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 9 (1959). (In Japanese.)

N. NISHIWAKI, M. HIRATA and S. YAMAZAKI, *Studies on High Temperature and High Pressure Gas Turbine; 5th Report, Studies on Film Cooling of Turbine Blades.* Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 11 (1959). (In Japanese.)

N. NISHIWAKI, A. TSUCHIDA, M. HIRATA, S. YAMAZAKI and M. AKIYAMA, *Studies on Heat Insulation by Air Film.* Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 17 (1961). (In Japanese.)

E. J. NOLAN and S. M. SCALA, *The Aerothermodynamic Behavior of Pyrolytic Graphite During Sustained Hyper-*

*sonic Flight*. Missile and Space Vehicle Department, Space Sciences Laboratory, General Electric, Technical Information Series R61SD051 (1961).

T. OGURI, Determination of rate of heat transfer between the gases and the cylinder walls of spark-ignition engine. *Bull. Fac. Engng, Yokohama* **9**, 1 (1960).

D. E. ROSNER, Surface temperature of high speed, radiation cooled bodies in dissociating atmospheres. *J. Amer. Rocket Soc.* **31**, No. 7, 1013 (1961).

W. F. SCHALWIJK, A simplified regenerator theory. *J. Engng Power* A **81**, No. 2, 142 (1959).

J. SEDDON, Nomogram analysis of heat transfer in supersonic flow. *Aircr. Engng* **33**, No. 387, 124 (1961).

J. P. SELLERS, JR., Effect of carbon deposition on heat transfer in a LOX/RP-1 thrust chamber. *J. Amer. Rocket Soc.* **31**, No. 5, 662 (1961).

S. L. SULLIVAN, JR. and C. D. HOLLAND, An analytical solution for a double pipe heat exchanger. *Industr. Engng Chem.* **53**, No. 9, 699 (1961).

J. L. SZYMKOWIAK, Industrial heat-transfer media for temperatures up to 400°C. *Chem.-Ing.-Tech.* **33**, No. 4, 243 (1961).

H. THAL-LARSEN, Dynamics of heat exchangers and their models. *J. Basic Engng* D **82**, No. 2, 489 (1960).

M. W. THRING and A. ATHERTON, Flow over transversely finned cylinders. *Trans. Instn Chem. Engrs, Lond.* **38**, No. 5, 235 (1960).

P. WADSWORTH, Hot air drying—Effects of temperature and humidity. *J. Textile Inst. Proc.* **51**, No. 9, 552 (1960).

W. J. YANG, J. A. CLARK and V. S. ARPACI, Dynamic response of heat exchangers having internal heat sources, Part IV. *J. Heat Transfer* C **83**, No. 3, 321 (1961).

M. J. ZUCROW and J. P. SELLERS, JR., Experimental investigation of rocket motor film cooling, *J. Amer. Rocket Soc.* **31**, No. 5, 668 (1961).

## BOOKS

G. K. BATCHELOR, Review of "Turbulent flows and heat transfer" Edited by C. C. LIN. *Aero. Quart.* **12**, Pt. 1, 94 (1961).

F. M. DEVIENNE, *Rarefied Gas Dyanmics* (Proceedings of the First International Symposium, Nice, France, July 1959). Pergamon Press, New York (1960).

R. W. HAYWOOD (Editor), *Thermodynamic Tables and Other Data* (2nd Ed.). Cambridge University Press, New York (1960).

J. KAYE and J. A. WELSH (Editor), *Direct Conversion of Heat to Electricity*. John Wiley, New York (1960).

D. MEKSYN, *New Methods in Laminar Boundary-Layer Theory*. Pergamon Press, New York (1961).

H. SCHLICHTING, *Boundary-Layer Theory* (4th Ed.). McGraw-Hill, New York (1960).

K. STEWARTSON, *The Theory of Unsteady Laminar Boundary Layers. Advances in Applied Mechanics*, Vol. 6. Academic Press, New York (1960).

M. J. THOMPSON, *Bibliography of Aeromechanics Research*. Defense Research Laboratory. University of Texas, Austin, Texas, Defense Research Laboratory Report 456 (1961).

*International Developments in Heat Transfer*, Parts I–V (Papers presented at the 1961 International Heat Transfer Conference, August 28–Sept. 1, 1961, University of Colorado, Boulder, Colo.). Published by The American Society of Mechanical Engineers, New York (1961).

## BOUNDARY LAYER FLOW

D. E. ABBOTT and S. J. KLINE, *Simple Methods for Classification and Construction of Similarity Solutions of Partial Differential Equations*. Department of Mechanical Engineering, Stanford University, Stanford University, Calif., Rep. MD-6, AFOSR TN 60-1163 (1961).

A. ACRIVOS, On laminar boundary layer flows with rapid homogeneous chemical reaction. *Chem. Engng Sci.* **13**, No. 2, 57 (1960).

A. ACRIVOS, Solution of the laminar boundary layer energy equation at high Prandtl numbers. *Phys. Fluids* **3**, No. 4, 657 (1960).

Y. AIHARA, *Stability of Compressible Boundary Layer Along Curved Wall Under Goertler-Type Disturbances*. Tokyo University, Aeronautical Research Institute 27, No. 2, Rep. 362 (1961).

A. D. Anderson, Stagnation-point heat transfer in equilibrium dissociated air with variable Prandtl and Lewis numbers. *J. Aero. Space Sci.* **28**, No. 9, 749 (1961).

E. BECKER, Die laminare inkompressible Grenzschicht an einer durch laufende Wellen deformierten ebenen Wand. *Z. Flugw.* **8**, No. 10/11, 308 (1960).

I. E. BECKWITH, Similarity solutions for small cross flows in laminar compressible boundary layers. *NASA* TR R-107 (1961).

R. D. CESS, Heat transfer to laminar flow across a flat plate with a nonsteady surface temperature. *J. Heat Transfer* C **83**, No. 3, 274 (1961).

G. T. CHAPMAN, Transition of the laminar boundary layer on a delta wing with 74° sweep in free flight at Mach numbers from 2·8 to 5·3. *NASA* TN D-1066 (1961).

H. K. CHENG, J. G. HALL, T. C. GOLIAN and A. HERTZBERG, Boundary-layer displacement and leading edge bluntness effects in high-temperature hypersonic flow. *J. Aero. Space Sci.* **28**, No. 5, 353 (1961).

S.-I. CHENG and R. H. LEVY, *The Boundary Layer in a Corner*. Department of Aeronautical Engineering, Princeton University, Princeton, N.J., Rep. 485, AFOSR TN 59-1165 (1959).

P. M. CHUNG, Hypersonic viscous shock layer of nonequilibrium dissociating gas. *NASA* TR R-109 (1961).

M. COOPER, E. E. MAYO and J. D. JULIUS, The influence of low wall temperature on boundary-layer transition and local heat transfer on 2-in.-diameter hemispheres at a Mach number of 4·95 and a Reynolds number per foot of $73{\cdot}2 \times 10^6$. *NASA* TN D-391 (1960).

R. J. CRESCI, *Theoretical Analysis of the Downstream Influence of Stagnation Point Mass Transfer*. Department of Aerospace Engineering and Applied

Mechanics, Polytechnic Institute of Brooklyn, Brooklyn, N.Y., WADD TR 60-434, PIBAL Rep. 604 (1961).

F. E. C. CULICK, *An Integral Method for Laminar Boundary Layer Calculations: Momentum Thickness and Mass Transfer with Zero Pressure Gradient*. Massachusetts Institute of Technology, Aerophysics Laboratory, Cambridge, Mass., AFOSR 1411, Tech. Rep. 10 (1961).

F. E. C. CULICK, A note on the compressible turbulent boundary layer with surface mass transfer. *J. Aero. Space Sci.* **28**, No. 9, 745 (1961).

R. W. DETRA and H. HIDALGO, Generalized heat transfer formulas and graphs for nose cone re-entry into the atmosphere. *J. Amer. Rocket Soc.* **31**, No. 3, 318 (1961).

W. D. DEVEIKIS and R. W. WALKER, Local aerodynamic heat transfer and boundary-layer transition on roughened sphere-ellipsoid bodies at Mach number 3·0. *NASA* TN D-907 (1961).

C. R. FAULDERS, A note on laminar boundary-layer skin friction under the influence of foreign-gas injection. *J. Aero. Space Sci.* **28**, No. 2, 166 (1961).

E. M. FRADKINA and A. V. KOSUKOV, About turbulent flow of conducting fluid under the action of electrodynamic forces. *J. Tech. Phys.* **31**, No. 3, 283 (1961).

J. J. GINOUX, Separated supersonic flows. *Heat Transfer and Fluid Mechanics Institute, Proc.*, p. 179 (1960).

S. A. GOL'DENBERG, Ignition in a flow by hot bodies. *J. Amer. Rocket Soc.* **31**, No. 5, 691 (1961).

A. C. JAIN, On the nature of the boundary layer near the leading edge of a flat plate with uniform suction. *J. Industr. Inst. Sci.* **43**, No. 3, 170 (1961).

C. H. J. JOHNSON, An exact solution to a problem in heat transfer. *Aust. J. Phys.* **14**, No. 2, 317 (1961).

G. JUNGCLAUS, Two-dimensional boundary layers and jets in magneto-fluid dynamics. *Rev. Mod. Phys.* **32**, No. 4, 823 (1960).

J. KESTIN, P. F. MAEDER and H. E. WANG, Influence of turbulence on the transfer of heat from plates with and without a pressure gradient. *Int. J. Heat Mass Transfer* **3**, No. 2, 133 (1961).

J. C. Y. KOH and J. P. HARTNETT, Measured pressure distribution and local heat transfer rates for flow over concave hemispheres. *J. Amer. Rocket Soc.* **31**, No. 1, 71 (1961).

J. C. Y. KOH and J. P. HARTNETT, Skin friction and heat transfer for incompressible laminar flow over porous wedges with suction and variable wall temperature. *Int. J. Heat Mass Transfer* **2**, No. 3, 185 (1961).

S. I. KOSTERIN and YU. A. KOSHMAROV, Turbulent boundary layer on a flat plate in a stream of dissociating gas. *Int. J. Heat Mass Transfer* **1**, No. 1, 46 (1960).

T. KUBOTA, Ablation with ice model at $M = 5{\cdot}8$. *J. Amer. Rocket Soc.* **30**, No. 12, 1164 (1960).

J. L. LANKFORD (prepared by), *The Effect of Heat Transfer on the Separation of Laminar Flow over Axisymmetric Compression Surfaces (U)*. U.S. Naval Ordnance Laboratory, White Oak, Md., NAVWEPS Rep. 7402, Aerodynamics Res. Rep. 138 (1961).

B. LEFUR, Transformation des equations de la couche limite laminaire a proprietes physiques variables avec des distributions de pression et de temperature parietale quelconques. *C.R. Acad. Sci., Paris* **252**, No. 7, 988 (1961).

P. A. LIBBY and R. J. CRESCI, Experimental investigation of downstream influence of stagnation-point mass transfer. *J. Aero. Space Sci.* **28**, No. 1, 51 (1961).

M. S. LONGUET-HIGGINS, Mass transport in the boundary layer at a free oscillating surface. *J. Fluid Mech.* **8**, Pt. 2, 293 (1960).

V. V. LUNEV, Flow of a viscous heat-conducting gas at high supersonic speeds about a cone. *Appl. Math. Mech.* **23**, No. 6, 1444 (1959).

C. F. MERLET and C. B. RUMSEY, Supersonic free-flight measurement of heat transfer and transition on a 10° cone having a low temperature ratio. *NASA* TN D-951 (1961). (Supersedes *NACA* RM L56L10.)

I. I. MEZHIROV, On the turbulent boundary layer of an imperfect gas. *Appl. Math. Mech.* **24**, No. 1, 120 (1960).

H. NARUSE, *Approximate Solutions of Hypersonic Laminar Boundary Layer Equations with Heat Transfer and Arbitrary Pressure Gradient and Their Applications*. Tokyo University, Aeronautical Research Institute 27, No. 1, Rep. 361 (1961).

N. NISHIWAKI and M. HIRATA, *Heat Transfer on a Surface Covered by Cold Air Film*, 1st Report. Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 15 (1960). (In Japanese.)

N. NISHIWAKI, M. HIRATA and A. TSUCHIDA, *Heat Transfer on a Surface Covered by Cold Air Film*, 2nd Report. Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan, NLR 16 (1961). (In Japanese.)

S. OSTRACH, A. W. GOLDSTEIN and J. HAMMAN, The effect of a deceleration force on a melting boundary layer. *J. Aero. Space Sci.* **27**, No. 8, 626 (1960).

A. PALLONE, Nonsimilar solutions of the compressible-laminar boundary-layer equations with applications to the upstream-transpiration cooling problem. *J. Aero. Space Sci.* **28**, No. 6, 449 (1961).

R. L. PHILLIPS, Effect of magnetic drag on re-entry body heating. *J. Amer. Rocket Soc.* **31**, No. 5, 672 (1961).

A. K. RAY, Estimation of critical viscous sublayer in heat transfer problems. *Appl. Sci.* A **10**, Nos. 3–4, 173 (1961).

D. E. ROSNER, *The Apparent Chemical Kinetics of Surface Reactions in External Flow Systems—Diffusional Falsification of Activation Energy and Reaction Order*. AeroChem Research Laboratories, Inc., Princeton, N.J., TP-35 (1961).

D. E. ROSNER, *Diffusion and Chemical Surface Catalysis in a Low Temperature Plasmajet—The Determination of Atom Concentrations in Non-Equilibrium Supersonic Stream of Activated Nitrogen*. AeroChem Research Laboratories, Inc., Princeton, N.J., TP-30 (1961).

W. H. SCHWARZ and W. P. COSART, The two-dimensional turbulent wall-jet. *J. Fluid Mech.* **10**, Pt. 4, 481 (1961).

J. SEDDON, Nomogram analysis of heat transfer in supersonic flow. *Aircr. Engng* **33**, No. 387, 124 (1961).

A. G. SMITH and V. L. SHAH, Approximate calculation method for heat transfer in laminar boundary layers with constant surface temperature. *Int. J. Heat Mass Transfer* **3**, No. 2, 126 (1961).

C. G. SMITH, Heat-flux distribution over hemispherical-

nosed bodies in hypersonic flight. *J. Aero. Space Sci.* **28**, No. 1, 69 (1961).
D. B. SPALDING and H. L. EVANS, Mass transfer through laminar boundary layers, Part 3—Similar solutions of the *B*-equation. *Int. J. Heat Mass Transfer* **2**, No. 4, 314 (1961).
E. M. SPARROW and R. D. CESS, Temperature-dependent heat sources or sinks in a stagnation point flow. *Appl. Sci. Res.* A **10**, Nos. 3–4, 185 (1961).
D. A. SPENCE, Some applications of Crocco's integral for turbulent boundary layer. *Heat Transfer and Fluid Mechanics Institute, Proc.*, p. 62 (1960).
Y. TOMITA, Analytical treatments of non-Newtonian fluid flow by introducing the conception of boundary layer. *Bull. Japan Soc. Mech. Engrs* **4**, No. 13, 77 (1961). (In English.)
D. L. TURCOTTE, A sublayer theory for fluid injection into the compressible turbulent boundary layer. *J. Aero. Space Sci.* **27**, No. 9, 675 (1960).
B. A. URYUKOV, Heat transfer in the turbulent boundary layer of a fluid. *Zh. Prikl. Mekh. Tekh. Fiz.* **3**, 119 (1960). (In Russian.)
G. C. VLIET and G. LEPPERT, Forced convection heat transfer from an isothermal sphere to water. *J. Heat Transfer* C **83**, No. 2, 163 (1961).
R. J. WISNIEWSKI and J. R. JACK, Recent studies on the effect of cooling on boundary-layer transition at Mach 4. *J. Aero. Space Sci.* **28**, No. 3, 250 (1961).
J. C. WU, Growth of magnetohydrodynamic boundary layers. *J. Amer Rocket Soc.* **31**, No. 4, 562 (1961).
M. YASUHARA, Experiments on axisymmetric boundary layers along a long cylinder in incompressible flow. *Trans. Japan Soc. Aero. Space Sci.* **2**, No. 3, 72 (1959).
L. YEE, H. E. BAILEY and H. T. WOODWARD, Ballistic range measurements of stagnation-point heat transfer in air and in carbon dioxide at velocities up to 18 000 ft/s. *NASA* TN D-777 (1961).

## CHANGE OF PHASE

I. T. ALADIEV, Heat transfer in nucleate boiling. *Konvektivnyi i Luchistyi Teploobmen*, p. 233. Izd. stvo Akad. Nauk SSSR, Moskva (1960). (In Russian.)
R. Z. ALIMOV, Heat and mass transfer during cooling by evaporation of surfaces heated to a high temperature. *Inzh.-Fiz. Zh.* **3**, No. 5, 31 (1960). (In Russian.)
P. J. BERENSON, Film-boiling heat transfer from a horizontal surface. *J. Heat Transfer* C **83**, No. 3, 351 (1961).
R. D. CESS and E. M. SPARROW, Film boiling in a forced-convection boundary-layer flow. *J. Heat Transfer* C **83**, No. 3, 370 (1961).
R. D. CESS and E. M. SPARROW, Subcooled forced-convection film boiling on a flat plate. *J. Heat Transfer* C **83**, No. 3, 377 (1961).
J. G. COLLIER, A. W. BENNETT and P. M. LACEY, *Heat Transfer to Mixtures of High Pressure Steam and Water in an Annulus.* Chemical Engineering Division, Atomic Energy Research Establishment, Harwell, Berkshire, AERE-R 3653 (1961).
W. G. COURTNEY, Recent advances in condensation and evaporation. *J. Amer. Rocket Soc.* **31**, No. 6, 751 (1961).
K. GOLDMANN, H. FIRSTENBERG and C. LOMBARDI, Burnout in turbulent flow—A droplet diffusion model. *J. Heat Transfer* C **83**, No. 2, 158 (1961).
K. F. GORDON, T. SINGH and E. Y. WEISSMAN, Boiling heat transfer between immiscible liquids. *Int. J. Heat Mass Transfer* **3**, No. 2, 90 (1961).
P. GRASSMANN, Wärme- und Stoffaustausch zwischen zwei fluiden Phasen. *Chem.-Ing.-Tech.* **31**, No. 3, 148 (1959).
P. GRIFFITH and G. B. WALLIS, Two-phase slug flow. *J. Heat Transfer* C **83**, No. 3, 307 (1961).
S. HASEGAWA, Free convection heat transfer in a thermo-syphon—in connection with cooling of gas turbine blades. *J. Japan Soc. Mech. Engrs* **64**, No. 504, 54 (1961).
G. F. HEWITT, *Analysis of Annular Two-Phase Flow: Application of the Dukler Analysis to Vertical Upward Flow in a Tube.* Chemical Engineering Division, Atomic Energy Research Establishment, Harwell, Berkshire, AERE-R 3680 (1961).
S. T. HSU and F. W. SCHMIDT, Measured variations in local surface temperatures in pool boiling of water. *J. Heat Transfer* C **83**, No. 3, 254 (1961).
H. S. ISBIN, R. VANDERWATER, H. FAUSKE and S. SINGH, A model for correlating two-phase, steam–water, burnout heat-transfer fluxes. *J. Heat Transfer* C **83**, No. 2, 149 (1961).
W. JOST, Bemerkungen zur Kondensation in Gasstrahlen. *Z. Flugw.* **9**, No. 4/5, 104 (1961).
J. C. Y. KOH, An integral treatment of two-phase boundary layer in film condensation. *J. Heat Transfer* C **83**, No. 3, 359 (1961).
V. V. KONSETOV, Heat transfer during condensation of steam inside horizontal tubes. *Inzh.-Fiz. Zh.* **3**, No. 6, 9 (1960). (In Russian.)
S. LEVY, Steam slip—Theoretical prediction from momentum model. *J. Heat Transfer* C **82**, No. 2, 113 (1960).
J. E. MCDONALD, On the ratio of evaporation to precipitation. *Bull. Amer. Meteorol. Soc.* **42**, No. 3, 185 (1961).
H. MERTE, JR. and J. A. CLARK, Pool boiling in an accelerating system. *J. Heat Transfer* C **83**, No. 3, 233 (1961).
V. G. MOROZOV, An experimental study of critical heat loads at boiling of organic liquids on a submerged heating surface. *Int. J. Heat Mass Transfer* **2**, No. 3, 252 (1961).
B. METAIS, The influence of gas liberation on heat transfer in the heating of liquids. *Chem.-Ing.-Tech.* **33**, No. 3, 182 (1961).
K. NISHIKAWA and R. SHIMOMURA, Boiling heat transfer at the coexistence of nucleate and film regions. *Technol. Rep., Kyushu Univ.* **33**, No. 2, 76 (1960).
K. NISHIKAWA, Photographic study of saturated free convection stable film boiling. *Bull. Japan Soc. Mech. Engrs* **4**, No. 13, 115 (1961). (In English.)
K. NIU, Flow of a condensing vapour with heat exchange. *J. Phys. Soc. Japan* **15**, No. 6, 1108 (1960).
M. B. NOEL, *Experimental Investigation of Heat-Transfer Characteristics of Hydrazine and a Mixture of* 90 *Per cent Hydrazine and* 10 *Per cent Ethylenediamine.* Jet

Propulsion Laboratory, California Institute of Technology Pasadena, Calif., JPL Tech. Rep. 32-109 (1961).
W. S. NORMAN and V. MCINTYRE, Heat transfer to liquid film on vertical surface. *Trans. Instn Chem. Engrs* **38**, No. 6, 301 (1960).
V. S. NOVOSELOV, Fall of a spherical drop in the presence of evaporation or condensation of vapors at its surface. *J. Amer. Rocket Soc.* **31**, No. 5, 686 (1961).
P. SACHS and R. A. K. LONG, A correlation for heat transfer in stratified two-phase flow with vaporization. *Int. J. Heat Mass Transfer* **2**, No. 3, 222 (1961).
W. G. SPANGENBERG and W. R. ROWLAND, Convection circulation in water induced by evaporation cooling. *Phys. Fluids* **4**, No. 6, 743 (1961).
W. G. STELTZ, The critical and two-phase flow of steam. *J. Engng Power* A **83**, No. 2, 145 (1961).
C. M. USISKIN and R. SIEGEL, An experimental study of boiling in reduced and zero gravity fields, *J. Heat Transfer* C **83**, No. 3, 243 (1961).
J. J. VAN DEEMTER and E. T. VAN DER LAAN, Momentum and energy balances for dispersed two-phase flow. *Appl. Sci. Res.* A **10**, No. 2, 102 (1961).
R. VISKANTA, Critical heat flux for water in swirling flow. *Nucl. Sci. Engng* **10**, No. 2, 202 (1961).
G. B. WALLIS and J. H. HEASLEY, Oscillations in two-phase flow systems. *J. Heat Transfer* C **83**, No. 3, 363 (1961).
J. W. WESTWATER, Nucleate pool boiling (part 2). *Petrol Chem. Engr* **33**, No. 10, 53 (1961).
N. ZUBER, *Nucleate Boiling, Part I: The Similarity with Natural Convection.* General Engineering Laboratory, General Electric, Schenectady, N.Y., Rep. 61GL166 (1961).
S. A. ZWICK, Growth of vapor bubbles in a rapidly heated liquid. *Phys. Fluids* **3**, No. 5, 685 (1960).

## CHANNEL FLOW

R. A. ALPHER, Heat transfer in magnetohydrodynamic flow between parallel plates. *Int. J. Heat Mass Transfer* **3**, No. 2, 108 (1961).
W. S. BAILEY, E. N. NILSON, R. A. SERRA, *et al.*, Gas particle flow in an axisymmetric nozzle. *J. Amer. Rocket Soc.* **31**, No. 6, 793 (1961).
H. BARROW, A semi-theoretical solution of asymmetric heat-transfer in annular flow. *J. Mech. Engng Sci.* **2**, No. 4, 331 (1960).
J. A. R. BENNETT, J. G. COLLIER, H. R. C. PRATT and J. D. THORNTON, Heat transfer to two-phase gas–liquid systems, Part I: Steam–water mixtures in the liquid-dispersed region in an annulus. *Trans. Instn Chem. Engrs* **39**, No. 2, 113 (1961).
D. F. BREWER and D. O. EDWARDS, Heat conduction by liquid helium II in capillary tubes, I: Transition to supercritical conduction. *Phil. Mag.* **6**, No. 66, 8th Series, 775 (1961).
G. FRANKE, Wärmeübergang und Geschwindigkeitsverlauf bei pulsierender Rohrströmung. *Allg. Wärmetech.* **10**, No. 3, 49 (1961).
S. C. GUPTA, A variational principle for convection of heat in anisotropic media. *Appl. Sci. Res.* A **10**, No. 3–4, 229 (1961).
R. I. HODGE, Frictional pressure drop in noncircular ducts. *J. Heat Transfer* C **83**, No. 3, 384 (1961).
Y.-Y. HSU and J. M. SMITH, The effect of density variation on heat transfer in the critical region. *J. Heat Transfer* C **83**, No. 2, 176 (1961).
G. A. KEMENY and J. A. CYPHERS, Heat transfer and pressure drop in an annular gap with surface spoilers. *J. Heat Transfer* C **83**, No. 2, 189 (1961).
J. L. KERREBROCK and R. V. MEGHREBLIAN, Vortex containment for the gaseous-fission rocket. *J. Aero. Space Sci.* **28**, No. 9, 710 (1961).
W. F. KRIEVE and D. M. MASON, Heat transfer in reacting systems: Heat transfer to nitrogen dioxide gas under turbulent flow conditions. *J. Amer. Inst. Chem. Engrs* **7**, No. 2, 277 (1961).
A. E. MARENOV, Investigation of heat exchange in supersonic flow of air in tubes. *J. Amer. Rocket Soc.* **30**, No. 11, 1055 (1960).
E. MOLLO-CHRISTENSEN, *Energy Exchange and Stability Considerations in the Circulatory System.* Massachusetts Institute of Technology, Fluid Dynamics Research Laboratory, Rep. 61-7 (1961).
A. I. MORGAN, JR. and R. A. CARLSON, Wall temperature and heat flux measurement in a round tube. *J. Heat Transfer* C **83**, No. 2, 105 (1961).
K. MURAKAWA, Heat transfer on vertical double pipes in velocity entry length. *Bull. Japan Soc. Mech. Engrs* **4**, No. 14, 347 (1961).
K. MURAKAWA, Heat transfer in entry length of double pipes, *Int. J. Heat Mass Transfer* **2**, No. 3, 240 (1961).
S. D. NIGAM and H. C. AGRAWAL, A variational principle for convection of heat, Parts 1 and 2. *J. Math. Mech.* **9**, No. 6, 869 (1960).
M. PERLMUTTER and R. SIEGEL, Two-dimensional unsteady incompressible laminar duct flow with a step change in wall temperature. *Int. J. Heat Mass Transfer* **3**, No. 2, 94 (1961).
B. S. PETUKHOV, L. G. GENIN and V. L. MALTER, Forced convection heat transfer in pipes with internal heat generation within the fluid flow. *Inzh.-Fiz. Zh.* **3**, No. 9, 3 (1960). (In Russian.)
A. J. REYNOLDS, Energy flows in a vortex tube. *Z. Angew. Math. Phys.* **12**, No. 4, 343 (1961).
J. D. SEADER and H. WOLF, Theoretical analysis of heat transfer to gases in smooth, round tubes under conditions of turbulent flow and high flux. *J. Amer. Rocket Soc.* **31**, No. 5, 650 (1961).
J. P. SELLERS, JR., Effect of two-dimensional heat transfer on wall temperatures in a tubular thrust chamber. *J. Amer. Rocket Soc.* **31**, No. 3, 445 (1961).
K. STEPHAN, Beitrag zur Berechnung des Wärmeüberganges und Druckabfalles laminarer Einlaufstromungen. *Ing.-Arch.* **29**, No. 3, 176 (1960).
K. STEPHAN, Wärmeübertragung laminar strömender Stoffe in einseitig beheizten oder gekühlten ebenen Kanälen. *Chem.-Ing.-Tech.* **32**, 401 (1960).
S. L. SULLIVAN, JR. and C. D. HOLLAND, An analytical solution for a double pipe heat exchanger. *Industr. Engng Chem.* **53**, No. 9, 699 (1961).

C. TIEN, The extension of Couette flow solution to non-Newtonian fluid. *Canad. J. Chem. Engng* **39**, No. 1, 45 (1961).

C. L. TIEN, Heat transfer by turbulently flowing fluid–solids mixture in a pipe. *J. Heat Transfer* C **83**, No. 2, 183 (1961).

G. V. TSIKLAURI and V. V. USANOV, Heat transfer at high speeds in a pipe. *Inzh.-Fiz. Zh.* **3**, No. 11, 48 (1960). (In Russian.)

E. H. WISSLER and R. S. SCHECHTER, A further note on a diffusion problem with chemical reaction. *Appl. Sci. Res.* A **10**, No. 3–4, 198 (1961).

J. R. WRIGHT and E. J. BROWN, Calculated temperature rise in round ducts. *ASHRAE J.* **3**, No. 7, 59 (1961).

## CONDUCTION

V. S. ARPACI, Transient conduction in coaxial cylinders with relative motion and heat generation. *J. Appl. Mech.* E **82**, No. 4, 623 (1960).

M. ASCHER, Explicit solutions of the one-dimensional heat equation for a composite wall. *Math. Comput.* **14**, No. 72, 346 (1960).

M. J. BALZERZAK and S. RAYNOR, Steady state temperature distribution and heat flow in prismatic bars with isothermal boundary conditions. *Int. J. Heat Mass Transfer* **3**, No. 2, 113 (1961).

W. J. BEEK and C. A. P. BAKKER, Mass transfer with a moving interface. *Appl. Sci. Res.*, A **10**, No. 3–4, 241 (1961).

G. P. BOIKOV and Y. A. KOROLENKO, The temperature field in bodies of elliptical section with internal heat generation. *Inzh.-Fiz. Zh.* **3**, No. 12, 78 (1960). (In Russian.)

H. BUCHHOLZ, Die Erwärmung in metallischen Kreislochscheiben bei radialem Heizstrom und temperaturabhängigem Leiterwiderstand. *Z. Angew. Math. Mech.* **41**, No. 6, 229 (1961).

S. P. CLARK, JR., Heat flow from a differentiated earth. *J. Geophys. Res.* **66**, No. 4, 1231 (1961).

A. H. EL-WAZIRI, The transient temperature distribution within slabs heated in continuous furnaces. *Iron Steel Engr* **38**, No. 3, 130 (1961).

E. EMBLIK, Freezing and thawing processes in refrigeration accumulators. *Sulzer Tech. Rev.* **41**, No. 3, 13 (1959).

N. H. FREED and C. J. RALLIS, Truncation error estimates for numerical and analog solutions of the heat conduction equation. *J. Heat Transfer* C **83**, No. 3, 382 (1961).

R. I. GAVRILOVA and A. P. PRUDNIKOV, A problem in the theory of heat conductivity. *Inzh.-Fiz. Zh.* **3**, No. 5, 136 (1960). (In Russian.)

G. R. GUINN, Aerodynamic heating of plane bodies of low thermal diffusivity. *J. Amer. Rocket Soc.* **31**, No. 1, 158 (1961).

R. C. HALL, Graphical–numerical determination of variable diffusion coefficient in solids. *Canad. J. Chem. Engng* **38**, No. 5, 154 (1960).

J. F. HEYDA, Green's function for Laplace's equation in a circular ring with radiation type boundary conditions. *Z. Angew. Math. Phys.* **12**, No. 4, 322 (1961).

T. J. LARDNER and F. V. POHLE, *A Note on the Application of the Heat Balance Integral to Problems of Non-Planar Geometry*. Polytechnic Institute of Brooklyn, Department of Aerospace Engng and Applied Mechanics, PIBAL Rep. 585, AFOSR 57 (1961).

T. J. LARDNER and F. V. POHLE, Application of the heat balance integral to problems of cylindrical geometry. *J. Appl. Mech.* E **82**, No. 2, 310 (1961).

A. N. LOWAN, On the numerical treatment of heat conduction problems with mixed boundary conditions. *Math. Comput.* **14**, No. 61, 266 (1960).

K. R. MERCK, Temperature distributions of reactor fuel element end caps. *Nucl. Sci. Engng* **10**, No. 3, 223 (1961).

W. L. MIRANKER, A well-posed problem for the backward heat equation. *Proc. Amer. Math. Soc.* **12**, No. 2, 243 (1961).

B. R. MORTON, Weak thermal rings. *J. Fluid Mech.* **9**, Pt. 1, 107 (1960).

T. F. REGENIE and J. C. ROWLEY, *Approximate Calculation of the Temperature Distribution Surrounding Coolant Holes in a Heat Generating Solid with Finite Value of Fluid Heat Transfer Coefficient*. Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico, LAMS-2436 (1960).

K. SANOKAWA, Thermal contact resistance. *J. Japan Soc. Mech. Engrs* **64**, No. 505, 240 (1961).

V. VODICKA, Two-dimensional steady temperature fields in a stratiform half-space. *Z. Angew. Math. Phys.* **12**, No. 2, 164 (1961).

J. E. WILKINS, JR., Minimum mass thin fins with specified minimum thickness. *J. Soc. Industr. Appl. Math.* **9**, No. 2, 194 (1961).

T. WOLFF, The Dirac delta function in heat conduction theory. *Z. Angew. Math. Mech.* **40**, No. 9, 421 (1960). (In German.)

## FLOW WITH SEPARATED REGIONS

A. F. CHARWAT, C. F. DEWEY, JR., J. N. ROOS and J. A. HITZ, An investigation of separated flows—Part II: Flow in the cavity and heat transfer. *J. Aero. Space Sci.* **28**, No. 7, 513 (1961).

J. F. FRANTZ, Fluid-two-particle heat transfer in fluidized beds. *Chem. Engng Progr.* **57**, No. 7, 35 (1961).

D. KUNII and J. M. SMITH, Heat transfer characteristics of porous rocks: Part 2, Thermal conductivities of unconsolidated particles with flowing fluids. *J. Amer. Inst. Chem. Engrs* **7**, No. 1, 29 (1961).

K. SREENIVASAN and A. RAMACHANDRAN, Effect of vibration on heat transfer from a horizontal cylinder to a normal air stream. *Int. J. Heat Mass Transfer* **3**, No. 1, 60 (1961).

G. C. VLIET and G. LEPPERT, Forced convection heat transfer from an isothermal sphere to water. *J. Heat Transfer* C **83**, No. 2, 163 (1961).

C. B. VON DER DECKEN, H. J. HANTKE, J. BINCKEBANCK and K. P. BACHUS, Bestimmung des Wärmeübergangs von Kugelschüttungen an durchströmendes Gas mit Hilfe der Stoffübergangs-Analogie. *Chem.-Ing.-Tech.* **32**, No. 9, 591 (1960).

## LOW-DENSITY HEAT TRANSFER

J. ENOCH, *A Kinetic Model for Hypersonic Rarefied Gas Flow*. Missile and Space Vehicle Department, Space Sciences Laboratory, General Electric, Technical Information Series R61SD063 (1961).

L. M. GILBERT and S. M. SCALA, *Free Molecular Heat Transfer in the Ionosphere*. Space Sciences Laboratory, General Electric, Technical Information Series R61SD076 (1961).

G. N. PATTERSON and A. K. SREEKANTH, Interpretation of probe pressures and some associated problems at very low densities. *Canad. Aero. J.* **7**, No. 1, 13 (1961).

P. P. WEGENER and H. ASHKENAS, Wind tunnel measurements of sphere drag at supersonic speeds and low Reynolds numbers. *J. Fluid Mech.* **10**, Pt. 4, 550 (1961).

## LIQUID METALS

N. Z. AZER and B. T. CHAO, Turbulent heat transfer in liquid metals—Fully developed pipe flow with constant wall temperature. *Int. J. Heat Mass Transfer* **3**, No. 2, 77 (1961).

D. K. EDWARDS and D. M. TELLEP, Heat transfer in low Prandtl number flows with variable thermal properties. *J. Amer. Rocket Soc.* **31**, No. 5, 652 (1961).

F. G. HAMMITT and E. M. BROWER, Natural convection flow in liquid-metal mobile-fuel nuclear reactors. *J. Engng Power A* **83**, No. 2, 170 (1961).

B. S. PETUKHOV and A. J. LUSHIN, Heat exchange in the laminar and transition regions of a liquid metal flow. *Prot. Akad. Nauk, SSSR, Tekh. Fiz.* **136**, No. 6, 1321 (1961).

R. SIERBIN, Heat-transfer by means of mercury and alcali metals. *Przemysl Chemiczny* **40**, No. 3, 138 (1961).

V. I. SUBBOTIN, M. KH. IBRAGIMOV, M. IVANOVSKII, M. N. ARNOL'DOV and E. V. NOMOFILOV, Heat transfer in a turbulent flow of liquid metal. *Atomn. Energiya SSSR.* **10**, No. 4, 384 (1961).

## MAGNETOHYDRODYNAMICS

E. I. ANDRIANKIN and YU. S. SAJASOV, The influence of the outer magnetic field on the plasma boundary layer. *J. Tech. Phys.* **31**, No. 7, 775 (1961).

R. CARRIGAN, E. RAISEN and K. SCHMUDE, *Experimental Studies to Determine the Chemical Species Prevalent in the Plasma of an Air Arc and the Boundary Layers Adjacent to Ablating Materials*. Wright Air Development Division, Wright-Patterson Air Force Base, Ohio, WADD TR 60-359 (1960).

C. C. CHANG and T. S. LUNDGREN, Duct flow in magnetohydrodynamics. *Z. Angew. Math. Phys.* **12**, No. 2, 100 (1961).

M. B. GLAUERT, Study of magnetohydrodynamic boundary layer on flat plate. *J. Fluid Mech.* **10**, Pt. 2, 276 (1961).

J. L. KERREBROCK, *Non-Equilibrium Effects on Conductivity and Electrode Heat Transfer in Ionized Gases*. Guggenheim Jet Propulsion Center, California Institute of Technology, Pasadena, Calif., Tech. Note 4, AFOSR 165 (1960).

P. S. LYKOUDIS, The Newtonian approximation in magnetic hypersonic stagnation-point flow. *J. Aero. Space Sci.* **28**, No. 7, 541 (1961).

R. L. PHILLIPS, Effect of magnetic drag on re-entry body heating. *J. Amer. Rocket Soc.* **31**, No. 4, 672 (1961).

G. W. PNEUMAN and P. S. LYKOUDIS, *Slip Flow Over a Magnetized Sphere Moving Slowly in a Conducting Medium*. School of Aeronautical and Engineering Sciences, Purdue University, Lafayette, Ind., Purdue Research Foundation Research Project No. 2649, Project Ae-51, Rep. A-61-1 (1961).

N. I. POL'SKII and I. T. SHVETS, Self-similar solutions of the laminar boundary layer equations in magnetic hydrodynamics. *Soviet Fiz. Dokl.* **6**, No. 2, 121 (1961).

R. F. PROBSTEIN, Recent Soviet advances in inviscid hypersonic aerodynamics. *Aero. Space Engng* **20**, No. 7, 10 (1961).

A. SHERMAN and G. W. SUTTON, *The Combined Effect of Tensor Conductivity and Viscosity on an MHD Generator with Segmented Electrodes*. Space Sciences Laboratory, Missile and Space Vehicle Department, General Electric, Technical Information Series R61SD100, AFOSR Document No. 687 (1961).

R. J. SUNDERLAND, *Mechanisms in Ion Production*. Air Force Office of Scientific Research, Air Research and Development Command, U.S.A.F. Washington, D.C., AFOSR-1146, AEROJET Rep. 2037 (1961).

H. WAHLQUIST, *Interaction of a Quantum Plasma with Electromagnetic Fields*. Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., Tech. Rep. 32-81 (1961).

C.-S. WU, Hypersonic viscous flow near the stagnation point in the presence of magnetic field. *J. Aero. Space Sci.* **27**, No. 12, 882 (1960).

H. YOSHIHARA, Motion of thin bodies in highly rarefied plasma. *Phys. Fluids* **4**, No. 1, 100 (1961).

## MEASUREMENT TECHNIQUES

C. B. AVERA, JR., Simple flow regulator for extremely low gas flows. *Rev. Sci. Instrum.* **32**, No. 8, 985 (1961).

A. V. BILEVICH, L. F. VERESHCHAGIN and YA. A. KALASHNIKOV, Piezometer for the determination of the density of gases at high pressures and temperatures. *Pribory Tekh. Eksp.* **6**, No. 3, 146 (1961).

E. A. BROWN, R. J. CHARLSON and D. L. JOHNSON, Steady-state heat flux gauge. *Rev. Sci. Instrum.* **32**, No. 8, 984 (1961).

F. L. CLARK and C. B. JOHNSON, Determination of real-gas stagnation temperature based on mass-flow consideration. *J. Aero. Space Sci.* **28**, No. 9, 742 (1961).

A. S. DARLING, Thermoelectric properties of rhodium–platinum alloys. *Instrum. Control Systems* **34**, No. 5, 861 (1961).

K. DITTERICH, Probleme bei der Temperaturmessung mit Thermoelementen. *Z. Ver. Dtsch. Ing.* **103**, No. 20, 875 (1961).

R. EICHHORN, Flow visualization and velocity measurement in natural convection with the tellurium dye method. *J. Heat Transfer* C **83**, No. 3, 379 (1961).

A. HAAS, Principles of nonradiometric methods of surface-temperature measurement. *Meres es Automat.* **8**, No. 11, 331 (1960). (In Hungarian.)
J. C. HARPER, Coaxial cylinder viscometer for non-Newtonian fluids. *Rev. Sci. Instrum.* **32**, No. 4, 425 (1961).
W. F. HUGHES and E. W. GAYLORD, On the theoretical analysis of a dynamic thermocouple: Part 2, The continuous area interface. *J. Appl. Mech.* E **82**, No. 2, 259 (1960).
M. S. KAYANDYER, A differential device for the comparison of radiation pyrometers. *Measurement Techniques* No. 2, 23 (Feb. 1961).
E. R. KEBBON, Bimetal thermometers. *Instrum. Control Systems* **34**, No. 5, 841 (1961).
J. H. LAUB, The boundary layer mass flowmeter. *Instrum. Control Systems* **34**, No. 4, 642 (1961).
V. E. MINASHIN, V. I. SUBBOTIN, P. A. USHAKOV and A. A. SHOLOKHOV, On errors in temperature measurement which are caused by the distortion of isotherms near the thermocouple groove. *Konvektivnyi i Luchistyi Teploobmen*, p. 205. Izd. stvo Akad. Nauk SSSR, Moskva (1960). (In Russian.)
P. M. REYNOLDS, Emissivity errors of infra-red pyrometers in relation to spectral response. *Brit. J. Appl. Phys.* **12**, No. 8, 401 (1961).
O. ROMAINE, How to calibrate thermocouples to high accuracies. *Space Aeronautics* **35**, No. 5, 89 (1961).
L. SCADRON, Ceramic-insulated thermocouples. *Instrum. Control Systems* **34**, No. 5, 856 (1961).
P. SCHOFFER and V. E. SUOMI, A direct-current integrator for radiation measurements. *Solar Energy* **5**, No. 1, 29 (1961).
J. SCHRODER, A simple method of determining the thermal conductivity of solids. *Philips Tech. Rev.* **21**, No. 12, 357 (1959/1960).
J. C. SCHULZ, *Application of a Hydrocarbon Tracer Technique to Gas Phase Mass Transfer Investigations.* Department of Mechanical Engineering, Stanford University, Stanford, Calif., Tech. Rep. 50 (1961).
T. N. SESHADRI and S. P. JAIN, A constant ice-point junction for thermocouples in continuous use for long periods. *J. Sci. Industr. Res.* **20**, No. 4, 161 (1961).
L. H. SINAULT and T. F. MCGRATH, Reactor core temperature measurement. *J. Amer. Rocket Soc.* **31**, No. 6, 799 (1961).
E. C. SMITH, Swaged MgO thermocouples. *Instrum. Control Systems* **34**, No. 5, 858 (1961).
D. W. STOPS, A simple and cheap thermal conductivity apparatus. *J. Sci. Instrum.* **38**, No. 5, 221 (1961).
J. F. SWINDELLS, Liquid-in-glass thermometers. *Instrum. Control Systems* **34**, No. 5, 846 (1961).
M. TAGA, A method of measuring thermal conductivity by revolving ring. *Bull. Japan Soc. Mech. Engrs* **3**, No. 11, 346 (1960).
E. L. WOISARD, Pulse method for the measurement of thermal diffusivity of metals. *J. Appl. Phys.* **32**, No. 1, 40 (1961).
B. YATES and C. H. PANTER, Indium resistance thermometers. *J. Sci. Instrum.* **38**, No. 5, 196 (1961).
K. R. CRAMER, Magnetohydrodynamic free-convection pipe flow. *J. Aero. Space Sci.* **28**, No. 9, 736 (1961).
H. W. EMMONS, *Some Observations on Pool Burning.* National Academy of Sciences National Research Council, Washington, D.C., Publication 786, AFOSR TN 59-1084 (1961).
R. M. FAND and J. KAYE, The influence of sound on free convection from a horizontal cylinder. *J. Heat Transfer* C **83**, No. 2, 133 (1961).
F. H. GARNER and J. M. HOFFMAN, Mass transfer from single solid spheres by free convection. *J. Amer. Inst. Chem. Engrs* **7**, No. 1, 148 (1961).
S. C. GUPTA, A variational principle for convection of heat in anisotropic media. *Appl. Sci. Res.* A **10**, No. 3–4, 229 (1961).
H. L. KUO, Solution of the non-linear equations of cellular convection and heat transport. *J. Fluid Mech.* **10**, Pt. 4, 611 (1961).
R. LEMICH and M. R. LEVY, The effect of vibration on natural convective mass transfer. *J. Amer. Inst. Chem. Engrs* **7**, No. 2, 240 (1961).
O. J. MENDLER, A. S. RATHBUN, N. E. VAN HUFF and A. WEISS, Natural-convection tests with water at 800 to 2000 lbf/in$^2$ under nonboiling, local boiling, and bulk boiling conditions. *J. Heat Transfer* C **83**, No. 3, 261 (1961).
B. METAIS, Wärmeubergang bei strömenden Flüssigkeiten im waagerechten Rohr mit Eigenkonvektion. *Chem.-Ing.-Tech.* **32**, No. 8, 535 (1960).
G. POOTS, Laminar natural convection in magnetohydrodynamics. *Int. J. Heat Mass Transfer* **3**, No. 1, 1 (1961).
G. F. SHAIDUROV, Convective heat transfer in horizontal cylinder. *Int. J. Heat Mass Transfer* **2**, No. 4, 280 (1961).
D. B. SPALDING and R. G. CRUDDACE, Theory of the steady laminar buoyant flow above a line heat source in a fluid of large Prandtl number and temperature-dependent viscosity. *Int. J. Heat Mass Transfer* **3**, No. 1, 55 (1961).
E. M. SPARROW and R. D. CESS, Free convection with blowing or suction. *J. Heat Transfer* C **83**, No. 3, 387 (1961).
S. P. TALWAR, Stability of a conducting rotating fluid of variable density. *J. Fluid Mech.* **9**, Pt. 4, 581 (1960).
R. A. WOODING, Instability of a viscous liquid of variable density in a Hele-Shaw cell. *J. Fluid Mech.* **7**, No. 4, 501 (1960).
C.-S. YIH, Thermal instability of viscous fluids. *Quart. Appl. Math.* **17**, No. 1, 25 (1959).
C.-S. YIH, Dual role of viscosity in the instability of revolving fluids of variable density. *Phys. Fluids* **4**, No. 7, 806 (1961).

## PROPERTIES

W. L. BADE, E. A. MASON and K. S. YUN, Transport properties of dissociated air. *J. Amer. Rocket Soc.* **31**, No. 8, 1151 (1961).
K.-H. BODE, Eine neue Methode zur Messung der Wärmeleitfähigkeit von Metallen bei hohen Temperaturen. *Allg. Wärmetech.* **10**, No. 6, 110 (1961).

K.-H. BODE, Eine neue Methode zur Messung der Wärmeleitfähigkeit von Metallen bei hohen Temperaturen. *Allg. Wärmetech.* **10**, No. 7, 125 (1961).

K. R. BUCK and H. N. M. STEWART, Latent heats of vaporization at low temperatures. *Chem. & Industr., Lond.* No. 18, 586 (May 1961).

E. J. COUCH and K. A. KOBE, Volumetric behaviour of nitrous oxide; pressure-volume isotherms at high pressures. *J. Chem. Engng Data* **6**, No. 2, 229 (1961).

E. R. DAVIDSON, Comparison of theoretical calculations on diatomic molecules with experiment. *J. Chem. Phys.* **34**, No. 4, 1240 (1961).

S. F. EDWARDS and J. J. SANDERSON, A new approach to transport problems in fully ionized plasma. *Phil. Mag.* **6**, No. 61, 71 (1961).

H. GEIER and K. SCHÄFER, Wärmeleitfähigkeit von reinen Gasen und Gasgemischen zwischen 0° und 1200°C. *Allg. Wärmetech.* **10**, No. 4, 70 (1961).

C. D. GOPALARATHNAM and G. S. LADDHA, Effective thermal conductivity in packed beds. *J. Amer. Inst. Chem. Engrs* **7**, No. 2, 249 (1961).

R. L. GORRING and S. W. CHURCHILL, Thermal conductivity of heterogeneous materials. *Chem. Engng Progr.* **57**, No. 7, 53 (1961).

P. GRAY and P. G. WRIGHT, The thermal conductivity of mixtures of nitrogen, ammonia and hydrogen (with Appendix by T. G. COWLING). *Proc. Roy. Soc.* A **263**, No. 1313, 161 (1961).

H. S. GREEN, Theories of transport in fluids. *J. Math. Phys.* **2**, No. 3, 344 (1961).

W. S. GROENIER and G. THODOS, Viscosity and thermal conductivity of ammonia in the gaseous and liquid states. *J. Chem. Engng Data* **6**, No. 2, 240 (1961).

J. O. HIRSCHFELDER, M. H. TAYLOR, T. KIHARA and R. RUTHERFORD, Viscosity of two-component gaseous mixtures. *Phys. Fluids* **4**, No. 6, 663 (1961).

L. J. HIRTH and K. A. KOBE, Gas compressibility factors at low pressures. *J. Chem. Engng Data* **6**, No. 2, 229 (1961).

R. L. HUMPHREY and C. A. NEEL, *Tables of Thermodynamic Properties of Air from 90° to 1500°K.* Arnold Engineering Development Center, Air Force Systems Command, U.S.A.F., AEDC-TN-61-103 (1961).

K. M. JOSHI and S. C. SAXENA, Viscosity of polar gases. *Physica, s' Grav.* **27**, No. 3, 329 (1961).

T. L. KANG, L. J. HIRTH, K. A. KOBE and J. J. MCKETTA, Pressure-volume-temperature properties of sulfur dioxide. *J. Chem. Engng Data* **6**, No. 2, 217 (1961).

T. L. KANG and J. J. MCKETTA, Application of Benedict–Webb–Rubin equation of state to sulfur dioxide. *J. Chem. Engng Data* **6**, No. 2, 227 (1961).

D. D. KONOWALOW and J. O. HIRSCHFELDER, Intermolecular potential functions for nonpolar molecules. *Phys. Fluids* **4**, No. 5, 629 (1961).

L. P. KRUDIN, State equation for partially ionized hydrogen. *J. Exper. Theor. Phys.* **40**, No. 4, 1134 (1961).

L. S. LEVITT, Extreme Pressures; II. Volume–temperature relationship for gases. *J. Chem. Phys.* **34**, No. 4, 1440 (1961).

O. LUTZ, Ein Thermo-Gasdynamisches Diagramm für Luftplasma. *Z. Flugw.* **9**, No. 4/5, 113 (1961).

J. E. MAYER, Approach to thermodynamic equilibrium. *J. Chem. Phys.* **34**, No. 4, 1207 (1961).

J. R. MOSZYNSKI, The viscosity of steam and water at moderate pressures and temperatures. *J. Heat Transfer* C **83**, No. 2, 111 (1961).

R. H. NORRIS and N. D. FITZROY, A quick thermal conductivity test on insulating materials. *Mater. Res. Stand.* **1**, No. 9, 727 (1961).

J. L. NOVOTNY and T. F. IRVINE, JR., Thermal conductivity and Prandtl number of carbon dioxide and carbon-dioxide air mixtures at one atmosphere. *J. Heat Transfer* C **83**, No. 2, 125 (1961).

F. Q. ORRALL and J. B. ZIRKER, The coefficient of thermal conductivity in the Sun's atmosphere. *Astrophys. J.* **134**, No. 1, 63 (1961).

C. ST. PIERRE and C. TIEN, A generalized method for the estimation of heat of vaporization. *Canad. J. Chem. Engng* **39**, No. 4, 170 (1961).

S. C. SAXENA and S. M. DAVE, Thermal diffusion of binary gas mixtures. *Rev. Mod. Phys.* **33**, No. 2, 148 (1961).

W. J. SCHEFFY and E. F. JOHNSON, Thermal conductivities of liquids at high temperatures. *J. Chem. Engng Data* **6**, No. 2, 245 (1961).

K. SINGH, Equation of state. *J. Sci. Industr. Res.* **20**, No. 4, 197 (1961).

P. E. SUETIN and B. A. IVAKIN, Interdiffusion coefficients of some gases measured by means of optical method. *J. Tech. Phys.* **31**, No. 4, 499 (1961).

A. SUGAWARA, On thermal conductivity of porous materials. *J. Appl. Phys., Japan* **30**, No. 1, 17 (1961). (In English.)

G. T.-N. TSAO, Thermal conductivity of two-phase materials. *Industr. Engng Chem.* **53**, No. 5, 395 (1961).

J. R. VIEGAS and T. C. PENG, Electrical conductivity of ionized air in thermodynamic equilibrium. *J. Amer. Rocket Soc.* **31**, No. 5, 654 (1961).

A. V. VORONEL, The heat capacity of Xe near the critical point and the value of $\partial^3 p/\partial V^3$. *J. Phys. Chem.* **35**, No. 4, 958 (1961).

S. WEISSMAN, S. C. SAXENA and E. A. MASON, Intermolecular forces from diffusion and thermal diffusion measurements. *Phys. Fluids* **3**, No. 4, 510 (1960).

N. V. ZARARITSKII, The thermal conductivity of high purity thallium and tin. *Soviet Fiz. JETP* **12**, No. 6, 1093 (1961).

H. ZIEBLAND, The thermal conductivity of toluene. New determinations and an appraisal of recent experimental work. *Int. J. Heat Mass Transfer* **2**, No. 4, 273 (1961).

## RADIATION

R. A. ALLEN, J. C. CAMM and J. C. KECK, *Radiation from Hot Nitrogen.* AVCO-Everett Research Laboratory, Everett, Mass., Res. Rep. 102, AFBSD TR 61-2 (1961).

E. M. ANDRIANKIN, Heat wave, radiating energy from front. *Soviet Fiz.-Tekh. Fiz.* **4**, No. 11, 1258 (1960).

G. A. ASKARJAN, The radiation from the ionized region

of the spark discharge. *J. Tech. Phys.* **31**, No. 7, 781 (1961).

B. BERNARD, The ten most-asked questions on infrared. *Instrum. Control Systems* **34**, No. 5, 854 (1961).

J. T. BEVANS, Radiant heat-transfer analysis of a furnace or other combustion enclosure. *J. Heat Transfer* C **83**, No. 2, 226 (1961).

K. J. BIGNELL, Heat balance measurements from an Earth satellite—An analysis of possibilities. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 372, 231 (1961).

M. H. COBBLE, Theoretical concentrations for solar furnaces. *Solar Energy* **5**, No. 2, 61 (1961).

F. G. CUNNINGHAM, Power input to a small flat plate from a diffusely radiating sphere, with application to earth satellites. *NASA* TN D-710 (1961).

E. R. G. ECKERT and E. M. SPARROW, Radiative heat exchange between surfaces with specular reflection. *Int. J. Heat Mass Transfer* **3**, No. 1, 42 (1961).

R. EULNER, J. MERTENS and R. L. POTTER, Thermal radiation from fluorine–ammonia flames. *Fuel* **40**, No. 2, 1 (1961).

J. W. GATES, Microscopic studies of reflecting surfaces. *Nature, Lond.* **190**, No. 4771, 117 (1961).

J. GIBBS and G. W. GORDON-SMITH, The colour-temperature of an incandescent helical filament. *Brit. J. Appl. Phys.* **12**, No. 5, 257 (1961).

G. HAAS and J. E. WAYLONIS, Optical constants and reflectance and transmittance of evaporated aluminum in the visible and ultra-violet. *J. Opt. Soc. Amer.* **51**, No. 7, 719 (1961).

N. K. HIESTER and R. E. DE LA RUE, The image furnace as a research tool. *J. Amer. Rocket Soc.* **30**, No. 10, 928 (1960).

H. G. HORAK and S. CHANDRASEKHAR, Diffuse reflection by a semi-infinite atmosphere. *Astrophys. J.* **134**, No. 1, 45 (1961).

L. P. KADANOFF, Radiative transport within an ablating body. *J. Heat Transfer* C **83**, No. 2, 215 (1961).

T. A. MCCARTY, *Radiant Interchange Configuration Factors for Parallel, Staggered Plates, Infinite in One Dimension, Connected by Conducting and Infinitely Thin Reradiating Strips and Separated by a Non-Absorbing Medium.* Applied Physics Laboratory, The Johns Hopkins University, Silver Spring, Md., Bumblebee Series, Rep. 296 (1960).

J. L. MONTEITH, The long-wave radiation balance of the British Isles. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 372, 171 (1961).

J. L. MONTEITH and G. SZEICZ, The radiation balance of bare soil and vegetation. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 372, 159 (1961).

G. L. POLYAK, Radiant heat transfer from bodies with arbitrary directional reflection from the surfaces. *Inzh.-Fiz. Zh.* **3**, No. 5, 31 (1960). (In Russian.)

S. M. POPOV and S. A. RYAZANOV, The significance of effective radiation in the heat balance of an ocean. *Byull. Akad. Nauk SSSR, Geofiz.* Series, No. 2, p. 281 (1961).

D. RAGUSA, Radiated power from a 2-in. sphere of high temperature air at pressures to 50 atm. *J. Amer. Rocket Soc.* **31**, No. 3, 445 (1961).

P. M. REYNOLDS, Emissivity errors of infra-red pyrometers in relation to spectral response. *Brit. J. Appl. Phys.* **12**, No. 8, 401 (1961).

W. T. ROACH, Some aircraft observations of fluxes of solar radiation in the atmosphere. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 373, 346 (1961).

W. T. ROACH, The absorption of solar radiation by water vapour and carbon dioxide in a cloudless atmosphere. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 373, 364 (1961).

D. E. ROSNER, *Steady State Surface Temperatures of Radiation Cooled Bodies in Dissociating Atmospheres.* AeroChem Research Laboratories, Inc., Princeton, N.J., TP-26, AFOSR-697 (1961).

E. M. SPARROW, C. M. USISKIN and H. A. HUBBARD, Radiation heat transfer in a spherical enclosure containing a participating, heat-generating gas. *J. Heat Transfer* C **83**, No. 2, 199 (1961).

E. M. SPARROW, J. L. GREGG, J. V. SZEL and P. MANOS, Analysis, results, and interpretation for radiation between some simply-arranged gray surfaces. *J. Heat Transfer* C **83**, No. 2, 207 (1961).

E. M. SPARROW, E. R. G. ECKERT and T. F. IRVINE, JR., The effectiveness of radiation fins with mutual irradiation. *J. Aero. Space Sci.* **28**, No. 10, 763 and 778 (1961).

R. T. SWANN, Effect of thermal radiation from a hot gas layer on heat of ablation. *J. Aero. Sci.* **28**, No. 7, 582 (1961).

J. A. THORNTON and A. B. CAMBEL, *The Effect of Radiation on Shock Velocity Attenuation in Electromagnetic Shock Tubes.* Gas Dynamics Laboratory, Northwestern University, Evanston, Ill., AFOSR-1101 (1961).

E. VAN GUNST, Physical aspects of the heat exchange between the human body and its surrounding, especially by radiation. *Ingenieur* **72**, No. 49, 61 (1960).

R. VISKANTA and R. J. GROSH, Temperature distribution in Couette flow with radiation. *J. Amer. Rocket Soc.* **31**, No. 6, 839 (1961).

O. H. VON ROOS, *General Theory of Collision-Broadening of Spectral Lines.* Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., JPL Tech. Rep. 32-100 (1961).

L. WARTENA and A. J. W. BORGHORST, The energy balance of an evaporation pan and the measurement of the reflectivity of its bottom. *Quart. J. Roy. Meteorol. Soc.* **87**, No. 372, 245 (1961).

J. E. WILKINS, JR., Minimizing the mass of thin radiating fins. *J. Aero. Space Sci.* **27**, No. 2, 1 (1960).

J. E. WILKINS, JR., Minimum-mass thin fins which transfer heat only by radiation to surroundings at absolute zero. *J. Soc. Industr. Appl. Math.* **8**, No. 4, 630 (1960).

J. E. WILKINS, JR., Minimum mass thin fins for space reactors. *Proc.* 1960 *Heat Transfer and Fluid Mechanics Institute*, p. 229. Stanford University Press, Stanford, Calif.

S. YOKOBORI, On the emissivity of a gas which contains particles. *Bull. Japan Soc. Mech. Engrs* **4**, No. 13, 131 (1961).

## ROTATING SURFACES

J. W. DAILY and R. E. NECE, Chamber dimension effects on induced flow and frictional resistance of enclosed rotating disks. *J. Basic Engng* D **82**, No. 1, 217 (1960).

D. R. DAVIES and C. B. BAXTER, On the approximate calculation of heat transfer by laminar flow from a rotating heated disk at Prandtl numbers between 0·2 and 6. *Quart. J. Mech. Appl. Math.* **14**, Pt. 2, 223 (1961).

R. C. DIPRIMA, *The Stability of Non-rotationally Symmetric Disturbances for Viscous Flow Between Rotating Cylinders*. Rensselaer Polytechnic Institute, Research Division, Troy, N.Y., RPI MathRep 40 (1961).

P. D. RICHARDSON, Transition on a heated horizontal rotating cylinder. *J. Heat Transfer* C **83**, No. 3, 386 (1961).

L. RINTEL, The stability of the motion of a fluid confined between two concentric cylinders rotating in opposite directions. *Bull. Res. Coun. Israel* **10C**, No. 1/2, 91 (1961).

S. ROSENBLAT, Flow between torsionally oscillating disks. *J. Fluid Mech.* **8**, Pt. 3, 388 (1960).

## TRANSFER MECHANISMS

G. M. ABRAMOVICH, B. G. KHUDENKO and I. S. MAKAROV, Turbulence intensity, temperature and concentration of admixtures in a turbulent wake immediately behind a plate placed across a flow. *Int. J. Heat Mass Transfer* **3**, No. 2, 84 (1961).

R. BETCHOV, On the mechanism of turbulent transition. *Phys. Fluids* **3**, No. 6, 1026 (1960).

E. A. BETZ, On the effect of trip-wires on boundary-layer transition. *Z. Flugw.* **9**, No. 1, 20 (1961). (In German.)

K. R. CZARNECKI and J. R. SEVIER, JR., Investigation of effects of roughness, surface cooling, and shock impingement on boundary-layer transition on a two-dimensional wing. *NASA* TN D-417 (1960).

R. DUNLAP, Effects of cooling on transition in the boundary layer on a hemisphere in simulated hypersonic flow. *Dissertation Abstr.* **22**, No. 2, 61–2746 (1961)

A. KASKEL, *Experimental Study of the Stability of Pipe Flow; II. Development of Disturbance Generator*. Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., Tech. Rep. 32-138 (1961).

H. K. LARSON and S. J. KEATING, JR., Transition Reynolds numbers of separated flows at supersonic speeds. *NASA* TN D-349 (1960).

M. MOCHIZUKI, Smoke observation on boundary layer transition caused by a spherical roughness element. *J. Phys. Soc. Japan* **16**, No. 5, 995 (1961).

J. L. POTTER and J. D. WHITFIELD, The relation between wall temperature and the effect of roughness on boundary-layer transition. *J. Aero. Space Sci.* **28**, No. 8, 663 (1961).

A. M. O. SMITH, Remarks on transition in a round tube. *J. Fluid Mech.* **7**, Pt. 4, 565 (1960).

W. SQUIRE, Application of the defect law to the determination of the average velocity and temperature in turbulent pipe flow. *Int. J. Heat Mass Transfer* **3**, No. 2, 155 (1961).

J. STERNBERG, *A Theory for the Laminar Sublayer of a Turbulent Flow*. Ballistic Research Laboratories, Aberdeen Proving Ground, Md., BRL Rep. 1127 (1961).

C. L. TIEN, On Jenkins model of eddy diffusivities for momentum and heat. *J. Heat Transfer* C **83**, No. 3, 389 (1961).

## TRANSPIRATION AND MASS TRANSFER COOLING

E. W. ADAMS, *A One-Dimensional Calculation Method for the Transient Temperature, Heat Transfer, and Ablation History at the Heated Surface of a Wall*. George C. Marshall Space Flight Center, Huntsville, Ala., MTP-AERO-61-68 (1961).

J. R. BARON and P. B. SCOTT, *The Laminar Diffusion Boundary Layer with External Flow Field Pressure Gradients*. Massachusetts Institute of Technology, Naval Supersonic Laboratory, Tech. Rep. 419, AFOSR-TN-1268 (1959).

E. R. BARTLE and B. M. LEADON, *The Compressible Turbulent Boundary Layer on a Flat Plate with Transpiration Cooling; I. Measurements of Heat Transfer and Boundary Layer Profiles*. Convair Scientific Research Laboratory, San Diego, Calif., Res. Rep. 11 (1961).

R. P. BERNICKER, Downstream effects of transpiration cooling. *J. Aero. Space Sci.* **28**, No. 8, 658 (1961).

F. CHEERS and J. N. LILEY, Heat transfer from slotted finned tubes. *Int. J. Heat Mass Transfer* **2**, No. 2, 259 (1961).

J. H. CHIN, S. C. SKIRVIN, L. E. HAYES and F. BURGGRAF, Film cooling with multiple slots and louvers. *J. Heat Transfer* C **83**, No. 3, 281 (1961).

R. J. CRESCI and P. A. LIBBY, *The Downstream Influence of Mass Transfer at the Nose of a Slender Cone*. Department of Acrospace Engineering and Applied Mechanics, Polytechnic Institute of Brooklyn, Brooklyn, N.Y., WADD TR 60-892 (1961).

F. E. C. CULICK, A note on the compressible turbulent boundary layer with surface mass transfer. *J. Aero. Space Sci.* **28**, No. 9, 745 (1961).

M. R. DENISON, The turbulent boundary layer on chemically active ablating surfaces. *J. Aero. Space Sci.* **28**, No. 6, 471 (1961).

H. L. EVANS, Mass transfer through laminar boundary layers—3a. Similar solutions of the *b*-equation when $\beta = 0$ and $\sigma = 0{\cdot}5$. *Int. J. Heat Mass Transfer* **3**, No. 1, 26 (1961).

R. G. FLEDDERMAN and H. HURWICZ, Analysis of transient ablation and heat conduction phenomena at a vaporizing surface. *Chem. Engng Symp.* Series 57, No. 32, 24 (1960).

J. P. HARTNETT, R. C. BIRKEBAK and E. R. G. ECKERT, Velocity distributions temperature distributions, effectiveness and heat transfer for air injected through a tangential slot into a turbulent boundary layer. *J. Heat Transfer* C **83**, No. 3, 293 (1961).

G. V. JEFFREYS, Mass transfer. *Brit. Chem. Engng* **6**, No. 5, 302 (1961).

M. F. KAZANSKY, P. P. LUTSICK and V. N. OLEYNIKOV, Non-stationary temperature and moisture content fields of porous bodies in the convection heat transfer process. *Int. J. Heat Mass Transfer* **2**, No. 3, 231 (1961).

J. C. Y. KOH and J. P. HARTNETT, Skin friction and heat transfer for incompressible laminar flow over porous wedges with suction and variable wall temperature. *Int. J. Heat Mass Transfer* **2**, No. 3, 185 (1961).

I. KOROBKIN (prepared by), *The Effects of the Molecular Properties of an Injected Gas on Compressible Air Laminar Boundary Layer Skin Friction and Heat Transfer*. U.S. Naval Ordnance Laboratory, White Oak, Md., NAVWEPS Rep. 7410 (1961).

O. KRISCHER, Heat and mass transfer with flow over or through bodies of different geometrical shapes. *Chem.-Ing.-Tech.* **33**, No. 3, 155 (1961).

E. H. LEBEIS, JR., Rate of a transfer unit—A new correlating factor for heat and mass transfer. *Industr. Engng Chem.* **53**, No. 5, 349 (1961).

P. A. LIBBY, *The Homogeneous Boundary Layer at an Axisymmetric Stagnation Point with Large Rates of Injection*. Department of Aerospace Engineering and Applied Mechanics, Polytechnic Institute of Brooklyn, Brooklyn, N.Y., WADD TR 60-435, PIBAL Rep. 605 (1960).

J. MARANGOZIS and A. I. JOHNSON, Mass transfer with and without chemical reaction. *Canad. J. Chem. Engng* **39**, No. 4, 152 (1961).

V. P. MOTULEVICH, Heat transfer and friction of a plate in a gas flow during formation of a turbulent boundary layer with delivery of a foreign substance through pores. *Inzh.-Fiz. Zh.* **3**, No. 8, 31 (1960). (In Russian.)

N. NESS, Foreign-gas injection into a compressible turbulent boundary layer on a flat plate. *J. Aero. Space Sci.* **28**, No. 8, 645 (1961).

J. H. OXLEY and J. M. BLOCHER, JR., Mass and heat transfer during the chemical vapor deposition of metals. *J. Electrochem. Soc.* **108**, No. 5, 460 (1961).

I. S. PASTERNAK and W. H. GAUVIN, Turbulent convective heat and mass transfer from accelerating particles. *J. Amer. Inst. Chem. Engrs* **7**, No. 2, 254 (1961).

A. PALLONE, Nonsimilar solutions of the compressible-laminar-boundary-layer equations with applications to the upstream-transpiration cooling problem. *J. Aero. Space Sci.* **28**, No. 6, 449 (1961).

G. D. RABINOVICH, Heat and mass transfer in a layer of moist material. *Inzh.-Fiz. Zh.* **3**, No. 12, 29 (1960). (In Russian.)

F. P. RICOU and D. B. SPALDING, Measurements of entrainment by axisymmetrical turbulent jets. *J. Fluid Mech.* **11**, Pt. 1, 21 (1961).

S. M. SCALA and W. F. ASHLEY, *Mass Addition Effects on Hypersonic Heat Transfer to a Two-Dimensional Body*. Space Sciences Laboratory, General Electric, Missile and Space Vehicle Department, Technical Information Series R60SD491 (1960).

D. B. SPALDING, The prediction of mass transfer rates when equilibrium does not prevail at the phase interface. *Int. J. Heat Mass Transfer* **2**, No. 4, 283 (1961).

D. B. SPALDING, The theory of melting ablation, with vaporization, gas-phase chemical reaction, surface pyrolysis and transient effects. *Aero. Quart.* **7**, No. 3, 237 (1961).

D. B. SPALDING and H. L. EVANS, Mass transfer through laminar boundary layers—2. Auxiliary functions for the velocity boundary layer. *Int. J. Heat Mass Transfer* **2**, No. 3, 199 (1961).

D. B. SPALDING and H. L. EVANS, Mass transfer through laminar boundary layers—3. Similar solutions of the *b*-equation. *Int. J. Heat Mass Transfer* **2**, No. 4, 314 (1961).

R. J. SPINDLER and H. HURWICZ, Transient heat flow in translucent non-gray ablating materials. *Ballistic Missiles and Space Technology*, Vol. II, p. 447, Pergamon Press, New York (1961).

R. T. SWANN, Effect of thermal radiation from a hot gas layer on heat of ablation. *J. Aero. Space Sci.* **28**, No. 7, 582 (1961).

R. J. WETHERN, Heat and momentum transfer in laminar flow: Helium, initially at plasma temperatures. *Dissertation Abstr.* **22**, No. 2, 61–2856 (1961).