

HEAT TRANSFER BIBLIOGRAPHY

E. M. SPARROW, L. R. LAING, E. R. G. ECKERT and R. J. GOLDSTEIN

Heat Transfer Laboratory, Department of Mechanical Engineering, University of Minnesota,
Minneapolis, Minnesota, 55455, U.S.A.

APPLICATIONS

- S. I. Abdel-Khalik, Heat removal factor for a flat-plate solar collector with a serpentine tube, *Solar Energy* **18**, 59 (1976).
L. Adams, Thermal conductance of air spaces, *ASHRAE Jl* **18**(3), 37 (1976).
R. B. Akhmedov, M. L. Gambarin and Z. S. Talibdzhyan, Error of measuring the temperature of the gases at the exit of a boiler furnace, *Thermal Engng* **23**(1), 62 (1975).
V. P. Alekseyev and G. Ye. Vaynshteyn, Selection of mathematical model of the process in optimizing contact heat exchangers, *Heat Transfer, Soviet Res.* **7**(3), 60 (1975).
R. Bairamov, K. Tioliev and M. Khodziev, A theoretical determination of the temperature in a solar water heater, *Int. Chem. Engng* **16**, 127 (1976).
T. L. Brosseau and J. R. Ward, Reduction of heat transfer to gun barrels by wear-reducing additives, *J. Heat Transfer* **97**, 610 (1975).
H. J. Brandon, R. V. Masek and J. C. Dunavant, Aerodynamic heating to corrugation stiffened structures in thick turbulent boundary layers, *AIAA Jl* **13**, 1460 (1975).
D. N. Brocard and D. R. F. Harleman, One-dimensional temperature predictions in unsteady flows, *J. Hydraulics Div.* **102** (HY 3), 227 (1976).
E. Broyer and C. W. Macosko, Heat transfer and curing in polymer reaction molding, *A.I.Ch.E. Jl* **22**, 268 (1976).
E. V. Bulanina, V. A. Morozov and Ye A. Sukhov, High-capacity counter-flow cooling towers, *Heat Transfer, Soviet Res.* **7**(3), 44 (1975).
D. G. Burkhard and D. L. Shealy, Design of reflectors which will distribute sunlight in a specified manner, *Solar Energy* **17**, 221 (1975).
O. Y. Chaban, B. A. Telyuk, R. V. Shrabyi and A. I. Danilov, Heat exchanger analysis in the case of incomplete information, *Heat Transfer, Soviet Res.* **7**(3), 69 (1975).
E. L. Cuplinskas, A simplified heating-cooling thermal storage system, *ASHRAE Jl* **18**(4), 29 (1976).
F. DeWinter, Solar energy and the flat plate collector, *ASHRAE Jl* **17**(11), 56 (1975).
C. B. Eaton and H. A. Blum, The use of moderate vacuum environments as a means of increasing the collection efficiencies and operating temperatures of flat-plate solar collectors, *Solar Energy* **17**, 151 (1975).
A. F. Emery, R. E. Short, A. W. Guy, K. K. Kraning and J. C. Lin, The numerical thermal simulation of the human body when undergoing exercise or nonionizing electromagnetic irradiation, *J. Heat Transfer* **98**, 284 (1976).
A. K. Fulton and J. I. Gonzalez, Insulation requirements for liquid-fueled ramjets with superalloy motor cases, *J. Spacecraft Rockets* **12**, 443 (1975).
R. D. Goodman and A. G. Menke, Effect of cover plate treatment on efficiency of solar collectors, *Solar Energy* **17**, 207 (1975).
J. K. Hagge and G. H. Junkhan, Mechanical augmentation of convective heat transfer in air, *J. Heat Transfer* **97**, 516 (1975).
K. G. T. Hollands and K. C. Goel, Mean diameters in parallel-flow and counter-flow aerosol systems, *J. Heat Transfer* **98**, 297 (1976).
R. B. Holmberg, Heat transfer in liquid-coupled indirect heat exchanger systems, *J. Heat Transfer* **97**, 499 (1975).
P. J. Hughes, S. A. Klein and D. J. Close, Packed thermal storage models for solar air heating and cooling systems, *J. Heat Transfer* **98**, 336 (1976).
P. Hutchinson, E. E. Khalil, J. H. Whitelaw and G. Wigley, The calculation of furnace-flow properties and their experimental verification, *J. Heat Transfer* **98**, 276 (1976).
I. E. Idel'chik and M. E. Shteinberg, An improved formula for calculating the losses of total pressure in perforated channels with a pth-dependent flowrate, *Thermal Engng* **22**(2), 110 (1975).
A. Kababaev, A. Khandurdyev, O. Klyschaeva and N. Kurbanov, A largescale solar air-conditioning pilot plant and its test results, *Int. Chem. Engng* **16**, 60 (1976).
S. Kao, Analysis of multipass heat exchangers with variable properties and transfer rate, *J. Heat Transfer* **97**, 509 (1975).
S. Kato, K. Yamaguchi, Y. Watanabe and Y. Hiraiwa, Measurement of temperature distribution within tools using powders of constant melting point, *J. Engng Ind.* **98**, 607 (1976).
V. Kaz'merovich, Ya. N. Shashurina, M. I. Kurochkina and P. G. Romankov, Application of the method of modelling for the construction of parametric series of heat exchangers, *Int. Chem. Engng* **15**, 700 (1975).
J. W. Keyes, Shock interference peak heating measurements using phase change coatings, *J. Spacecraft Rockets* **13**, 61 (1976).
B. L. Krivoshein and V. N. Novakovskiy, Transient thermal processes in long gas pipelines, *Heat Transfer, Soviet Res.* **7**(3), 134 (1975).
F. Kupcik, Heat transfer at the walls and the bottom of agitated vessels, *Int. Chem. Engng* **15**, 658 (1975).
H. G. Lorsch, Thermal energy storage for solar heating, *ASHRAE Jl* **17**(11), 47 (1975).
J. H. Lundell and R. R. Dickey, Ablation of graphitic materials in the sublimation regime, *AIAA Jl* **13**, 1079 (1975).
K. Mastanajah, Correlation of theoretical analysis with experimental data on the performance of charring ablatives, *J. Heat Transfer* **98**, 139 (1976).
D. K. McDaniels, D. H. Lowndes, H. Mattheu, J. Reynolds and R. Gray, Enhanced solar energy collection using reflector-solar thermal collector, *Solar Energy* **17**, 277 (1975).
J. E. Minardi and H. N. Chuang, Performance of a "black" liquid flatplate solar collector, *Solar Energy* **17**, 179 (1975).
A. M. Mitky and M. N. Özışık, A one-dimensional model for seasonal variation of temperature distribution in stratified lakes, *Int. J. Heat Mass Transfer* **19**, 201 (1976).
T. F. Morey and D. N. Gorman, Development on the Viking Mars Lander thermal control subsystem design, *J. Spacecraft Rockets* **13**, 229 (1976).
K. Namatame and K. Obayashi, Subcooled decompression analysis in PWR LOCA, *J. Heat Transfer* **98**, 12 (1976).
R. T. Nash and J. W. Williamson, The effect of heat loss on solar heating systems, *Solar Energy* **18**, 11 (1976).
D. T. Nelson, D. L. Evans and R. K. Bansal, Linear Fresnel lens concentrators, *Solar Energy* **17**, 285 (1975).
P. P. Paily and E. O. Macagno, Numerical prediction of thermal regime of rivers, *J. Hydraulics Div.* **102**(HY3), 255 (1976).
F. C. Prenger, Jr. and W. C. Patterson, Earth albedo as determined from skylab data, *J. Spacecraft Rockets* **13**, 244 (1976).
J. Reinkenhofer and R. Schmucker, Correction factor for heat

- flux in an expansion nozzle. *J. Spacecraft Rockets* **13**, 63 (1976).
- R. G. Rice and R. J. Marshall. Short penetration models for direct and indirect contact, co-current heat transfer. *Can. J. Chem. Engng* **53**, 453 (1975).
- D. C. Ross and K. R. Diller. An experimental investigation of burn injury in living tissue. *J. Heat Transfer* **98**, 292 (1976).
- I. M. Rudenko and N. T. Spodyryak. Optimum geometries of wave-shaped air preheater tubes. *Heat Transfer, Soviet Res.* **7**(4), 48 (1975).
- D. A. Sechrist and R. W. Hornbeck. An analysis of heat transfer and fade in disk brakes. *J. Engng Ind.* **98**, 385 (1976).
- S. C. Seitel. Collector performance enhancement with flat reflectors. *Solar Energy* **17**, 291 (1975).
- G. G. Sklover and V. G. Grigor'ev. Calculating the heat transfer coefficient in steam turbine condensers. *Thermal Engng* **22**(1), 86 (1975).
- A. Sabin, W. Wagner and C. R. Easton. Central collector solar energy receivers. *Solar Energy* **18**, 21 (1976).
- K. F. Starner. Effect of fouling factors on heat exchanger design. *ASHRAE Jl* **18**(5), 39 (1976).
- H. W. Stock. Surface patterns on subliming and liquifying ablation materials. *AIAA Jl* **13**, 1217 (1975).
- C. L. Tien and W. W. Yuen. Radiation characteristics of honeycomb solar collectors. *Int. J. Heat Mass Transfer* **18**, 1409 (1975).
- L. L. Vant-Hull and A. F. Hildebrandt. Solar thermal power systems based on optical transmission. *Solar Energy* **18**, 31 (1976).
- A. P. Watkinson and O. Martinez. Scaling of heat exchanger tubes by calcium carbonate. *J. Heat Transfer* **97**, 504 (1975).
- H. R. Wetenkamp and R. M. Kipp. Hot spot heating by composition shoes. *J. Engng Ind.* **98**, 453 (1976).
- R. Winston and H. Hinterberger. Principles of cylindrical concentrators for solar energy. *Solar Energy* **17**, 255 (1975).
- N. E. Wijeyesundara. Response time of solar collectors. *Solar Energy* **18**, 65 (1976).
- F. C. Yip. Design parameter for assessing wicking capabilities of heat pipes. *J. Spacecraft Rockets* **13**, 237 (1976).
- J. H. Young, H. Merte, Jr. and G. A. Gates. Analysis of thermal gradients within human temporal bones. *Int. J. Heat Mass Transfer* **19**, 503 (1976).
- Ye. S. Zaychenko. Average temperature difference for water-cooling of saturated air in contact heat exchangers. *Heat Transfer, Soviet Res.* **7**(4), 89 (1975).
- layers; II. Three-dimensional flows in Cartesian coordinates. *AIAA Jl* **13**, 1056 (1975).
- P. Chassaing and A. Claria. Transfert de masse dans des jets turbulents de revolution en milieu non homogene. *Int. J. Heat Mass Transfer* **19**, 249 (1976).
- S. W. Churchill. A comprehensive correlating equation for forced convection from flat plates. *A.I.Ch.E. Jl* **22**, 264 (1976).
- D. J. Collins and C. W. Gorton. An experimental study of diffusion from a line source in a turbulent boundary layer. *A.I.Ch.E. Jl* **22**, 610 (1976).
- H. G. Davies. Fluctuating heat transfer from hot wires in low Reynolds number flow. *J. Fluid Mech.* **73**, 53 (1976).
- U. Gat and R. A. Green. Direct contact heat transfer from an immiscible liquid jet. *Wärme- und Stoffübertragung* **9**, 13 (1976).
- S. R. Gorla. Non-Newtonian nonsimilar boundary layers. *Can. J. Chem. Engng* **53**, 563 (1975).
- D. P. Gutman and K. E. Torrance. Response of the urban boundary layer to heat addition and surface roughness. *Boundary-Layer Meteorol.* **9**, 217 (1975).
- H. M. Hua and P. S. Lykoudis. Heat transfer from a constant temperature circular cylinder in cross-flow. *Int. J. Heat Mass Transfer* **19**, 698 (1976).
- V. M. Iyeviev. Heat transfer, friction and diffusion in high-temperature turbulent flows. *Heat Transfer, Soviet Res.* **7**(4), 1 (1975).
- P. C. Jain and B. S. Goel. A numerical study of unsteady laminar forced convection from a circular cylinder. *J. Heat Transfer* **98**, 303 (1976).
- P. E. Jenkins and V. W. Goldschmidt. Conditional (point average) temperature and velocities in a heated turbulent plane jet. *Physics Fluids* **19**, 613 (1976).
- M. Katagiri. Unsteady boundary layer flows past an impulsively started circular cylinder. *J. Phys. Soc. Japan* **40**, 1171 (1976).
- V. I. Katinas, I. I. Zhyugzhda, A. A. Zhukauskas and S. A. Shvegzhda. The effects of the turbulence of an approaching stream of viscous fluid on local heat transfer from a circular cylinder. *Int. Chem. Engng* **16**, 283 (1976).
- R. N. Koopman and E. M. Sparrow. Local and average transfer coefficients due to an impinging row of jets. *Int. J. Heat Mass Transfer* **19**, 673 (1976).
- S. G. Lekoudis, A. H. Nayfeh and W. S. Saric. Compressible boundary layers over wavy walls. *Physics Fluids* **19**, 514 (1976).
- M. Lessen and S. T. Gangwani. Effect of small amplitude wall waviness upon the stability of the laminar boundary layer. *Physics Fluids* **19**, 510 (1976).
- L. M. Mach. A numerical study of the temporal eigenvalue spectrum of the Blasius boundary layer. *J. Fluid Mech.* **73**, 497 (1976).
- R. N. Meroney and P. Bradshaw. Turbulent boundary-layer growth over a longitudinally curved surface. *AIAA Jl* **13**, 1448 (1975).
- S. Meier. Investigation of the heat transfer mechanism in supersonic turbulent boundary layers. *Wärme- und Stoffübertragung* **8**, 159 (1975).
- H. Miyazaki and E. M. Sparrow. Flow and heat transfer in curved wall jets on circular surfaces. *Int. J. Heat Mass Transfer* **18**, 1351 (1975).
- S. Murata, Y. Miyake and T. Inaba. Laminar flow in a curved pipe with varying curvature. *J. Fluid Mech.* **73**, 735 (1976).
- N. S. Murty and V. M. K. Sastri. Direct contact heating of laminar falling liquid jets. *Int. J. Heat Mass Transfer* **19**, 115 (1976).
- R. S. Reddy Gorla. Heat transfer in a laminar wall jet over a curved surface. *Appl. Scient. Res.* **31**, 437 (1976).
- R. S. Reddy Gorla. Transverse curvature effect on the flow field in a laminar cylindrical wall jet. *J. Fluids Engng* **98**, 116 (1976).
- J. L. Stollery and G. T. Coleman. A correlation between pressure and heat transfer distributions at supersonic and hypersonic speeds. *Aeronaut. Q.* **26**, 304 (1975).

BOOKS

- P. L. Blackshear, *Heat Transfer in Fires: Thermophysics, Social Aspects, Economic Impact*. Scripta, Washington, D.C. (1976).
- D. A. de Vries and N. H. Afzal, *Heat and Mass Transfer in the Biosphere: I. Transfer Processes in the Plant Environment*. Scripta, Washington, D.C. (1975).
- S. Whitaker, *Elementary Heat Transfer Analysis*. Pergamon Press, New York (1976).

BOUNDARY LAYER AND EXTERNAL FLOWS

- E. Achenbach, Total and local heat transfer from a smooth circular cylinder in crossflow at high Reynolds number. *Int. J. Heat Mass Transfer* **18**, 1387 (1975).
- N. Afzal, Second-order effects in self-similar laminar compressible boundary-layer flows. *Int. J. Engng Sci.* **14**, 415 (1976).
- N. Afzal and R. Narasimha, Axisymmetric turbulent boundary layer along a circular cylinder at constant pressure. *J. Fluid Mech.* **74**, 113 (1976).
- W. D. Baines and J. F. Keffer. Shear stress and heat transfer at a stagnation point. *Int. J. Heat Mass Transfer* **19**, 21 (1976).
- N. Chandrashekhar and N. V. C. Swamy. Wall shear stress inference for three-dimensional turbulent boundary-layer velocity profiles. *J. Appl. Mech.* **43**, 20 (1976).
- T. Cebecci. Calculation of three-dimensional boundary

- L. C. Thomas, A theoretical study of thermally developing fully turbulent boundary-layer flow, *J. Heat Transfer* **98**, 334 (1976).
- C. B. Watkins, Jr., Unsteady heat transfer in impulsive Falkner-Skan flows, *Int. J. Heat Mass Transfer* **19**, 395 (1976).
- A. R. Wazzan, H. Taghavi and Y. Y. Li, Effect of free stream vorticity on spatial stability of incompressible boundary layers with nonparallel effects, *Physics Fluids* **19**, 362 (1976).
- J. C. Williams III, Semi-similar solutions to the three-dimensional laminar boundary layer, *Appl. Scient. Res.* **31**, 161 (1975).
- R. E. Willins and R. G. Griskey, Mass transfer from cylinders at various orientations to flowing gas streams, *Can. J. Chem. Engng* **53**, 500 (1975).
- G. B. Zdanavichyus, B. A. Chesna, I. I. Zhyugzhda and A. A. Zhukauskas, Local heat transfer in an air stream flowing laterally to a circular cylinder at high *Re* numbers, *Int. Chem. Engng* **16**, 121 (1976).

CHANGE OF PHASE AND TWO-PHASE FLOW

- N. Bairamov, M. Mamedov and L. E. Rybakova, Theoretical investigation of the stability of droplets at the surface of a solid body as applied to drop-wise condensation, *Int. Chem. Engng* **16**, 325 (1976).
- S. Benedek, Heat transfer at the condensation of steam on turbulent waterjet, *Int. J. Heat Mass Transfer* **19**, 448 (1976).
- J. Berghmans, Stability of the vapor film during film boiling from horizontal cylinders, *Int. J. Multiphase Flow* **2**, 319 (1975).
- J. Berghmans, Electrostatic fields and the maximum heat flux, *Int. J. Heat Mass Transfer* **19**, 791 (1976).
- A. S. Borodin and J. J. C. Picot, The measurement and prediction of temperatures at the free interface of falling water films under heat transfer, *Can. J. Chem. Engng* **54**, 59 (1976).
- R. M. Canon and E. L. Park, Jr., Transition boiling of normal pentane from a horizontal flat gold surface at one atmosphere pressure, *Int. J. Heat Mass Transfer* **19**, 696 (1976).
- C. E. Chang and W. R. Wilcox, Analysis of surface tension driven flow in floating zone melting, *Int. J. Heat Mass Transfer* **19**, 355 (1976).
- K. Cornwall, B. G. Nair and T. D. Patten, Observation of boiling in porous media, *Int. J. Heat Mass Transfer* **19**, 236 (1976).
- E. J. Davis, S. C. Hung and S. Arciero, An analogy for heat transfer with wavy stratified gas liquid flow, *A.I.Ch.E. Jl* **21**, 872 (1975).
- H. Delmas and H. Angelino, Instabilités au cours de la contraction de bulles de vapeur non sphériques, *Int. J. Heat Mass Transfer* **19**, 118 (1976).
- C. M. Detz and R. T. Vermesh, Nucleation effects in the dropwise condensation of steam on electroplated gold surfaces, *A.I.Ch.E. Jl* **22**, 87 (1976).
- A. A. Dolinskiy, L. M. Maslyugow, A. G. Gritsay, G. K. Ivanitskiy and A. G. Zritovskiy, Calculation of the dehydration period of a droplet, *Heat Transfer, Soviet Res.* **7**(3), 131 (1975).
- E. M. Drake, A. A. Jeje and R. C. Reid, Transient boiling of liquified cryogens on a water surface. I. Nitrogen, methane and ethane, *Int. J. Heat Mass Transfer* **18**, 1361 (1975).
- E. M. Drake, A. A. Jeje and R. C. Reid, Transient boiling of liquified cryogens on a water surface. II. Light hydrocarbon mixtures, *Int. J. Heat Mass Transfer* **18**, 1369 (1975).
- A. S. El-Arini, J. A. Sabbagh and M. A. Obeid, Laminar film condensation heat transfer in the presence of electric and magnetic fields, *J. Heat Transfer* **97**, 628 (1975).
- M. Epstein and D. H. Cho, Laminar film condensation on a vertical melting surface, *J. Heat Transfer* **98**, 108 (1976).
- L. C. Farrar and E. Marschall, Film boiling in a scaling liquid, *J. Heat Transfer* **98**, 173 (1976).
- I. M. Fedotkin, V. B. Vyskrebtssov and V. A. Zhurakhovskiy, Dynamics of vapor phase nuclei in boiling, *Heat Transfer, Soviet Res.* **7**(3), 37 (1975).
- Y. Hayashi, A. Takimoto and M. Kanbe, Transport-reaction mechanism of mist formation based on the critical supersaturation model, *J. Heat Transfer* **98**, 114 (1976).
- G. Hesse, E. M. Sparrow and R. J. Goldstein, Influence of pressure on film boiling heat transfer, *J. Heat Transfer* **98**, 166 (1976).
- K. H. Hsiao, L. C. Witte and J. E. Cox, Transient film boiling from a moving sphere, *Int. J. Heat Mass Transfer* **18**, 1343 (1975).
- G. L. Hubbard, A. F. Mills and D. K. Chung, Heat transfer across a turbulent falling film with cocurrent vapor flow, *J. Heat Transfer* **98**, 319 (1976).
- H. Jaster and P. G. Kosky, Condensation heat transfer in a mixed flow regime, *Int. J. Heat Mass Transfer* **19**, 95 (1976).
- N. L. Kafengaus, The mechanism of pseudoboiling, *Heat Transfer, Soviet Res.* **7**(4), 94 (1975).
- E. M. Kopalinsky and R. A. A. Bryant, Friction coefficients for bubbly two-phase flow in horizontal pipes, *A.I.Ch.E. Jl* **22**, 82 (1976).
- P. G. Kosky, Heat transfer to saturated mist flowing normally to a heated cylinder, *Int. J. Heat Mass Transfer* **19**, 539 (1976).
- V. A. Kravchenko, L. F. Tolubinskaya and A. I. Pyatnichko, Heat transfer in boiling of methane at $p = 1.02$ bar, *Heat Transfer, Soviet Res.* **7**(3), 27 (1975).
- D. A. Labuntsov, Current theories of nucleate boiling of liquids, *Heat Transfer, Soviet Research* **7**(3), 1 (1975).
- C. K. Law, Quasi-steady droplet vaporization theory with property variations, *Physics Fluids* **18**, 1426 (1975).
- L. L. Levitan and F. P. Lantsman, Investigating burnout with flow of a steam-water mixture in a round tube, *Thermal Engng* **22**, 102 (1975).
- C. C. Maneri and R. E. Schneider, A correction to non-circular duct hot patch data, *J. Heat Transfer* **98**, 332 (1976).
- R. F. Mann and W. W. Walker, The vaporization of small binary drops on a flat plate at maximum heat flux, *Can. J. Chem. Engng* **53**, 487 (1975).
- T. J. McMillan and L. G. Leal, The effect of deformation on the effective conductivity of a dilute suspension of drops in the limit of low particle Pecllet number, *Int. J. Multiphase Flow* **2**, 105 (1975).
- R. Mesler, A mechanism supported by extensive experimental evidence to explain high heat fluxes observed during nucleate boiling, *A.I.Ch.E. Jl* **22**, 246 (1976).
- I. F. Mikhaylov, G. P. Glazunov and N. A. Kosik, Evaporation of liquid-nitrogen droplets on metal surfaces, *Heat Transfer, Soviet Res.* **7**(3), 35 (1975).
- I. T. Mirzaev, A. M. Kutepov and Kh. R. Rustamov, The critical heat flux during the boiling of aqueous solutions at low pressures, *Int. Chem. Engng* **16**, 368 (1976).
- D. Moalem and S. Sideman, Theoretical analysis of a horizontal condenser-evaporator tube, *Int. J. Heat Mass Transfer* **19**, 259 (1976).
- J. Montlucón, Heat and mass transfer in the vicinity of an evaporating droplet, *Int. J. Multiphase Flow* **2**, 171 (1975).
- F. Moreaux, J. C. Chevrier and G. Beck, Destabilization of film boiling by means of a thermal resistance, *Int. J. Multiphase Flow* **2**, 183 (1975).
- Y. Mori and K. Komotori, Statistical characteristics of ebullition of single superheated drops in an immiscible liquid medium, *Bull. JSME* **18**, 1035 (1975).
- N. S. Murty and V. M. K. Sastry, Evaporation of laminar falling liquid film along an inclined wall, *Wärme- und Stoffübertragung* **8**, 241 (1975).
- A. P. Ornatskiy, V. A. Chernobay, A. F. Vasil'yev and S. V. Perkhov, Heat transfer crisis in annuli with cosinusoidal heat release along the length, *Heat Transfer, Soviet Res.* **7**(3), 66 (1975).
- A. P. Ornatskiy, V. A. Chernobay and A. F. Vasil'yev, Heat transfer crisis in annuli in which the rate of heat transfer varies longitudinally, *Heat Transfer, Soviet Res.* **7**(4), 27 (1975).

- M. R. Özgu and J. C. Chen, Local film thickness during transient voiding of a liquid-filled channel. *J. Heat Transfer* **98**, 159 (1976).
- J. R. A. Pearson, On the melting of solids near a hot moving interface, with particular reference to beds of granular polymers. *Int. J. Heat Mass Transfer* **19**, 405 (1976).
- D. A. Pereverzev and V. Ya. Shpak, Unsteady two-phase heat transfer in a vertical pipe heated by dry saturated steam. *Heat Transfer, Soviet Res.* **7**(3), 71 (1975).
- Cz. P. Popiel and L. Boguslawski, Heat transfer by laminar film condensation on sphere surfaces. *Int. J. Heat Mass Transfer* **18**, 1486 (1975).
- G. Preiss and P. C. Wayner, Jr., Evaporation from a capillary tube. *J. Heat Transfer* **98**, 178 (1976).
- K. Rao and P. K. Sharma, Effect of interfacial shear on evaporation rates of liquid patches. *Can. J. Chem. Engng* **53**, 456 (1975).
- M. Reimann and U. Grigull, Analytical investigation of free convection and film boiling in laminar boundary layers with temperature dependent properties (in German). *Wärme- und Stoffübertragung* **8**, 167 (1975).
- F. E. Sage and J. Estrin, Film condensation from a ternary mixture of vapors upon a vertical surface. *Int. J. Heat Mass Transfer* **19**, 323 (1976).
- R. R. Schultz, S. Kasturirangan and R. Cole, Experimental studies of incipient vapor nucleation. *Can. J. Chem. Engng* **53**, 408 (1975).
- R. A. Seban and A. Faghri, Evaporation and heating with turbulent falling liquid films. *J. Heat Transfer* **98**, 315 (1976).
- R. A. W. Shock, Evaporation of binary mixtures in upward annular flow. *Int. J. Multiphase Flow* **2**, 411 (1976).
- R. A. Smith, F. A. Price and P. Griffith, An analysis of critical heat flux in flow reversal transients. *J. Heat Transfer* **98**, 153 (1976).
- A. Stücheli and M. N. Özışık, Hydrodynamic entrance lengths of laminar falling films. *Chem. Engng Sci.* **31**, 369 (1976).
- Yu. F. Sviridenko and V. A. Makhin, Tests of liquid evaporation into flowing gas. *Heat Transfer, Soviet Res.* **7**(3), 41 (1975).
- Y. Taitel and A. E. Dukler, A model for predicting flow regime transitions in horizontal and near horizontal gas liquid flow. *A.I.Ch.E. Jl* **22**, 47 (1976).
- T. G. Theofanous and P. D. Patel, Universal relations for bubble growth. *Int. J. Heat Mass Transfer* **19**, 425 (1976).
- Y. Tochitani, Y. H. Mori and K. Komotori, Vaporization of a liquid injected into an immiscible liquid through a single nozzle. *Wärme- und Stoffübertragung* **8**, 249 (1975).
- V. I. Tolubinskiy, Computation of the average growth rate of vapor bubbles. *Heat Transfer, Soviet Res.* **7**(3), 77 (1975).
- V. I. Tolubinskiy, Yu. N. Ostrovskiy and V. Ye. Pisarev, Boiling "crisis" generated upon a steep increase in power in heaters with different heat capacities (tube-wall thicknesses). *Heat Transfer, Soviet Res.* **7**(3), 31 (1975).
- T. Ueda and H. Tanaka, Measurements of velocity, temperature and velocity fluctuation distributions in falling liquid films. *Int. J. Multiphase Flow* **2**, 261 (1975).
- H. C. Ünal, Maximum bubble diameter, maximum bubble-growth time and bubble-growth rate during the subcooled nucleate flow boiling of water up to 17.7 MN/m^2 . *Int. J. Heat Mass Transfer* **19**, 643 (1976).
- V. C. Van der Mast and L. A. Bromley, Interfacial phenomena in falling film evaporation of natural seawater. *A.I.Ch.E. Jl* **22**, 533 (1976).
- G. N. Velichko, V. M. Stefanovskii and A. Z. Socherbakov, Investigation of heat transfer during the condensation of binary vapor mixture. *Int. Chem. Engng* **15**, 625 (1975).
- K. D. Voskresenskiy and Ye. S. Turilina, Determination of the condensation length in pipes. *Heat Transfer, Soviet Res.* **7**(4), 79 (1975).
- P. C. Wayner, Jr., Y. K. Kao and I. V. LeCroix, The interline heat-transfer coefficient of an evaporating wetting film. *Int. J. Heat Mass Transfer* **19**, 487 (1976).
- S. D. R. Wilson, Unsteady and two-dimensional flow of a condensate film. *J. Heat Transfer* **98**, 313 (1976).
- G. Yadigaroglu and R. T. Lahey, Jr., On the various forms of the conservation equations in two-phase flow. *Int. J. Multiphase Flow* **2**, 477 (1976).
- V. M. Zhukov, G. M. Kazakov, S. A. Kovalev and Yu. A. Kuzma-Kichta, Heat transfer in boiling of liquids on surfaces coated with low thermal conductivity films. *Heat Transfer, Soviet Res.* **7**(3), 16 (1975).
- W. Zyskowski, On the transplosion phenomenon and the Leidenfrost temperature for the molten copper water thermal interaction. *Int. J. Heat Mass Transfer* **19**, 625 (1976).

CHANNEL FLOW

- G. A. Adebiyi and W. B. Hall, Experimental investigation of heat transfer to supercritical pressure carbon dioxide in a horizontal pipe. *Int. J. Heat Mass Transfer* **19**, 715 (1976).
- S. Ayyash and W. D. McComb, Some anomalous results in drag reduction by adsorbed layers. *Chem. Engng Sci.* **31**, 169 (1976).
- S. S. Agureykin, R. A. Karimov and D. A. Nusupbekova, Heat transfer by (combined) convection, radiation, and conduction in tubes with arbitrary heat supply distribution. *Heat Transfer, Soviet Res.* **7**(4), 31 (1975).
- M. Balaram, Heat generated by MHD Couette flow with porous walls. *J. Lubric. Tech.* **97**, 630 (1975).
- K. F. Barker, B. Avitzur and K. J. Hahn, Jr., The analytical determination of friction for flow through conical converging dies. *J. Franklin Inst.* **301**, 263 (1976).
- C. E. Bassett and J. R. Welty, Non-Newtonian heat transfer in the thermal entrance region of uniformly heated, horizontal pipes. *A.I.Ch.E. Jl* **21**, 699 (1975).
- H. F. Bauer, Diffusion, convection and chemical reaction in a channel. *Int. J. Heat Mass Transfer* **19**, 479 (1976).
- A. I. Butuzov, M. K. Bezrodnyy and M. M. Pustovit, Hydraulic resistance and heat transfer in forced flow in rectangular coiled tubes. *Heat Transfer, Soviet Res.* **7**(4), 84 (1975).
- P. Carajilescov and N. E. Todreas, Experimental and analytical study of axial turbulent flows in an interior subchannel of a bare rod bundle. *J. Heat Transfer* **98**, 262 (1976).
- T. W. Chapman and G. L. Bauer, Stagnation-point viscous flow of an incompressible fluid between porous plates with uniform blowing. *Appl. Scient. Res.* **31**, 223 (1975).
- K. C. Cheng, R.-C. Lin and J.-W. Ou, Fully developed laminar flow in curved rectangular channels. *J. Fluids Engng* **98**, 41 (1976).
- E. B. Cheung and L. Baker, Jr., Transient freezing of liquids in tube flow. *Nucl. Sci. Engng* **60**, 1 (1976).
- S. Yu. Danilevich and G. B. Froishteter, An experimental investigation of heat transfer during the laminar flow of a non-linear visco-plastic fluid in a tube. *Int. Chem. Engng* **17**, 376 (1976).
- D. Gärtner, Turbulent forced convection heat transfer in annuli with arbitrarily varying boundary conditions of second kind. *Wärme- und Stoffübertragung* **8**, 273 (1975).
- V. Gnielinski, New equations for heat and mass transfer in turbulent pipe and channel flow. *Int. Chem. Engng* **16**, 359 (1976).
- J. A. Golding and R. Dussault, Prediction of concentration and temperature distributions in a flow reactor: homogeneous liquid-phase reaction. *Int. J. Heat Mass Transfer* **19**, 493 (1976).
- L. Goldstein, Jr. and E. M. Sparrow, Experiments on the transfer characteristics of a corrugated fin and tube heat exchanger configuration. *J. Heat Transfer* **98**, 26 (1976).
- S. Golos, When is it allowed to treat heat-transfer coefficient α as a constant? *Int. J. Heat Mass Transfer* **18**, 1467 (1975).
- R. Gregorig, Fully developed turbulent flow with very high Reynolds numbers in tubes. Hamilton's Principle. *Int. Chem. Engng* **16**, 346 (1976).
- S. M. Hai, Pressure development in the entrance region

- and fully developed region of generalized channel turbulent flows. *J. Appl. Mech.* **43**, 13 (1976).
- S. W. Hong and A. E. Bergles, Augmentation of laminar flow heat transfer in tubes by means of twisted-tape inserts. *J. Heat Transfer* **98**, 251 (1976).
- S. W. Hong and A. E. Bergles, Laminar flow heat transfer in the entrance region of semi-circular tubes with uniform heat flux. *Int. J. Heat Mass Transfer* **19**, 123 (1976).
- G. A. Hughmark, Heat, mass, and momentum transport with turbulent flow in smooth and rough pipe. *A.I.Ch.E. Jl* **12**, 1033 (1975).
- G. J. Hwang and J.-P. Sheu, Liquid solidification in combined hydrodynamic and thermal entrance region of a circular tube. *Can. J. Chem. Engng* **54**, 66 (1976).
- A. Ya. Inayatov, Correlation of data on heat transfer. Flow parallel to tube bundles at relative tube pitches of $1.1 < s/d < 1.6$. *Heat Transfer, Soviet Res.* **7**(3), 84 (1975).
- L. A. M. Janssen, Axial dispersion in laminar flow through coiled tubes. *Chem. Engng Sci.* **31**, 215 (1976).
- V. Javeri, Combined influence of wall conductance, pressure work, viscous dissipation and Joule heating on MHD channel flow heat transfer. *Wärme- und Stoffübertragung* **8**, 261 (1975).
- V. Javeri, Combined influence of Hall effect, ion slip, viscous dissipation and Joule heating on MHD heat transfer in a channel. *Wärme- und Stoffübertragung* **8**, 193 (1975).
- S. Kakac, A general analytical solution to the equation of transient forced convection with fully developed flow. *Int. J. Heat Mass Transfer* **18**, 1449 (1975).
- T. E. Laskaris, Finite-element analysis of compressible and incompressible viscous flow and heat transfer problems. *Physics Fluids* **18**, 1639 (1976).
- M. F. Letelier S and Hans J. Leutheusser, Skin friction in unsteady laminar pipe flow. *J. Hydraulics Div.* **102**(HY1), 41 (1976).
- J. Liu and V. L. Shah, Numerical solution of a casson fluid flow in the entrance of annular tubes. *Appl. Scient. Res.* **31**, 213 (1975).
- K. O. Lund, Asymptotic analysis of the average, steady, isothermal flow in coupled, parallel channels. *J. Heat Transfer* **98**, 19 (1976).
- R. Mahalingam and J. M. Coulson, Non-isothermal pressure-drop in non-Newtonian laminar flow. *Can. J. Chem. Engng* **53**, 589 (1976).
- J. H. Masliyah and K. Nandakumar, Heat transfer in internally finned tubes. *J. Heat Transfer* **98**, 257 (1976).
- W. J. McMichael and J. D. Hellums, Interphase mass and heat transfer in pulsatile flow. *A.I.Ch.E. Jl* **21**, 743 (1975).
- M. D. Mikhailov and B. K. Shishedjiev, Coupled at boundary mass or heat transfer in entrance concurrent flow. *Int. J. Heat Mass Transfer* **19**, 553 (1976).
- Z. L. Miropol-skii, Heat transfer to superheated steam with supply and removal of heat. *Thermal Engng* **22**(3), 91 (1975).
- V. Mohan, J. Raghuraman and D. T. Wasan, Diffusion and reaction in turbulent flow of a power-law fluid in a circular tube. *A.I.Ch.E. Jl* **21**, 752 (1975).
- J. C. Mulligan and D. D. Jones, Experiments on heat transfer and pressure drop in a horizontal tube with internal solidification. *Int. J. Heat Mass Transfer* **19**, 213 (1976).
- E. Naito, Laminar heat transfer in the entrance region of parallel plates. The case of uniform heat flux. *Int. Chem. Engng* **16**, 162 (1976).
- M. Ohmi, T. Usui, M. Fukawa and S. Hirasaki, Pressure and velocity distributions in pulsating laminar pipe flow. *Bull. JSME* **19**, 298 (1976).
- K. R. Perkins and D. M. McEligot, Mean temperature profiles in heated laminarizing air flows. *J. Heat Transfer* **97**, 589 (1975).
- F. E. M. Saboya and E. M. Sparrow, Transfer characteristics of two-row plate fin and tube heat exchanger configurations. *Int. J. Heat Mass Transfer* **19**, 41 (1976).
- N. Seki, S. Fukusako and T. Hirata, Effect of stall length on heat transfer in reattached region behind a double step at entrance to an enlarged flat duct. *Int. J. Heat Mass Transfer* **19**, 700 (1976).
- S. N. Shah and K. E. Cox, Dispersion in non-Newtonian laminar flow through a tube. *Chem. Engng Sci.* **31**, 241 (1976).
- F. T. Smith, Steady motion within a curved pipe. *Proc. R. Soc.* **347**, 345 (1976).
- P. L. Stephenson, A theoretical study of heat transfer in two-dimensional turbulent flow in a circular pipe and between parallel and diverging plates. *Int. J. Heat Mass Transfer* **19**, 413 (1976).
- A. S. Sukomel, V. I. Velichko, Yu. G. Abrosimov and D. F. Gutsev, An investigation of heat transfer in the entry section of a rectangular duct. *Thermal Engng* **22**(3), 99 (1975).
- A. Z. Szeri, C. C. Yates and S. M. Hai, Flow development in a parallel plate channel. *J. Lubric. Tech.* **98**, 145 (1976).
- L. C. Thomas and C. R. Kakaria, A unified model for turbulent and laminar momentum transfer: channel flow. *J. Appl. Mech.* **43**, 8 (1976).
- H. Tanaka, Flow uniformizing effect of damping screen in pipe flow. *Bull. JSME* **19**, 127 (1976).
- R. C. H. Tsou and Y. P. Chang, On the linearized analysis of entrance flow in heated, porous conduits. *Int. J. Heat Mass Transfer* **19**, 448 (1976).
- R. van Dooren, Porous pipe flow. *Physics Fluids* **19**, 481 (1976).
- S. A. Victor and V. L. Shah, Steady state heat transfer to blood flowing in the entrance region of a tube. *Int. J. Heat Mass Transfer* **19**, 777 (1976).
- R. W. Watkins, C. R. Robertson and A. Acrivos, Entrance region heat transfer in flowing suspensions. *Int. J. Heat Mass Transfer* **19**, 693 (1976).

CONDUCTION

- F. W. Ahrens, Thermal bond conductance between a cylinder and a plane wall. *J. Heat Transfer* **97**, 617 (1975).
- A. Aziz and J. Y. Benziez, Application of perturbation techniques to heat-transfer problems with variable thermal properties. *Int. J. Heat Mass Transfer* **19**, 271 (1976).
- E. R. Barnes, A variational problem arising in the design of cooling fins. *Q. Appl. Math.* **34**, 1 (1976).
- L. Bolle, A new approach to the concept of efficiency of high fins. *Int. J. Heat Mass Transfer* **19**, 443 (1976).
- D. C. Boshuisen and L. van Wijngaarden, An investigation on the temperature distribution in thin-walled cylinders during welding up to wear-proof layers. *Appl. Scient. Res.* **31**, 1 (1975).
- V. A. Bubnov, Wave concepts in the theory of heat. *Int. J. Heat Mass Transfer* **19**, 175 (1976).
- B.-H. Caussade, Contribution à la résolution de l'équation non linéaire de la chaleur. *Int. J. Heat Mass Transfer* **19**, 303 (1976).
- T. C. Chawla, G. Leaf, W. L. Chen and M. A. Grolmes, The application of the collocation method using hermite cubic splines to nonlinear transient one-dimensional heat conduction problems. *J. Heat Transfer* **97**, 562 (1975).
- B. T. F. Chung and L. T. Yeh, Freezing and melting of materials with variable properties and arbitrary heat fluxes. *AIAA Jl* **14**, 388 (1976).
- W. Contreras and R. S. Thorsen, Transient melting of a solid heated by a condensing saturated vapor Case I. Negligible interface curvature. *J. Heat Transfer* **97**, 570 (1975).
- L. Y. Cooper, Heating of a cylindrical cavity. *Int. J. Heat Mass Transfer* **19**, 575 (1976).
- P. L. Davis, On the hyperbolicity of the equations of the linear theory of heat conduction for materials with memory. *SIAM J. Appl. Math.* **30**, 75 (1976).
- P. L. Dhar and C. P. Arora, Optimum design of finned surfaces. *J. Franklin Inst.* **301**, 379 (1976).
- H. Domingos and D. Voelker, Transient temperature rise in layered media. *J. Heat Transfer* **98**, 329 (1976).
- J. Dundurs and C. Panek, Heat conduction between bodies with wavy surfaces. *Int. J. Heat Mass Transfer* **19**, 721 (1976).

- H. Farkas, On the phenomenological theory of heat conduction, *Int. J. Engng Sci.* **13**, 1035 (1975).
- H. Farkas, Error estimation for approximations of the solution of the one-dimensional stationary heat conduction equation on the basis of the governing principle of dissipative processes, *Int. J. Engng Sci.* **13**, 1029 (1975).
- L. S. Fletcher and W. R. Ott, Thermal contact conductance of lead ferrite and boron nitride, *J. Heat Transfer* **98**, 331 (1976).
- R. P. Forslund and H. Q. Oliveira, The effect of thermal constriction resistance in the design of channel-plate heat exchangers: cylindrical geometry, *J. Heat Transfer* **97**, 619 (1975).
- B. W. Grange, R. Viskanta and W. H. Stevenson, Diffusion of heat and solute during freezing of salt solutions, *Int. J. Heat Mass Transfer* **19**, 373 (1976).
- S. Guenzi and C. J. Maday, A least weight circular cooling fin, *J. Engng Ind.* **97**, 1190 (1975).
- J. R. Howard, An experimental study of heat transfer through periodically contacting surfaces, *Int. J. Heat Mass Transfer* **19**, 367 (1976).
- P. R. W. Hudson, The thermal resistivity of diamond heat-sink bond materials, *J. Phys. D: Appl. Phys.* **9**, 225 (1976).
- C.-L. Huang and Y.-P. Shih, Perturbation solution for planar solidification of a saturated liquid with convection at the wall, *Int. J. Heat Mass Transfer* **18**, 1481 (1975).
- Y. Jaluria, A study of transient heat transfer in long insulated wires, *J. Heat Transfer* **98**, 127 (1976).
- A. M. Jones, P. W. O'Callaghan and S. D. Probert, Thermal rectification due to distortions induced by heat fluxes across contacts between smooth surfaces, *J. Mech. Engng Sci.* **17**, 252 (1975).
- M. S. Kazimi and C. A. Erdman, On the interface temperature of two suddenly contacting materials, *J. Heat Transfer* **97**, 615 (1975).
- J. Kern and J. O. Hansen, Transient heat conduction in cylindrical systems with an axially moving boundary, *Int. J. Heat Mass Transfer* **10**, 707 (1976).
- G. Ye London, Gas temperature and heat flux in short-lived gas-dynamic processes, *Heat Transfer, Soviet Res.* **7**(3), 152 (1975).
- A. V. Luikov, V. A. Bubnov and I. A. Soloviev, On wave solutions of the heat-conduction equation, *Int. J. Heat Mass Transfer* **19**, 245 (1976).
- A. Macwal, T. C. Bache and G. A. Hegemier, A continuum model for diffusion in laminated composite media, *J. Heat Transfer* **98**, 133 (1976).
- N. D. Malmuth, Temperature field of a moving point source with change of state, *Int. J. Heat Mass Transfer* **19**, 349 (1976).
- M. D. Mikhailov, Exact solution for freezing of humid porous half-space, *Int. J. Heat Mass Transfer* **19**, 651 (1976).
- N. K. Mukoyed and V. Ya. Zhuravlenko, Solving of problems of heat conduction in multilayer media by the method of summary representations, *Heat Transfer, Soviet Res.* **7**(3), 158 (1975).
- J. Neiss and E. R. F. Winter, Analysis of the transient heat conduction between heat exchanger pipes and the earth for heat pump applications, *Wärme- und Stoffübertragung* **9**, 39 (1976).
- P. W. O'Callaghan, A. M. Jones and S. D. Probert, The thermal behavior of gauzes as interfacial inserts between solids, *J. Mech. Engng Sci.* **17**, 233 (1975).
- J. Padovan, Quasi-analytical transient conduction solution, *AIAA Jl* **13**, 1238 (1975).
- R. I. Reeves, Variational solutions for two nonlinear boundary-value problems for diffusion with concentration-dependent coefficients, *Q. Appl. Math.* **33**, 291 (1975).
- P. Riha, On the microcontinuum model of heat conduction in materials with inner structure, *Int. J. Engng Sci.* **14**, 529 (1976).
- L. D. Simmons, Critical thickness of insulation accounting for variable convection coefficient and radiation loss, *J. Heat Transfer* **98**, 150 (1976).
- K. Stewartson and R. T. Waechter, On Stefan's problem for spheres, *Proc. R. Soc.* **348**, 415 (1976).
- N. V. Suryanarayana, Transient response of straight fins, Part II, *J. Heat Transfer* **98**, 324 (1976).
- W. Tarnawski, Mathematical model of frozen consumption products, *Int. J. Heat Mass Transfer* **19**, 15 (1976).
- A. G. Tempkin, Discrete formulation of heat conduction and diffusion equations, *Int. J. Heat Mass Transfer* **19**, 785 (1976).
- M. Toren, Y. Zvirin and Y. Winograd, Melting and evaporation phenomena during electrical erosion, *J. Heat Transfer* **97**, 576 (1975).
- V. Vacek, Slab radiation with initial temperature distribution described by an odd function, *Wärme- und Stoffübertragung* **9**, 49 (1976).
- B. Vujanovic and B. Baćić, Applications of Gauss's principle of least constraint to the non-linear-transfer problem, *Int. J. Heat Mass Transfer* **19**, 721 (1976).
- L. S. Yao, C. L. Tien and S. A. Berger, Thermal analysis of a fast-moving slab in two adjacent temperature chambers, *J. Heat Transfer* **98**, 326 (1976).
- T.-F. Zien, Approximate calculation of transient heat conduction, *AIAA Jl* **14**, 404 (1976).
- G. I. Zhovnir and V. S. Novikov, Construction of Green's functions for boundary-value problems for the heat conduction equation on the basis of the Ye. V. Tolubinskiy integral method, *Heat Transfer, Soviet Res.* **7**(3), 165 (1975).

FLOW WITH SEPARATED REGIONS

- R. W. Johnson and A. M. Dhanak, Heat transfer in laminar flow past a rectangular cavity with fluid injection, *J. Heat Transfer* **98**, 226 (1976).
- P. A. Libby, Prediction of the intermittent turbulent wake of a heated cylinder, *Physics Fluids* **19**, 494 (1976).
- I. Nakamura, Steady wake behind a sphere, *Physics Fluids* **19**, 5 (1976).
- M. C. Smith, M. C. Potter and S. Kapur, The effect of wall temperature on the growth and separation of the laminar boundary layer of a sphere, *Int. J. Heat Mass Transfer* **19**, 33 (1976).
- R. K. Sullery, A. K. Gupta and C. S. Moorthy, Similarity in the turbulent near wake of bluff bodies, *AIAA Jl* **13**, 1425 (1975).

HEAT AND MASS TRANSFER

- S. A. Beg, Local mass transfer from spheroids, *Wärme- und Stoffübertragung* **9**, 55 (1976).
- M. F. Blair and R. D. Lander, New techniques for measuring film cooling effectiveness, *J. Heat Transfer* **97**, 539 (1975).
- R. S. Colladay and L. M. Russell, streakline flow visualization of discrete hole film cooling for gas turbine applications, *J. Heat Transfer* **98**, 245 (1976).
- P. Durbetaki and H. W. Hsu, Stagnation point heat transfer: Ignition of a combustible mixture with inert gas injection through a porous wall, *J. Heat Transfer* **97**, 626 (1975).
- N. W. Foster and D. Lampard, Effects of density and velocity ratio on discrete hole film cooling, *AIAA Jl* **13**, 1112 (1975).
- M. H. Friedman, Transport through a growing boundary layer to a permeable wall, *A.I.Ch.E. Jl* **22**, 407 (1976).
- J. M. R. Graham, Turbulent flow past a porous plate, *J. Fluid Mech.* **73**, 565 (1976).
- G. W. Haering, Film cooling in adverse pressure gradients, *Int. J. Heat Mass Transfer* **19**, 117 (1976).
- H. Honma, Incompressible viscous flow past a flat plate with injection or suction, *Bull. JSME* **19**, 154 (1976).
- F. Kayihan, O. C. Sandall and D. A. Mellichamp, Simultaneous heat and mass transfer in binary distillation. I. Theory, *Chem. Engng Sci.* **30**, 1333 (1975).
- C. S. Kim and P. M. Chung, An asymptotic, thermo-diffusive ignition theory of porous solid fuels, *J. Heat Transfer* **98**, 269 (1976).
- S. Lengyel, The calculation of temperature distribution, heat flow, component diffusion flows and reaction rates in tungsten halogen lamps, *J. Phys. D: Appl. Phys.* **9**, 709 (1976).

- R. E. Mayle and F. J. Camarata, Multihole cooling film effectiveness and heat transfer, *J. Heat Transfer* **97**, 534 (1975).
- R. E. Mayle and F. C. Kopper, Adiabatic wall effectiveness of a turbulent boundary layer with slot injection, *J. Heat Transfer* **98**, 240 (1976).
- R. H. Nilson and Y. G. Tsuei, Film cooling by oblique slot injection in high-speed laminar flow, *AIAA Jl* **13**, 1199 (1975).
- N. Peters, Analysis of a laminar flat plate boundary-layer diffusion flame, *Int. J. Heat Mass Transfer* **19**, 385 (1976).
- R. Piva and A. Srokowski, Cross-flow influence on slot cooling effectiveness, *J. Aircraft* **12**, 617 (1975).
- J. A. Schetz and J. van Overeem, Skin friction reduction by injection through combinations of slots and porous sections, *AIAA Jl* **13**, 971 (1975).
- I. T. Shvets and V. M. Repukhov, Calculation of boundary conditions for heat transfer in combined cooling of a wall, *Heat Transfer, Soviet Res.* **7**(4), 40 (1975).
- I. T. Shvets and V. M. Repukhov, Effect of thermal history of a gas flow on the transfer of heat from a wall (thermal-protection blanket problem), *Heat Transfer, Soviet Res.* **7**(3), 145 (1975).
- E. M. Sparrow, R. J. Goldstein and M. A. Rouf, Effect of nozzle-surface separation distance on impingement heat transfer for a jet in a cross-flow, *J. Heat Transfer* **97**, 528 (1975).
- D. Sucker and H. Brauer, Steady mass and heat transfer from transverse cylinders in steady flow (in German), *Wärme- und Stoffübertragung* **9**, 1 (1976).
- Y. Tambour and B. Gal-Or, Phenomenological theory of thermodynamic coupling in multicomponent compressible laminar boundary layers, *Physics Fluids* **19**, 219 (1976).
- H.-C. Yao and V. E. Schrock, Heat and mass transfer from freely falling drops, *J. Heat Transfer* **98**, 120 (1976).
- T.-F. Zien Approximate analysis of heat transfer in transpired boundary layers with effects of Prandtl number, *Int. J. Heat Mass Transfer* **19**, 513 (1976).

LIQUID METALS

- I. T. Alad'yev and N. S. Kondrat'yev (dec.), Heat transfer in condensation of high-velocity potassium-vapor streams, *Heat Transfer, Soviet Res.* **7**(4), 74 (1975).
- S. G. Bankoff and H. K. Choi, Growth of a bubble at a heated surface in a pool of liquid metal, *Int. J. Heat Mass Transfer* **19**, 87 (1976).
- O. E. Dwyer, Growth rates of hemispherical bubbles in nucleate boiling of liquid metals, *Chem. Engng Sci.* **31**, 187 (1976).
- O. E. Dwyer and C. J. Hsu, Evaporation of the microlayer in hemispherical bubble growth in nucleate boiling of liquid metals, *Int. J. Heat Mass Transfer* **19**, 185 (1976).
- I. G. Gorlov, A. I. Rzayev and V. F. Khudyakov, Boiling of potassium in pipes at high pressures, *Heat Transfer, Soviet Res.* **7**(4), 60 (1975).
- W. J. Minkowycz, D. M. France and R. M. Singer, Behavior of inert gas bubbles in forced convective liquid metal circuits, *J. Heat Transfer* **98**, 5 (1976).
- A. V. Nekrasov, S. A. Logvinov and I. N. Testov, Heat-transfer crisis in a steam-generating tube on heating with a liquid-metal heat carrier (coolant), *Soviet Atomic Energy* **39**, 595 (1975).
- J. R. Welty and D. R. Peinecke, Velocity measurements for buoyancy-induced flow in mercury adjacent to vertical single cylinders, *J. Heat Transfer* **98**, 146 (1976).

LOW DENSITY

- H. Lang, Second-order slip effects in Poiseuille flow, *Physics Fluids* **19**, 366 (1976).
- S. K. Loyalka, Velocity profile in the Knudsen layer for the Kramer's problem, *Physics Fluids* **18**, 1666 (1975).
- M. Muthanna and G. Nath, Magnetic hypersonic rarefied flow at the stagnation point of a blunt body with slip and mass transfer, *Int. J. Heat Mass Transfer* **19**, 603 (1976).

- T. Tyrehus, J. J. Smolderen and J. F. Wendt, Knudsen layer for tracer gas diffusion, *Physics Fluids* **18**, 1253 (1975).

MHD, ARCS AND PLASMA

- D. M. Benenson and J. J. Nowobilski, Temperature measurements in rail electrode cross-flow arcs, *AIAA Jl* **14**, 408 (1976).
- D. Bhattacharyya and W. H. Gauvin, Modeling of heterogeneous systems in a plasma jet reactor, *A.I.Ch.E. Jl* **21**, 879 (1975).
- S. K. Chan, M. D. Cowley and M. T. C. Fang, Integral methods of analysing electric arcs: III. Shape-factor correlation for low radiation and laminar flow, *J. Phys. D: Appl. Phys.* **9**, 1085 (1976).
- A. M. Howatson and D. R. Topham, The instability of electric arcs burning axially in accelerated flow, *J. Phys. D: Appl. Phys.* **9**, 1101 (1976).
- V. Javeri, Combined influence of wall conductance, pressure work, viscous dissipation and Joule heating on MHD channel flow heat transfer, *Wärme- und Stoffübertragung* **8**, 261 (1975).
- B. S. Mazumder, A. S. Gupta and N. Datta, Hall effects on combined free and forced convective hydromagnetic flow through a channel, *Int. J. Engng Sci.* **14**, 285 (1976).
- D. A. Nusupbekova, Sh. Sh. Ibrayev and K. K. Shalina, Spectral measurement of temperature in three-phase electric-arc chambers, *Heat Transfer, Soviet Res.* **7**(4), 143 (1975).
- D. C. Strachan and M. R. Barrault, Axial velocity variations in high-current free-burning arcs, *J. Phys. D: Appl. Phys.* **9**, 429 (1976).
- P. S. Todorovic, G. R. Jones and M. R. Barrault, Time-resolved laser-Doppler measurements in a high-current arc plasma, *J. Phys. D: Appl. Phys.* **9**, 423 (1976).

MEASUREMENT TECHNIQUES

- S. F. Ali, Hot-wire anemometry in moderately heated flow, *Rev. Scient. Instrum.* **46**, 185 (1975).
- A. N. Amatuni and T. I. Malyutina, An interference dilatometer for the temperature range 20–1100°C, *Measmt Tech., Pittsb.* **18**, 267 (1975).
- P. Andersson and G. Bäckström, Thermal conductivity of solids under pressure by the transient hot wire method, *Rev. Scient. Instrum.* **47**, 205 (1976).
- R. A. Antonia and A. Prabhhu, Reynolds shear stress and heat flux balance in a turbulent round jet, *AIAA Jl* **14**, 221 (1976).
- R. M. A. Azzam, Oscillating-analyzer ellipsometer, *Rev. Scient. Instrum.* **47**, 624 (1976).
- W. D. Baines and J. F. Keffer, Measurement of shear stress near a stagnation point, *Rev. Scient. Instrum.* **47**, 440 (1976).
- J. J. Barnoski, Hot-wire measurement of velocity gradients in a fluid flow, *AIAA Jl* **13**, 1129 (1975).
- R. P. Benedict and T. M. Godett, A note on obtaining temperatures from thermocouple EMF measurements, *J. Engng Pwr* **97**, 516 (1975).
- R. P. Benedict, J. S. Wyler and G. B. Brandt, The effect of edge sharpness on the discharge coefficient of an orifice, *J. Engng Pwr* **97**, 576 (1975).
- G. R. Boyer, B. F. Lamouroux and B. S. Prade, Air-flow-birefringence measurement, *J. Opt. Soc. Am.* **75**, 1319 (1975).
- L. Bruschi and M. Santini, Vibrating wire viscometer, *Rev. Scient. Instrum.* **46**, 1560 (1975).
- L. Cheng and W. G. Cross, Production of single liquid drops of controlled size and velocity, *Rev. Scient. Instrum.* **46**, 263 (1975).
- H. F. Dobeck and J. H. Massig, Application of a Fabry Perot spectrometer to the measurement of spectral line shifts much smaller than line width, *Appl. Optics* **15**, 69 (1976).
- A. B. Dukler and W. N. Chen, Measurement of mean velocities and turbulence structure using hot wires or films in two-dimensional flow, *I.E.C Fundamentals* **14**, 359 (1975).
- W. F. Dunn, B. T. Chao and A. M. Clauzing, Simple optical

- detector for measuring production rate and local velocity of drops. *Rev. Scient. Instrum.* **47**, 321 (1976).
- E. Durst and W. H. Stevenson. Visual modeling of laser Doppler anemometer signals by moiré fringes. *Appl. Optics* **15**, 137 (1976).
- D. Favier and N. Pellerin. Measurement of all three mean velocity components by a single hot film anemometer. *Rev. Scient. Instrum.* **47**, 368 (1976).
- U. Gat, D. S. Kammer and O. J. Hahn. The effect of temperature dependent properties on transients measurement with intrinsic thermocouple. *Int. J. Heat Mass Transfer* **18**, 1337 (1975).
- C. A. Gearhart, Jr., J. A. McLinn and W. Zimmerman, Jr. Simple high-stability potentiometric AC bridge circuits for high-resolution low-temperature resistance thermometry. *Rev. Scient. Instrum.* **46**, 1493 (1975).
- O. A. Gerashchenko, S. A. Sazhina, T. G. Grishchenko and A. D. Lebedev. Dynamic characteristics of an absolute radiometer. *Heat Transfer, Soviet Res.* **7**(3), 116 (1975).
- P. S. Glazyrin, T. A. Ivanova and V. Pak. Methods and apparatus for calibrating thin-film liquid-crystal heat detectors. *Measmt Tech., Pittsb.* **18**, 417 (1975).
- K. R. Hall, P. T. Eubank, A. S. Myerson and W. E. Nixon. A new technique for collecting binary vapor liquid equilibrium data without measuring composition: the method of intersecting isochores. *A.I.Ch.E. Jl* **21**, 1111 (1975).
- N. A. Hallowell and A. K. Lewkowicz. Investigation into the anomalous behavior of Pitot tubes in dilute polymer solutions. *Physics Fluids* **18**, 1617 (1976).
- D. A. Harper, R. H. Hildebrand, R. Stiening and R. Winston. Heat trap: an optimized far infrared field optics system. *Appl. Optics* **15**, 53 (1976).
- B. J. Jody, P. C. Jain and S. C. Saxena. Determination of thermal properties from steady-state heat transfer measurements on a heated tungsten wire in vacuum and helium gas. *J. Heat Transfer* **97**, 605 (1975).
- P. K. Katti and P. C. Mehta. Noise elimination technique in holography. *Appl. Optics* **15**, 530 (1976).
- Y. J. Kaufman and A. Gersten. Simultaneous heating and temperature measurements by an infrared laser beam. *Appl. Optics* **15**, 353 (1976).
- B. Keramati and C. H. Wolgemuth. Device for the direct measurement of fluid densities. *Rev. Scient. Instrum.* **46**, 1573 (1975).
- T. G. Kollie, J. L. Horton, K. R. Carr, M. B. Herskovitz and C. A. Mossman. Temperature measurement errors with type K (Chromel vs Alumel) thermocouples due to short-ranged ordering in Chromel. *Rev. Scient. Instrum.* **46**, 1447 (1975).
- A. A. Kozhevnikov. Determination of enthalpy, temperature and other properties of flame jets by the two-thermocouple method. *Heat Transfer, Soviet Res.* **7**(4), 149 (1975).
- B. P. Kozyrev and D. D. Val'chikhin. Differential IR pyrometry of surface-heating nonuniformity. *Measmt Tech., Pittsb.* **18**, 413 (1975).
- J. J. Lee. Simple swept double probe for streaming plasma diagnostics. *Rev. Scient. Instrum.* **46**, 1591 (1975).
- D. L. Martin. Germanium thermometer calibration. *Rev. Scient. Instrum.* **46**, 657 (1975).
- J. A. Maynard, T. K. Gaylord and J. H. Rust. Data acquisition system for laser Doppler velocimeters. *Rev. Scient. Instrum.* **46**, 1469 (1975).
- R. V. Mustacich and B. R. Ware. Velocity-tracking circuit for a laser Doppler velocimeter using real-time spectrum analysis. *Rev. Scient. Instrum.* **47**, 108 (1976).
- A. G. Parker and J. C. Brusse. New smoke generator for flow visualization in low speed wind tunnels. *J. Aircraft* **13**, 57 (1976).
- A. N. Pavlovskii. Calibration of rotameters and rheometers. *Measmt Tech., Pittsb.* **18**, 393 (1975).
- F. J. Pierce and C. I. Ezekwe. Comparison of Reynolds stress diagnostics by fixed and rotating probes. *AIAA Jl* **14**, 412 (1976).
- B. C. Platt, H. W. Icenogle, J. E. Harvey, R. Korniski and W. L. Wolfe. Technique for measuring the refractive index and its change with temperature in the infrared. *J. Opt. Soc. Am.* **65**, 1264 (1975).
- R. Saarimaa and P. Wallin. Electronic liquid-in-glass thermometer. *Rev. Scient. Instrum.* **47**, 195 (1976).
- R. P. Salazar and E. Marschall. Thickness measurements in liquid film flow by laser scattering. *Rev. Scient. Instrum.* **46**, 1539 (1975).
- V. A. Sandborn. Effect of velocity gradients on measurements of turbulent shear stress. *AIAA Jl* **14**, 400 (1976).
- R. Schnurmann and P. A. Davies. Admissible Reynolds numbers for Poiseuille flow in jet viscometer orifices. *Proc. R. Soc.* **347**, 47 (1975).
- R. V. Smith and J. T. Leang. Evaluations of correlations for two-phase flowmeters three current—one new. *J. Engng Pwr* **97**, 589 (1975).
- H. M. Smith, M. H. Sewall and J. R. King. Real-time holographic interferometry: a system. *Appl. Optics* **15**, 729 (1976).
- F. A. Soldatov and S. N. Kryukov. Theory of the moving boundary method for determining the rate of evaporation and the diffusion coefficient. *Int. Chem. Engng* **14**, 607 (1975).
- A. V. Solodukhin. Standard quartz dilatometer for the temperature range 20–300 K. *Measmt Tech., Pittsb.* **18**, 274 (1975).
- P. J. Tausch and R. S. Newrock. Comment on resistance thermometry bridges. *Rev. Sci. Instrum.* **47**, 515 (1976).
- M. A. F. Thiel. Error calculation of polarization measurements. *J. Opt. Soc. Am.* **66**, 65 (1976).
- N. K. Tutu and R. Chevray. Cross-wire anemometry in high intensity turbulence. *J. Fluid Mech.* **71**, 785 (1975).
- T. D. Vavanellos and J. H. Olson. Light scattering as a method for measuring turbulent concentration fluctuations in liquids. *IEC Fundamentals* **14**, 355 (1975).
- J. Y. Wang. Laser absorption methods for simultaneous determination of temperature and species concentrations through a cross section of a radiating flow. *Appl. Optics* **15**, 768 (1976).
- A. W. Webb, D. U. Gubser and L. C. Towle. Cryostat for generating pressures to 100 kilobar and temperatures to 0.03K. *Rev. Scient. Instrum.* **47**, 59 (1976).
- K. W. Weber and H.-J. Hinz. Improved flow microcalorimeter for biophysical studies. *Rev. Scient. Instrum.* **47**, 592 (1976).
- J. S. Wyler and R. P. Benedict. Comparisons between throat and pipe wall tap nozzles. *J. Engng Pwr* **97**, 569 (1975).
- V. N. Zmeykov, B. P. Ustimenko and A. A. Shishkin. A method for measuring temperature and velocity fluctuations in high-temperature turbulent flows. *Heat Transfer, Soviet Res.* **7**(4), 134 (1975).

NATURAL CONVECTION

- S. Abdell and J. L. Hudson. An experimental study of centrifugally driven free convection in a rectangular cavity. *Int. J. Heat Mass Transfer* **18**, 1415 (1975).
- J. Adler. Surface tension driven flows in shallow layers due to heat or mass transfer to the free surface. *Int. J. Engng Sci.* **13**, 1017 (1975).
- J. N. Arnold, I. Catton and D. K. Edwards. Experimental investigation of natural convection in inclined rectangular regions of differing aspect ratios. *J. Heat Transfer* **98**, 67 (1976).
- T. Audunson and B. Gebhart. Secondary mean motions arising in a buoyancy induced flow. *Int. J. Heat Mass Transfer* **19**, 737 (1976).
- N. G. Barton. The dispersion of a buoyant solute in laminar flow in a straight horizontal pipe. Part I. Predictions from Erdogan and Chatwin's (1967) paper. *J. Fluid Mech.* **74**, 81 (1976).
- N. G. Barton. The dispersion of a buoyant solute in laminar flow in a straight horizontal pipe. Part 2. The approach to the asymptotic state. *J. Fluid Mech.* **74**, 91 (1976).
- A. Boura and B. Gebhart. The stability of a vertical flow

- which arises from combined buoyancy modes. *A.I.Ch.E. Jl* **22**, 94 (1976).
- H. Buchberg, I. Catton and D. K. Edwards, Natural convection in enclosed spaces—a review of application to solar energy collections. *J. Heat Transfer* **98**, 182 (1976).
- D. R. Caldwell, Thermosolutal convection in a solution with large negative Soret coefficient. *J. Fluid Mech.* **74**, 129 (1976).
- G. D. Callahan and W. J. Marner, Transient free convection with mass transfer on an isothermal vertical flat plate. *Int. J. Heat Mass Transfer* **19**, 165 (1976).
- C.-Y. Chang, J. A. Guin and L. D. Roberts, Surface reaction with combined forced and free convection. *A.I.Ch.E. Jl* **22**, 252 (1976).
- G. S. Charlson and R. L. Sani, Finite amplitude axisymmetric thermo-convective flows in a bounded cylindrical layer of fluid. *J. Fluid Mech.* **71**, 209 (1975).
- K. C. Cheng and R.-S. Wu, Maximum density effects on thermal instability of horizontal laminar boundary layers. *Appl. Scient. Res.* **31**, 465 (1976).
- H. H.-S. Chu and S. W. Churchill, The effect of heater size, location, aspect ratio and boundary conditions on two-dimensional, laminar, natural convection in rectangular channels. *J. Heat Transfer* **98**, 194 (1976).
- J. F. Clarke and N. Riley, Free convection and the burning of a horizontal fuel surface. *J. Fluid Mech.* **74**, 415 (1976).
- L. J. Crane, Axially symmetric plumes at very small Prandtl numbers. *Z. Angew. Math. Phys.* **26**, 427 (1975).
- L. J. Crane, Natural convection from a vertical cylinder at very small Prandtl numbers. *Z. Angew. Math. Phys.* **27**, 61 (1976).
- D. E. Daney, Turbulent natural convection of liquid deuterium, hydrogen and nitrogen within enclosed vessels. *Int. J. Heat Mass Transfer* **19**, 431 (1976).
- J. R. Dyer, The development of laminar natural-convective flow in a vertical uniform heat flux duct. *Int. J. Heat Mass Transfer* **18**, 1455 (1975).
- I. A. Eltayeb, Overstable hydromagnetic convection in a rotating fluid layer. *J. Fluid Mech.* **71**, 161 (1975).
- R. Farhadieh and R. S. Tankin, A study of the freezing of sea water. *J. Fluid Mech.* **71**, 293 (1975).
- D. E. Titzjarrald, An experimental study of turbulent convection in air. *J. Fluid Mech.* **73**, 693 (1976).
- T. Fujii and M. Fujii, The dependence of local Nusselt number on Prandtl number in the case of free convection along a vertical surface with uniform heat flux. *Int. J. Heat Mass Transfer* **19**, 121 (1976).
- R. D. Gasser and M. S. Kazimi, Onset of convection in a porous medium with internal heat generation. *J. Heat Transfer* **98**, 49 (1976).
- B. Gebhart, H. Shaukatullah and L. Pera, The interaction of unequal laminar plane plumes. *Int. J. Heat Mass Transfer* **19**, 751 (1976).
- A. Goodarz, Stability of a micropolar fluid layer heated from below. *Int. J. Engng Sci.* **14**, 81 (1976).
- D. D. Gray and A. Giorgini, The validity of the Boussinesq approximation for liquids and gases. *Int. J. Heat Mass Transfer* **19**, 545 (1976).
- L. L. Green and T. D. Foster, Secondary convection in a Hele Shaw cell. *J. Fluid Mech.* **74**, 675 (1975).
- T. Green and S. W. Kang, Long-wave decay due to convective turbulence. *J. Fluid Mech.* **73**, 427 (1976).
- J. J. Grella and G. M. Faeth, Measurements in a two-dimensional thermal plume along a vertical adiabatic wall. *J. Fluid Mech.* **71**, 701 (1975).
- G. M. Harpole and I. Catton, Laminar natural convection about downward facing heated blunt bodies to liquid metals. *J. Heat Transfer* **98**, 208 (1976).
- W. Hauf and U. Grigull, Heat transfer measurements on horizontal, cylindrical containers—essential parameters (in German). *Wärme- und Stoffübertragung* **9**, 21 (1976).
- C. A. Hieber and E. J. Nash, Natural convection above a line heat source: higher-order effects and stability. *Int. J. Heat Mass Transfer* **18**, 1473 (1975).
- K. G. T. Hollands, T. E. Unny, G. D. Raithby and L. Konicek, Free convection heat transfer across inclined air layers. *J. Heat Transfer* **98**, 189 (1976).
- G. M. Homsy and A. E. Sherwood, Convective instabilities in porous media with through flow. *A.I.Ch.E. Jl* **22**, 168 (1976).
- C. Hunter and N. Riahi, Nonlinear convection in a rotating fluid. *J. Fluid Mech.* **72**, 433 (1976).
- M. C. Jischke and R. T. Doty, Linearized buoyant motion in a closed container. *J. Fluid Mech.* **71**, 729 (1975).
- C. A. Jones, D. R. Moore and N. O. Weiss, Axisymmetric convection in a cylinder. *J. Fluid Mech.* **73**, 353 (1976).
- Y. Kamotani and S. Ostrach, Effect of thermal instability on thermally developing laminar channel flow. *J. Heat Transfer* **98**, 62 (1976).
- T.-T. Kao, Locally nonsimilar solution for laminar free convection adjacent to a vertical wall. *J. Heat Transfer* **98**, 321 (1976).
- D. R. Kassoy and Z. Zebib, Variable viscosity effects on the onset of convection in porous media. *Physics Fluids* **18**, 1649 (1976).
- R. J. Kee, C. S. Landram and J. C. Miles, Natural convection of a heat-generating fluid within closed vertical cylinders and spheres. *J. Heat Transfer* **98**, 55 (1976).
- C. B. Kim and D. E. Wollersheim, Free convection heat transfer to non-Newtonian, dilatant fluids from a horizontal cylinder. *J. Heat Transfer* **98**, 144 (1976).
- F. A. Kulacki and R. J. Goldstein, Hydrodynamic instability in fluid layers with uniform volumetric energy sources. *Appl. Scient. Res.* **31**, 81 (1975).
- F. A. Kulacki and R. Ramchandani, Hydrodynamic instability in a porous layer saturated with a heat generating fluid. *Wärme- und Stoffübertragung* **8**, 179 (1975).
- M. L. Lawson, W.-J. Yang and S. Bunditkul, Theory on thermal instability of binary gas mixtures in porous media. *J. Heat Transfer* **98**, 35 (1976).
- K. S. Liew and M. Adelman, Laminar natural heat transfer from an isothermal sphere to non-Newtonian fluid. *Can. J. Chem. Engng* **53**, 494 (1975).
- R. R. Long, Relation between Nusselt number and Rayleigh number in turbulent thermal convection. *J. Fluid Mech.* **73**, 445 (1976).
- W. J. Marner and J. Kleppe, Combined free and forced laminar convection in a Bingham plastic on a vertical flat plate. *J. Fluids Engng* **98**, 119 (1976).
- W. J. Minkowycz and P. Cheng, Free convection about a vertical cylinder embedded in a porous medium. *Int. J. Heat Mass Transfer* **19**, 805 (1976).
- J. Mizushima and K. Gotoh, The stability of natural convection in a vertical fluid layer. *J. Fluid Mech.* **73**, 65 (1976).
- D. A. Nield, The onset of transient convective instability. *J. Fluid Mech.* **71**, 441 (1975).
- K. Noto and R. Matsumoto, Turbulent heat transfer by natural convection along an isothermal vertical flat surface. *J. Heat Transfer* **97**, 621 (1975).
- J.-W. Ou, K. C. Cheng and R.-C. Lin, Combined free and forced laminar convection in inclined rectangular channels. *Int. J. Heat Mass Transfer* **19**, 277 (1976).
- H. Ozoc, H. Sayama and S. W. Churchill, Natural convection in an inclined rectangular channel at various aspect ratios and angles—experimental measurements. *Int. J. Heat Mass Transfer* **18**, 1425 (1975).
- H. Ozoc, K. Yamamoto, S. W. Churchill and H. Sayama, Three-dimensional numerical analysis of laminar natural convection in a confined fluid heated from below. *J. Heat Transfer* **98**, 202 (1976).
- B. R. Pamplin and G. H. Holt, Temperature oscillations induced in a mercury bath by horizontal heat flow. *J. Phys. D: Appl. Phys.* **9**, 145 (1976).
- M. A. Patrick and A. A. Wragg, Optical and electrochemical studies of transient free convection mass transfer at horizontal surfaces. *Int. J. Heat Mass Transfer* **18**, 1397 (1975).
- J. K. Platten and G. Chavepeyron, Instabilité et flux de chaleur dans le problème de Bénard à deux constituants aux

- coefficients de Soret positifs. *Int. J. Heat Mass Transfer* **19**, 27 (1976).
- G. D. Raithby and K. G. T. Hollands, Laminar and turbulent free convection from elliptic cylinders, with a vertical plate and horizontal circular cylinder as special cases. *J. Heat Transfer* **98**, 72 (1976).
- R. S. Reddy Gorla, Combined natural and forced convection in a laminar wall jet along a vertical plate with uniform surface heat flux. *Appl. Scient. Res.* **31**, 455 (1976).
- R. J. Ribando and K. E. Torrance, Natural convection in a porous medium: Effects of confinement, variable permeability and thermal boundary conditions. *J. Heat Transfer* **98**, 42 (1976).
- H. Rubin, On the analysis of cellular convection in porous media. *Int. J. Heat Mass Transfer* **18**, 1483 (1975).
- S. A. Sabbagh, A. Aziz, A. S. El-Ariny and G. Hamad, Combined free and forced convection in inclined circular tubes. *J. Heat Transfer* **98**, 322 (1976).
- V. U. K. Sastry and G. Maiti, Numerical solution of combined convective heat transfer of micropolar fluid in an annulus of two vertical pipes. *Int. J. Heat Mass Transfer* **19**, 207 (1976).
- V. F. Schrock and A. D. K. Laird, Physical modelling of combined forced and natural convection in wet geothermal formations. *J. Heat Transfer* **98**, 213 (1976).
- N. Seki, S. Fukusano and M. Nakoaka, Experimental study on natural convection heat transfer with density inversion of water between two horizontal concentric cylinders. *J. Heat Transfer* **97**, 556 (1975).
- P. Singh, The application of the governing principle of dissipative processes to Bénard convection. *Int. J. Heat Mass Transfer* **19**, 581 (1976).
- E. M. Sparrow and L. Lee, Analysis of mixed convection about a horizontal cylinder. *Int. J. Heat Mass Transfer* **19**, 229 (1976).
- E. M. Sparrow, L. Lee and N. Shamsundar, Convective instability in a melt layer heated from below. *J. Heat Transfer* **98**, 88 (1976).
- K. Stork and U. Müller, Convection in boxes: an experimental investigation in vertical cylinders and annuli. *J. Fluid Mech.* **71**, 231 (1975).
- A. J. Suo-Antilla and I. Catton, The effect of stabilizing temperature gradient on heat transfer from a molten fuel layer with volumetric heating. *J. Heat Transfer* **97**, 544 (1975).
- Y. Tsuchiya, The anomalous behavior of oscillatory temperature fluctuations near the threshold of thermal convection. *J. Phys. Soc. Japan* **40**, 280 (1976).
- G. C. Vliet and D. C. Ross, Turbulent natural convection on upward and downward facing inclined constant heat flux surfaces. *J. Heat Transfer* **97**, 549 (1975).
- R.-S. Wu and K. C. Cheng, Maximum density effects on thermal instability induced by combined buoyancy and surface tension. *Int. J. Heat Mass Transfer* **19**, 559 (1976).
- and Wärmeübergang in Schuttsschichten I. Überblick und mathematische Grundlagen. *Int. J. Heat Mass Transfer* **19**, 9 (1976).
- G. A. Hughmark, Heat transfer in a packed bed. *AIChE J.* **22**, 198 (1976).
- A. I. Karpenko, N. I. Syromyatnikov and L. K. Vasanova, Heat transfer in the thermal stabilization zone of a liquid-fluidized bed. *Heat Transfer, Soviet Res.* **7**, 107 (1975).
- Y. S. Lou and C. Wang, Temperature distribution in cylindrical packed beds. *Int. J. Engng Sci.* **14**, 467 (1976).
- A. V. Luikov, Capillary-porous materials and the transfer of heat or energy. *Int. Chem. Engng* **18**, 54 (1976).
- D. R. McGaw, Heat transfer in shallow crossflow fluidized bed heat exchangers I. A generalized theory, *Int. J. Heat Mass Transfer* **19**, 657 (1976).
- D. R. McGaw, Heat transfer in shallow crossflow fluidized bed heat exchangers II. Experimental, *Int. J. Heat Mass Transfer* **19**, 665 (1976).
- J. Medlin and R. Jackson, Fluid mechanical description of fluidized beds. The effect of distributor thickness on convective instabilities. *I EC Fundamentals* **14**, 315 (1975).
- G. Neale, H. Anaka and D. Hampel, Transport phenomena in non-homogeneous porous media: fluid flow. *Can. J. Chem. Engng* **53**, 691 (1975).
- M. Nishimura, Y. Hirabayashi and S. Sugiyama, Heat transfer accompanied by melting in a fixed bed of granular solids. *Int. Chem. Engng* **16**, 169 (1976).
- Yu. Ya. Pechenov and V. G. Kashirskiy, Heat transfer to an air suspension of solids flowing in a horizontal pipe. *Heat Transfer, Soviet Res.* **7**(4), 113 (1975).
- K. Ragunathan and K. Subba Raju, Eddy diffusivities in liquid-fluidized beds. *I EC Proc. Des. Dev.* **15**, 82 (1976).
- P. N. Rowe and A. W. Nienow, Minimum fluidisation velocity of multi-component particle mixtures. *Chem. Engng Sci.* **30**, 1365 (1975).
- I. I. Sherif, A. S. A. Ammar and S. A. El-Messih, The effect of pore-shape configuration orientation on the thermal conductivity of porous materials. *Int. J. Heat Mass Transfer* **19**, 227 (1976).
- R. Siegel, Effect of distributor plate-to-bed resistance ratio on onset of fluidized-bed channeling. *AIChE J.* **22**, 590 (1976).
- G. G. Tyukhav, Ye. V. Kravchenko and G. P. Mankevich, Electrical resistance of fluidized beds and the electrode temperature in a unit with cylindrical electrode geometry. *Heat Transfer, Soviet Res.* **7**(4), 101 (1975).
- I. Yaron, Regular expansion solutions for heat or mass transfer in concentrated two-phase particulate systems at small Peclét and Reynolds numbers. *Int. J. Heat Mass Transfer* **19**, 61 (1976).
- S. S. Zabrodsky, N. V. Antonishin and A. L. Parnas, On fluidized bed-to-surface heat transfer. *Can. J. Chem. Engng* **54**, 52 (1976).

RADIATION

- E. O. Bartell and W. L. Wolfe, Cavity radiators: an ecumenical theory. *Appl. Optics* **15**, 84 (1976).
- H. S. Bennett and R. A. Forman, Absorption coefficients of weakly absorbing solids: theory of a barothermal gas cell. *Appl. Optics* **15**, 347 (1976).
- H. S. Bennett and R. A. Forman, Absorption coefficients of highly transparent solids: photoacoustic theory for cylindrical configurations. *Appl. Optics* **15**, 1313 (1976).
- J. R. Carpenter, D. G. Briggs and V. Sernas, Combined radiation and developing laminar free convection between vertical flat plates with asymmetric heating. *J. Heat Transfer* **98**, 95 (1976).
- A. T. Chai and A. E. S. Green, Ratio measurement of diffuse to direct solar irradiances in the middle ultraviolet. *Appl. Optics* **15**, 1182 (1976).
- A. L. Crosbie, A closed-form solution for the radiosity at the edge of a rectangular cavity. *J. Heat Transfer* **98**, 148 (1976).
- G. C. Davis, The effect of axial radiation on the cartesian
- J. Broughton and J. Kubie, A note on heat-transfer mechanisms as applied to flowing granular media. *Int. J. Heat Mass Transfer* **19**, 232 (1976).
- D. M. Burch, R. W. Allen and B. A. Peavy, Transient temperature distribution within porous slabs subjected to sudden transpiration heating. *J. Heat Transfer* **98**, 221 (1976).
- Yu. A. Buyevich, A model of bubbles rising in a fluidized bed. *Int. J. Multiphase Flow* **2**, 337 (1975).
- R. Clift, M. Filla and L. Massimilla, Gas and particle motion in jets in fluidized beds. *Int. J. Multiphase Flow* **2**, 549 (1976).
- M. Doi, A new variational approach to the diffusion and the flow problem in porous media. *J. Phys. Soc. Japan* **40**, 567 (1976).
- M. M. El-Kaissy and G. M. Homsy, Instability waves and the origin of bubbles in fluidized beds. Part I. Experiments. *Int. J. Multiphase Flow* **2**, 379 (1976).
- D. Gelbin, K.-H. Radeke, W. Stein and H.-J. Wolff, Stoff-

- Graetz problem, *Int. J. Heat Mass Transfer* **19**, 157 (1976).
 T. E. Donovan and R. Greif, Laminar convection with an absorbing and emitting gas, *Appl. Scient. Res.* **31**, 110 (1975).
 R. Farrell, Determination of configuration factors of irregular shape, *J. Heat Transfer* **98**, 311 (1976).
 Z. S. Galanova, Radiant and convective heat transfer to a plate and cone, *Heat Transfer, Soviet Res.* **7**(3), 93 (1975).
 C. K. Hsieh and R. W. Coldevey, Errors in reflectance measurement of transparent substances due to nonblackness, *Solar Energy* **17**, 201 (1975).
 D. R. Jeng, E. J. Lee and K. J. DeWitt, A study of two limiting cases in convective and radiative heat transfer with nongray gases, *Int. J. Heat Mass Transfer* **19**, 597 (1976).
 S. Kubo, Steady one-dimensional flow of a radiating gas past a heat source, *J. Phys. Soc. Japan* **40**, 1186 (1976).
 M. Kuriyama, K. Katayama, Y. Takuma, Y. Hasegawa and T. Ohsaka, Analytical study of radiation and conduction heat transfer in infrared transmitting chalcogenide glass, *Bull. JSME* **18**, 1158 (1975).
 D. C. Look and S. E. McKinney, Numerical quadrature and two-dimensional radiative heat transfer, *Int. J. Num. Meth. Engng* **10**, 491 (1976).
 J. D. Love and A. W. Snyder, Generalized Fresnel's laws for a curved absorbing interface, *J. Opt. Soc. Am.* **65**, 1072 (1975).
 D. Marcuse, Curvature loss formula for optical fibers, *J. Opt. Soc. Am.* **66**, 216 (1976).
 D. R. McKenzie, Selective nature of gold-black deposits, *J. Opt. Soc. Am.* **66**, 249 (1976).
 L. M. McMillin and H. E. Fleming, Atmospheric transmittance of an absorbing gas: a computationally fast and accurate transmittance model for absorbing gases with constant mixing ratios in inhomogeneous atmospheres, *Appl. Optics* **15**, 358 (1976).
 D. A. Nelson, Radiation heat transfer through molecular gases at large optical depth, *J. Heat Transfer* **98**, 310 (1976).
 R. G. Pinnick, D. E. Carroll and D. J. Hofmann, Polarized light scattered from monodisperse randomly oriented nonspherical aerosol particles: measurements, *Appl. Optics* **15**, 384 (1976).
 S. N. Rhea, Rapid method for determining concentric cylinder radiation view factors, *AIAA Jl* **13**, 1122 (1975).
 J. A. Roux, A. M. Smith and D. C. Todd, Radiative transfer with anisotropic scattering and arbitrary temperature for plane geometry, *AIAA Jl* **13**, 1203 (1975).
 R. Ruppin, Optical properties of a metal sphere with a diffuse surface, *J. Opt. Soc. Am.* **66**, 449 (1976).
 N. Selçuk and R. G. Siddall, Two-flux spherical harmonic modelling of two-dimensional radiative transfer in furnaces, *Int. J. Heat Mass Transfer* **19**, 313 (1976).
 S. V. Shalvarova and N. T. Spodyryak, Heat transfer in tubes with flat and wave-shaped radiant energy receptors, *Heat Transfer, Soviet Res.* **7**(4), 54 (1975).
 S. Srinivasan and R. Ram, Radiative heat-transfer effects on the propagation of pressure shocks, *Int. J. Heat Mass Transfer* **19**, 297 (1976).
 J. W. Stultz, Solar absorptance of second surface mirrors for high angles of incidence, *J. Spacecraft Rockets* **13**, 57 (1976).
 Yu. A. Surinov and V. V. Popov, Determination of local and average generalized angular emission factors for a pair of parallel, symmetrically arranged circular disks, *Heat Transfer, Soviet Res.* **7**(3), 109 (1975).
 R. P. Taylor and R. Viskanta, Spectral and directional radiation characteristics of thin-film coated isothermal semi-transparent plates, *Wärme- und Stoffübertragung* **8**, 219 (1975).
 V. V. Truong and G. D. Scott, Optical constants of aggregated gold films, *J. Opt. Soc. Am.* **66**, 124 (1976).
 R. L. Varwig and M. A. Kwok, Temperature measurement in a CW HF chemical laser plenum, *AIAA Jl* **13**, 1224 (1975).
 C. H. F. Velzel, A general theory of the aberrations of diffraction gratings and grating-like optical instruments, *J. Opt. Soc. Am.* **66**, 346 (1976).
 V. A. Volkov, V. V. Zhurin, A. B. Karasev and B. K. Tkachenko, Radiation measurements behind 8–12 km s shock waves in air and a CO₂ + N₂ mixture, *AIAA Jl* **14**, 371 (1976).
 M. D. Wagh and B. V. Rao, Right angle bends in light pipes: analysis, *Appl. Optics* **15**, 1331 (1976).
 A. T. Wassel and D. K. Edwards, Molecular gas radiation in a laminar or turbulent pipe flow, *J. Heat Transfer* **98**, 101 (1976).
 A. T. Wassel and D. K. Edwards, Mean beam lengths for spheres and cylinders, *J. Heat Transfer* **98**, 208 (1976).
 G. J. Wilhelm, J. W. Rouse, Jr. and A. J. Blanchard, Depolarization of light back scattered from rough dielectrics, *J. Opt. Soc. Am.* **65**, 1036 (1975).
- ### ROTATING SURFACES OR FLUIDS
- L. M. de Socio, E. M. Sparrow and F. R. G. Eckert, Analysis of rotating, recirculating turbulent flow and heat transfer in an enclosure with fluid throughflow, *Int. J. Heat Mass Transfer* **19**, 345 (1976).
 B. S. Mazumder, A. S. Gupta and N. Datta, Flow and heat transfer in hydromagnetic Ekman layer on a porous plate with Hall effects, *Int. J. Heat Mass Transfer* **19**, 523 (1976).
 M. Murakami, O. Kito, Y. Katayama and Y. Iida, An experimental study of swirling flow in pipes, *Bull. JSME* **19**, 118 (1976).
 G. G. Poe and A. Acrivos, Closed streamline flows past small rotating particles: heat transfer at high Péclet numbers, *Int. J. Multiphase Flow* **2**, 365 (1976).
 S. M. Roberts and J. S. Shipman, Computation of the flow between a rotating and a stationary disk, *J. Fluid Mech.* **73**, 53 (1976).
 C. J. Scott and K. W. Bartelt, Decaying annular swirl flow with inlet solid body rotation, *J. Fluids Engng* **98**, 33 (1976).
 A. N. Sherstyuk, Friction factor and heat transfer coefficient of a rotating round cylinder, *Thermal Engng* **22**(2), 41 (1975).
 R. N. Smith and R. Greif, Turbulent transport to a rotating cylinder for large Prandtl or Schmidt numbers, *J. Heat Transfer* **97**, 594 (1975).
- ### THERMODYNAMIC AND TRANSPORT PROPERTIES
- S. W. Brelevi and J. P. O'Connell, Generalized prediction of isothermal compressibilities and an isothermal equation of state for liquid mixtures, *A.I.Ch.E. Jl* **21**, 1024 (1975).
 A. B. Donaldson, On the estimation of thermal conductivity of organic vapors. Data for some freons, *I.E.C. Fundamentals* **14**, 325 (1975).
 E. J. LeFevre, M. R. Nightingale and J. W. Rose, The second virial coefficient of ordinary water substance: A new correlation, *J. Mech. Engng Sci.* **17**, 243 (1975).
 D.-Y. Peng and D. B. Robinson, A new two-constant equation of state, *I.E.C. Fundamentals* **15**, 59 (1976).
 E. M. Sparrow and N. Cur, Characteristics of hollow glass microspheres as an insulating material and an opacifier, *J. Heat Transfer* **98**, 232 (1976).
 B. Sundqvist and G. Bäckström, Thermal conduction of metals under pressure, *Rev. Scient. Instrum.* **47**, 177 (1976).
 D. L. Timrot, M. A. Serednitskaya and S. A. Traktueva, An investigation of the viscosity of air at temperatures of 300–570 K and pressures of 10⁵–1.2 × 10⁷ Pa by the oscillating disc method, *Thermal Engng* **22**(3), 104 (1975).
 M. K. Zhokhovskii, Equation of the p-T diagram at the liquid-vapor phase equilibrium, *Measmt Tech., Pittsb.* **18**, 1495 (1975).
- ### TRANSFER MECHANISMS
- R. Betchov, Numerical simulation of isotropic turbulence, *Physics Fluids* **18**, 1230 (1975).
 M. K. Bull and A. S. W. Thomas, High frequency wall-pressure fluctuations in turbulent boundary layers, *Physics Fluids* **19**, 597 (1976).
 D. M. Bushnell, A. M. Cary, Jr. and B. B. Holley, Mixing length in low Reynolds number compressible turbulent boundary layers, *AIAA Jl* **13**, 1119 (1975).

- K. Chida and Y. Katto, Conjugate heat transfer of continuously moving surfaces, *Int. J. Heat Mass Transfer* **19**, 461 (1976).
- K. Chida and Y. Katto, Study on conjugate heat transfer by vectorial dimensional analysis, *Int. J. Heat Mass Transfer* **19**, 453 (1976).
- R. G. Deissler, Comparison of theory and experiment for homogeneous turbulence with shear, *Physics Fluids* **18**, 1237 (1975).
- J. H. Ferziger and S. Shaanan, Effect of anisotropy and rotation on turbulence production, *Physics Fluids* **19**, 596 (1976).
- M. M. Gibson and B. E. Launder, On the calculation of horizontal, turbulent, free shear flows under gravitational influence, *J. Heat Transfer* **98**, 81 (1976).
- M. R. Head, Equilibrium and near-equilibrium turbulent boundary layers, *J. Fluid Mech.* **73**, 1 (1976).
- M. R. Head and R. A. McD. Galbraith, Eddy viscosity and entrainment in equilibrium boundary layers, *Aeronaut. Q.* **26**, 229 (1975).
- I. S. F. Jones, The maintenance of turbulent shear stress in a mixing layer, *J. Fluid Mech.* **74**, 269 (1976).
- Y. Kaneda, The 5/3 power law in fully developed turbulence as a consequence of the Navier-Stokes equations, *J. Phys. Soc. Japan* **40**, 919 (1976).
- W. S. Lewellen, M. E. Teske and C. duP. Donaldson, Variable density flows computed by a second-order closure description of turbulence, *AI.A.A J.* **14**, 382 (1976).
- T. S. Lundren and Y. B. Pointin, Turbulent self-diffusion, *Physics Fluids* **19**, 355 (1976).
- W. D. McComb, Turbulent energy transfer in a nonlinear isotropic fluid, *Int. J. Engng Sci.* **14**, 239 (1976).
- D. M. McEligot, P. E. Pickett and M. F. Taylor, Measurement of wall region turbulent Prandtl numbers in small tubes, *Int. J. Heat Mass Transfer* **19**, 799 (1976).
- D. Noat, Two-dimensional unidirectional turbulent flow in a local equilibrium, *Physics Fluids* **18**, 1813 (1976).
- E. Ohlmer and D. Schwalm, The evaluation of a one-dimensional temperature profile in a turbulent fluid flow from the amplitude distribution of measured temperature fluctuations at a fixed detector position, *Int. J. Heat Mass Transfer* **19**, 765 (1976).
- R. Raj, Form of the turbulence dissipation equation as applied to curved and rotating turbulent flows, *Physics Fluids* **18**, 1241 (1975).
- A. J. Reynolds, The variation of turbulent Prandtl and Schmidt numbers in wakes and jets, *Int. J. Heat Mass Transfer* **19**, 757 (1976).
- H. K. Richards and J. B. Morton, Experimental investigation of turbulent shear flow with quadratic mean-velocity profiles, *J. Fluid Mech.* **73**, 165 (1976).
- D. J. Shlien and S. Corrsin, Dispersion measurements in a turbulent boundary layer, *Int. J. Heat Mass Transfer* **19**, 285 (1976).
- P. L. Sulem and U. Frisch, Bounds on energy flux for finite energy turbulence, *J. Fluid Mech.* **72**, 417 (1976).
- P. J. Sullivan, Dispersion of a line source in grid turbulence, *Physics Fluids* **19**, 159 (1976).
- A. Suwono, M. Daguenet and D. Bodiot, Etude théorique des flux de diffusion, ou de conduction, sur un nombre fini de surfaces actives en interaction, séparées les unes des autres par des zones inertes, dans un fluide visqueux Newtonien ou non, en écoulement laminaire ou turbulent, *Int. J. Heat Mass Transfer* **19**, 239 (1976).
- K. S. Venkataramani, N. K. Tutu and R. Chevray, Probability distributions in a round heated jet, *Physics Fluids* **18**, 1413 (1975).
- A. Yoshizawa, A statistical formulation of non-stationary homogeneous turbulence, based on time-dependent turbulent viscosity, *J. Phys. Soc. Japan* **40**, 274 (1976).