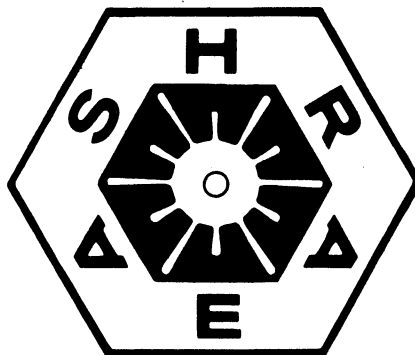


1980

ASHRAE COMPOSITE INDEX OF TECHNICAL ARTICLES

subject index of all technical material
that appeared in ASHRAE JOURNAL,
ASHRAE TRANSACTIONS,
and International Best Papers



copyright 1981

American Society of Heating,
Refrigerating and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, N. E., Atlanta, GA 30329

ABSORPTION

- The Consumption of Energy and of Capital in Dehumidification Systems, Herbert D. Ball, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Conservation Techniques for Use in Rotary Solid Sorption Dehumidification Systems, James A. Coellner, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- A Review of Currently Available Sorption Equipment for Air Conditioning, Joseph K. Thornton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Solar and Sorption—An Energy Effective Alternative, Stephen D. Fitch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Use of Liquid Sorption Dehumidification to Improve Energy Utilization of Air Systems, William C. Griffiths, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

AIR-CLEANING

- Air Quality Levels in a Two-Zone Space, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Sizing an Air-Cleaning System, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

AIR-CONDITIONER

- Capacity Control for Partial Load Operation of Screw Compressor Units, Anders Lundberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Characteristics of Refrigerant Flow in a Capillary Tube, Hisao Koizumi, Kunio Yokoyama, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Small-Sized, Oblong, Universal Burner with Low NOx Emission, Takashi Hashimoto, Shigeyuki Yamazaki, Tadashi Shinozaki, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Study of the Effects and Economics of Capacity Modulation on Seasonal Energy Efficiency Ratios (SEER) for Air Conditioners, Russell W. Griffith, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

AIR-CONDITIONING

- Air-Conditioning Economies Available to Existing Buildings, Alan M. Brown, *International Best Paper*, 1979
- Compressor Capacity Control for Air-Conditioning System Partial Load Operation, Milton W. Garland, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Compressor Capacity Control for System Partial Load Operation, Earl W. Newton, Dennis M. Beekman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Contractor's View of HVAC Noise and Vibration Problems, D. J. Mosshart, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Dead Band Controls Guide, Joseph P. Paoluccio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of Typical HVAC Materials in Two Geothermal Heating Systems, David A. Mitchell, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Rail Vehicle Air-Conditioning Equipment with Overload Relieving System, Toshiharu Matsuda, Seigo Miyamoto, Yasuo Minoshima, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Residential Ice Storage as a Load Management Tool, Richard H. Auris, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Review of Currently Available Sorption Equipment for Air Conditioning, Joseph K. Thornton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Space Shuttle: Today's System for Tomorrow's World, John L. Fisher, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Air Conditioning for Summer and Winter Comfort, W. H. Carrier, *ASHRAE Journal*, Vol. 22, No. 5, 1980
- Calorimetry Testing and HVAC&R, Robert T. Topper, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Economic Analysis: Water Source Heat Pumps, Gary C. Thomann, Jay A. Fulton, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- The HVAC&R Industry in the 80's, Ray Durazo, *ASHRAE Journal*, Vol. 22, No. 2, 1980

AIR-COOLING

- Cooling and Heat Pump Heating Seasonal Performance Effects Evaluation Model, Raymond J. Rettberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficient Computation of Zone Loads, E. F. Sowell, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The El Centro Geothermal Energy Heating and Cooling Field Experiment, Roger N. Yamasaki, Peter B. Sherwood, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Centered Heating and Cooling Utilizing Wastewater Heat Recovery, David W. Wade, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Impact of HVAC Process Dynamics on Energy Use, Dennis E. Miller, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Selection of Working Fluids Appropriate for Solar Rankine Cycle Cooling of Buildings, Ezzat I. Wali, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Alternate Source of Cooling: The Ejector-Compression Heat Pump, Richard M. Hamner, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Attic Ventilators and Energy Conservation, Ira Block, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- EBTR Compliance and Comfort Cooling Tool, C. Mike Scofield, *ASHRAE Journal*, Vol. 22, No. 6, 1980

AIR-COOLING (continued)

- Indirect/Direct Evaporative Cooling Systems, Neil Eskra, *ASHRAE Journal*, Vol. 22, No. 5, 1980
- On Solar System Performance, A. F. G. Bedinger, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- A Velocity-Type Forced-Air Vegetable Precooler, A. H. Bennett, A. Aharoni, H. L. Strum, *ASHRAE Journal*, Vol. 22, No. 12, 1980

AIR-CURTAIN

- Optimum Heat Transfer through Turbulent Recirculated Plane Air Curtains, Ronald H. Howell, Masaru Shibata, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

AIR-DISTRIBUTION

- Numerical Solution of Room Air Distribution, Katsuhito Yamaguchi, Akira Yoshikawa, *International Best Paper*, 1979
- Controls for Single-Duct Variable Air Volume Terminal Units, Lloyd W. Geake, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effects of Air Flow Maldistributions on Air-to-Refrigerant Heat Exchanger Performance, Thomas J. Fagan, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Field Measurements of a Mobile Home Unitary Heat Pump (in a Heating Mode), Gordon H. Hart, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Fort McHenry Tunnel Ventilation System, Paul K. Hinkley, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- A High Velocity, Low Pressure Air System, J. J. W. Siganto, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A New Algorithm for Radiant Interchange in Room Loads Calculations, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Performance of a Continuous Linear Air Diffuser in the Perimeter Zone of an Office Environment, Gordon H. Hart, Daniel Int-Hout, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Sound Off, Robert M. Parsky, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Thermal Comfort in a Room Heated by Different Methods, B. W. Olesen, E. Mortensen, J. Thorshauge, B. Berg-Munch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

AIR-FLOW

- Numerical Solution of Room Air Distribution, Katsuhito Yamaguchi, Akira Yoshikawa, *International Best Paper*, 1979
- The Atrium as a Fresh Air Channel—A Different Concept in Smoke Control, John W. Fothergill, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The British Gas Multi-Cell Model for Calculating Ventilation, David W. Etheridge, Donald K. Alexander, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effect of Flow and Pressure Transients on Axial Flow Fans, John A. Murphy, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effects of Air Flow Maldistributions on Air-to-Refrigerant Heat Exchanger Performance, Thomas J. Fagan, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Experimental and Numerical Study of Air Movement in Slot-Ventilated Enclosures, Michael B. Timmons, Louis D. Albright, Ronald B. Furry, Kenneth E. Torrance, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Fort McHenry Tunnel Ventilation System, Paul K. Hinkley, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- A High Velocity, Low Pressure Air System, J. J. W. Siganto, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimum Heat Transfer through Turbulent Recirculated Plane Air Curtains, Ronald H. Howell, Masaru Shibata, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Vestibule Pressurization System for the Protection of Escape Routes of a 17-Story Hotel, G. T. Tamura, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Stairwell Pressurization, John H. Klote, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Testing of the IDS Tower Smoke Control System, John W. Fothergill, Jr., G. Clinton Hedsten, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Variable Pitch Axial Flow Fans for Tunnel Ventilation: A Comparison to Centrifugal Fans, Hans D. Baesel, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

AIR-HANDLING

- Environmental Design of a Three-Level, Hub-Type Subway Station in a Central Business District, Richard D. Yelvington, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Infiltration-Pressurization Correlation: Simplified Physical Modeling, Max H. Sherman, David T. Grimsrud, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- System-Powered Variable Air Volume Terminals, John P. Kettler, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Research Note No. 20: Contaminant Level Control in Parking Garages (RP-223), *ASHRAE Journal*, Vol. 22, No. 12, 1980

AIR-LEAKAGE

- Air Quality Levels in a Two-Zone Space, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Application of a Generalized Model of Air Infiltration to Existing Homes, James T. Cole, Thomas S. Zawacki, Robert H. Elkins, Jon W. Zimmer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

AIR-LEAKAGE (continued)

- Calculating Infiltration: An Examination of Handbook Models, John E. Janssen, A. Noel Pearman, Thomas J. Hill, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Estimated Rate of Pressurization and Depressurization of Buildings, M. M. Shah, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Infiltration-Pressurization Correlation: Simplified Physical Modeling, Max H. Sherman, David T. Grimsrud, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Infrared Audits of Roof Heat Loss, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Intercomparison of Tracer Gases Used for Air Infiltration Measurements, David T. Grimsrud, Max H. Sherman, John E. Janssen, A. Noel Pearman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Methods for Conducting Small-Scale Pressurization Tests and Air Leakage Date of Multi-Story Apartment Buildings, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Wind and Temperature Induced Pressure Differentials and an Equivalent Pressure Difference Model for Predicting Air Infiltration in Schools, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Reducing Heat Loss through Window Retrofitting, N. E. Hager, Jr., W. H. Phillips, *ASHRAE Journal*, Vol. 22, No. 3, 1980

AIRCRAFT

- The Space Shuttle: Today's System for Tomorrow's World, John L. Fisher, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

ARCHITECTURE

- The Atrium as a Fresh Air Channel—A Different Concept in Smoke Control, John W. Fothergill, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design Charts to Size Direct Gain Passive Systems, James W. Taul, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Developing Office Building Design and Operation Strategies Using UWENSOL and the Comfort Routine, Dean R. Heerwagen, Ashley F. Emery, Charles J. Kippenhan, Gordon B. Varey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Estimated Rate of Pressurization and Depressurization of Buildings, M. M. Shah, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Indoor Sound Rating Criteria, Lewis S. Goodfriend, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Life Cycle Cost Analysis for Buildings, Robert P. Charette, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Noise Control and Specifications—A Developer's View, James C. Rosenfeld, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sound Off, Robert M. Parsky, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Stairwell Pressurization, John H. Klote, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Transient Thermal Behavior of an Externally Insulated Massive Building, P. S. Gujral, Raymond J. Clark, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Building Envelope Studies—California Projects, Carl H. Jordan, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Energy Conservation Design Guidelines: Including Mass and Insulation in Building Walls, Michael E. Dexter, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- The New State of Illinois Center: Futuristic Pantheon of Energy Management, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Owens-Corning Fiberglas Energy Conservation Awards 1980, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Shades Up Edison (RP-258), Harry J. Sauer, Jr., *ASHRAE Journal*, Vol. 22, No. 10, 1980
- A Technical Review of the "M" Factor Concept, R. D. Godfrey, K. E. Wilkes, A. G. Lavine, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Vitreous Insulations: Are They Hazardous?, J. P. Leineweber, *ASHRAE Journal*, Vol. 22, No. 3, 1980

BALANCING

- Hydronics and Control Valve Selection, John A. Olson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

BOILER

- Performance of a Pulse Combustion Gas-Fired Water Heater, S. T. Vogt, M. S. Yen, R. J. Schoenhals, W. Soedel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Simultaneous Firing of Coal with Oil or Gas in Boilers 60-600 hp (589-5886 kW), William F. Zunker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Design Principles of Boiler Optimization, Erling C. Hallanger, *ASHRAE Journal*, Vol. 22, No. 5, 1980

BUILDING-CODE

- An Analysis of Code Related Responses from the Solar Demonstration Program, Joseph Greenberg, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Making State Solar Laws Work: Results of a Study of State Solar Energy Incentives, J. David Roessner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Aspects of a National Program Plan for Industrial/Commercial Insulation for Mechanical Systems, Frank J. Powell, *ASHRAE Journal*, Vol. 22, No. 10, 1980

BUILDING-CODE (continued)

- Energy Conservation through Enforcement of Mandatory Energy Codes, David R. Miller, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Energy Performance for New Buildings(BEPS), Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- Engineering Audits at State-Owned Building in Minnesota, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Federal Role in the Development and Commercialization of Solar Technology, Mike Mc Cormack, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Model Codes and Thermal Insulation Requirements, G. F. Clyde, *ASHRAE Journal*, Vol. 22, No. 10, 1980

BUILDING-SYSTEMS

- Air-Conditioning Economies Available to Existing Buildings, Alan M. Brown, *International Best Paper*, 1979
- The Keiper Method for Moisture Design in Buildings, H. A. Trethowen, *International Best Paper*, 1979
- Adaptive Optimal Control—An Algorithm for Direct Control, Donald R. Farris, Thomas E. Mc Donald, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Certification of Energy Analysis Computer Programs in California, Craig W. Hoellwarth, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design and Control Strategies for Energy Storage, Gideon Shavit, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Design of Direct Digital Control Building Management Systems, G. A. Sams, Roger Mellor, C. J. Fielden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Direct Digital Control System in Cornwall, Ontario, James W. Ford, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Distributed Processing and DDC Control: A Retrofit Application, Arthur E. Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- An Experimental Validation of a Rational Model for Dynamic Responses of Buildings, D. Paul Mehta, James E. Woods, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Life Cycle Cost Analysis for Buildings, Robert P. Charette, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Ontario Government's Experience with Thermal Storage in New and Existing Buildings, Walter S. Chick, Sr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Transient Thermal Behavior of an Externally Insulated Massive Building, P. S. Gujral, Raymond J. Clark, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- ASHRAE Standard 90 Update, Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Building Envelope Studies—California Projects, Carl H. Jordan, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- EBTR Compliance and Comfort Cooling Too!, C. Mike Scofield, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Energy Performance for New Buildings(BEPS), Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- The Institutional Building Grants Program: An Overview, Dennis R. Landsberg, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Microcomputers Hail New Era in Controls, William F. Chapman, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Owens-Corning Fiberglas Energy Conservation Awards 1980, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Power Line Carriers: Reducing Control Installation Cost, James P. Tuff, Jayant R. Patel, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- A Review of the Building Controls Industry—1980, Vincent D. Lee-Thorp, *ASHRAE Journal*, Vol. 22, No. 7, 1980

BURNER

- A Small-Sized, Oblong, Universal Burner with Low NO_x Emission, Takashi Hashimoto, Shigeyuki Yamazaki, Tadashi Shinozaki, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

CALORIMETRY

- Definition and Measurement of Local Thermal Discomfort Parameters, T. Lund Madsen, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Calorimetry Testing and HVAC&R, Robert T. Topper, *ASHRAE Journal*, Vol. 22, No. 10, 1980

CEILING

- Comfort Limits for Heated Ceilings, P. O. Fanger, L. Banhidi, B. W. Olesen, G. Langkilde, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

CENTRAL-PLANT

- Control of a Heat Pump/Storage/Solar Hot Water-Chilled Water Central Plant, Howard Nordeen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

CENTRIFUGAL

- Compressor Capacity Control for System Partial Load Operation, Earl W. Newton, Dennis M. Beekman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Variable Pitch Axial Flow Fans for Tunnel Ventilation: A Comparison to Centrifugal Fans, Hans D. Baesel, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

CHILLER

- Compressor Capacity Control for System Partial Load Operation, Earl W. Newton, Dennis M. Beekman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

CHILLER (continued)

- Control of a Heat Pump/Storage/Solar Hot Water-Chilled Water Central Plant, Howard Nordeen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Direct Cooling Utilizing Aquifer Thermal Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effect of Noncondensable Gases in Water Chiller Condensers—Literature Survey and Theoretical Predictions (RP-225), Ralph L. Webb, A. S. Wanniarachchi, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effect of Noncondensable Gases on the Performance of an R-11 Centrifugal Water Chiller Condenser (RP-225), Ralph L. Webb, A. S. Wanniarachchi, T. M. Rudy, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Storage in Robson Square, Vancouver, British Columbia, Edward I. MacKie, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Controlling Chiller Tube Fouling, Gordon Leitner, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Research Note No. 19: Simulating Central Chilled Water Systems (RP-141), *ASHRAE Journal*, Vol. 22, No. 10, 1980

COIL

- The Bidirectional Coil Loop Thermosiphon Heat Exchanger (RP-188), Thomas W. Mc Donald, S. Sampath, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Defrosting Industrial Refrigeration With Hot Coils (RP-193), W. V. Richards, W. F. Stoecker, *ASHRAE Journal*, Vol. 22, No. 12, 1980

COLD-STORAGE

- Design and Control Strategies for Energy Storage, Gideon Shavit, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Direct Cooling Utilizing Aquifer Thermal Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Nutritional Value of Frozen Pizzas (RP-192), Basil Kamel, Amihud Kramer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Rail Vehicle Air-Conditioning Equipment with Overload Relieving System, Toshiharu Matsuda, Seigo Miyamoto, Yasuo Minoshima, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Residential Ice Storage as a Load Management Tool, Richard H. Auris, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Review and Analysis of the Transient Method for Determining Thermal Diffusivity of Fruits and Vegetables, Jerome J. Gaffney, Carl D. Baird, William D. Eshleman, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Spray Head Design on Fishing Vessels Using Sprayed Refrigerated Seawater, Edward R. Kolbe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Survey of Published Heat Transfer Coefficients Encountered in Food Refrigeration Processes (RP-228), Javier Arce, Vincent E. Sweat, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Refrigeration and Preservation of Fish, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- A Velocity-Type Forced-Air Vegetable Precooler, A. H. Bennett, A. Aharoni, H. L. Strum, *ASHRAE Journal*, Vol. 22, No. 12, 1980

COMBUSTION

- Performance of a Pulse Combustion Gas-Fired Water Heater, S. T. Vogt, M. S. Yen, R. J. Schoenhals, W. Soedel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Simultaneous Firing of Coal with Oil or Gas in Boilers 60-600 hp (589-5886 kW), William F. Zunker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Design Principles of Boiler Optimization, Erling C. Hallanger, *ASHRAE Journal*, Vol. 22, No. 5, 1980

COMFORT

- Assessing Environmental Conditions in Apartments of the Elderly, Ralph O. Turnquist, R. Phillip Volmer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Comfort Limits for Heated Ceilings, P. O. Fanger, L. Banhidi, B. W. Olesen, G. Langkilde, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Definition and Measurement of Local Thermal Discomfort Parameters, T. Lund Madsen, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Developing Office Building Design and Operation Strategies Using UWENSOL and the Comfort Routine, Dean R. Heerwagen, Ashley F. Emery, Charles J. Kippenhan, Gordon B. Varey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Impact of HVAC Process Dynamics on Energy Use, Dennis E. Miller, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- New Horizons for 55-74: Implications for Energy Conservation and Comfort, Larry G. Berglund, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Physiological Responses of 262 Seated Sedentary Subjects in Neutral and Heat Stress Environments, Stephan A. Konz, William B. Zuti, F. H. Rohles, Jr., Donald E. Skipton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Temperature or Temperament: A Psychologist Looks at Thermal Comfort, F. H. Rohles, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Thermal Comfort during Cyclical Temperature Fluctuations (RP-198), F. H. Rohles, Jr., George A. Milliken, Donald E. Skipton, Ivanka Krstic, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Comfort in a Room Heated by Different Methods, B. W. Olesen, E. Mortensen, J. Thorshauge, B. Berg-Munch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

COMMERCIAL

- Comparison of Performance and Computer Simulation of a Thermal Storage System for Commercial Buildings, Gary Calobrisi, James M. Henderson, Harry L. Brown, Bernard B. Hamel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Conservation Ideas for New and Existing Commercial Greenhouses, Ted H. Short, Michael F. Brugger, William L. Baurer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy Management and Conservation in Greenhouses—A Manufacturer's View, Harold E. Gray, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy-Efficient Crop Production in Greenhouses, Henry M. Cathey, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Optimum Heat Transfer through Turbulent Recirculated Plane Air Curtains, Ronald H. Howell, Masaru Shibata, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A System for Maximizing Solar Collection with Thermal Storage, Robert T. Tamblin, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Federal Role in the Development and Commercialization of Solar Technology, Mike Mc Cormack, *ASHRAE Journal*, Vol. 22, No. 11, 1980

COMPRESSOR

- Capacity Control for Partial Load Operation of Screw Compressor Units, Anders Lundberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Compressor Capacity Control for Air-Conditioning System Partial Load Operation, Milton W. Garland, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Compressor Capacity Control for System Partial Load Operation, Earl W. Newton, Dennis M. Beekman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hermetic Magnetic Wire Coating Adherence to Conductor After Heat Cycling in R-22, Harold L. Emmons, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimal Refrigerant Compressor for Low Pressure Ratio Applications, Amir L. Ecker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Study of the Effects and Economics of Capacity Modulation on Seasonal Energy Efficiency Ratios (SEER) for Air Conditioners, Russell W. Griffith, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficiency Considerations for Two-Stage Systems, Raymond Klingler, *ASHRAE Journal*, Vol. 22, No. 12, 1980

COMPUTER

- Adaptive Optimal Control—An Algorithm for Direct Control, Donald R. Farris, Thomas E. Mc Donald, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Bruce Hunn Residence as Simulated by the DEROB System, David O. Northrup, Francisco Arumi-Noe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Certification of Energy Analysis Computer Programs in California, Craig W. Hoellwarth, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Comparison of Experimental and Computer-Predicted Performance for Six Solar Domestic Hot Water Systems, Stanley T. Liu, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 5, 1980
- Comparison of Performance and Computer Simulation of a Thermal Storage System for Commercial Buildings, Gary Calobrisi, James M. Henderson, Harry L. Brown, Bernard B. Hamel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Design of Direct Digital Control Building Management Systems, G. A. Sams, Roger Mellor, C. J. Fielden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Direct Digital Control System in Cornwall, Ontario, James W. Ford, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Distributed Processing and DDC Control: A Retrofit Application, Arthur E. Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficient Computation of Zone Loads, E. F. Sowell, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Computer Program Certification—Pros and Cons, Carl H. Fullman, Robert M. Helm, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Control Solutions Using Advanced Microelectronic Technology, Dale A. Mueller, Ulrich Bonne, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- A Program to Involve the Homeowner in the Fabrication and Installation of a Solar Water Heater, Stanley A. Mumma, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Pros and Cons of Certification of Energy Analysis Computer Programs, Kenneth D. Hall, Jr., Neil R. Patterson, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Using the Heat Pump Annual Utilization Efficiency to Optimize Design and Conservation of Energy, John A. Hughes, Jacek Kasprzycki, Lyle R. Poole, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Microcomputers Hail New Era in Controls, William F. Chapman, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- New York City's Energy Conservation Program, Merja H. Lehtinen, Tobias Namenson, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- A Review of the Building Controls Industry—1980, Vincent D. Lee-Thorp, *ASHRAE Journal*, Vol. 22, No. 7, 1980

CONDENSATION

- Enhancement of Horizontal In-Tube Condensation of R-113 (RP-219), Minh Luu, Arthur E. Bergles, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

CONDENSATION (continued)

- Laminar Heat Transfer in a Circular Tube with Twisted Tapes during Condensation, Wayne A. Helmer, Javaid Iqbal, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Mathematical Model for Predicting Attic Ventilation Rates Required for Preventing Condensation on Roof Sheathing, Douglas M. Burch, D. E. Luna, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Two-Phase Flow in Horizontal Condensate Return Lines of Steam Thermal Systems (RP-167), Richard A. Fleschner, Ronald H. Howell, Harry J. Sauer, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

CONDENSER

- Design and Operation of a Multi-Functional Test Facility for Heat Exchanger Performance Rating, Mal Turaga, Paul Fazio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effect of Noncondensable Gases in Water Chiller Condensers—Literature Survey and Theoretical Predictions (RP-225), Ralph L. Webb, A. S. Wanniarachchi, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effect of Noncondensable Gases on the Performance of an R-11 Centrifugal Water Chiller Condenser (RP-225), Ralph L. Webb, A. S. Wanniarachchi, T. M. Rudy, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effects of Air Flow Maldistributions on Air-to-Refrigerant Heat Exchanger Performance, Thomas J. Fagan, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Heat Transfer and Pressure Drop during Condensation Inside Horizontal Tubes with Static Mixer Inserts, S. T. Lin, Naim Z. Azer, L. T. Fan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Maximizing COP of Water-to-Air Heat Pumps through Condenser Water Temperature Optimization, J. Robert Snyder, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980

CONSUMPTION

- The Consumption of Energy and of Capital in Dehumidification Systems, Herbert D. Ball, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hot Water Consumption and Performance of an Automatic Storage-Type Service Water Heating Installation in a School Building, Leslie Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Note on the Transient Performance and Degradation Coefficient of a Field Tested Heat Pump—Cooling and Heating Mode, Victor W. Goldschmidt, Gordon H. Hart, Richard C. Reiner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Reducing Residential Energy Growth with More Efficient Space Heating Equipment, Dennis L. O'Neal, Eric A. Hirst, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Design Principles of Boiler Optimization, Erling C. Hallanger, *ASHRAE Journal*, Vol. 22, No. 5, 1980

CONTROL

- Adaptive Optimal Control—An Algorithm for Direct Control, Donald R. Farris, Thomas E. Mc Donald, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Atrium as a Fresh Air Channel—A Different Concept in Smoke Control, John W. Fothergill, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Characteristics of Refrigerant Flow in a Capillary Tube, Hisao Koizumi, Kunio Yokoyama, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Comparison and Advantages of Dual-Duct Variable-Volume Control Assemblies in Controlling the Perimeter of Large Buildings, M. Leon Kloostera, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Contaminant Level Control in Parking Garages (RP-223), A. R. Stankunas, Paul T. Bartlett, Kevin C. Tower, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Contractor's View of HVAC Noise and Vibration Problems, D. J. Mosshart, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Control of a Heat Pump/Storage/Solar Hot Water-Chilled Water Central Plant, Howard Nordeen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Controls for Single-Duct Variable Air Volume Terminal Units, Lloyd W. Geake, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Dead Band Controls Guide, Joseph P. Paoluccio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design and Control Strategies for Energy Storage, Gideon Shavit, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Design of Direct Digital Control Building Management Systems, G. A. Sams, Roger Mellor, C. J. Fielden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Direct Digital Control System in Cornwall, Ontario, James W. Ford, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Distributed Processing and DDC Control: A Retrofit Application, Arthur E. Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Effects of Stratification in Performance and Control of Residential Electric Water Heaters, Robert E. Cook, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Electric-Driven Heat Pump Systems: Simulations and Controls II, Ulrich Bonne, Amin Patani, Richard D. Jacobson, Dale A. Mueller, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Control Solutions Using Advanced Microelectronic Technology, Dale A. Mueller, Ulrich Bonne, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980

CONTROL (continued)

- Hydronics and Control Valve Selection, John A. Olson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Maximizing COP of Water-to-Air Heat Pumps through Condenser Water Temperature Optimization, J. Robert Snyder, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- A New Power Saving Household Refrigerator-Freezer, Toshiyuki Onishi, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Noise Control and Specifications—A Developer's View, James C. Rosenfeld, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sound Off, Robert M. Parsky, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Stairwell Pressurization, John H. Klote, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- System-Powered Variable Air Volume Terminals, John P. Kettler, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Testing of the IDS Tower Smoke Control System, John W. Fothergill, Jr, G. Clinton Hedsten, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Controlling Chiller Tube Fouling, Gordon Leitner, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Power Line Carriers: Reducing Control Installation Cost, James P. Tuff, Jayant R. Patel, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Research Note No. 20: Contaminant Level Control in Parking Garages (RP-223), *ASHRAE Journal*, Vol. 22, No. 12, 1980
- A Review of the Building Controls Industry—1980, Vincent D. Lee-Thorp, *ASHRAE Journal*, Vol. 22, No. 7, 1980

CONVECTION

- An Experimental Comparison of Energy Requirements for Space Heating with Radiant and Convective Systems (RP-177B), Herbert R. Bailey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

COOLING-TOWER

- Calcium Carbonate Scaling Characteristics of Cooling Tower Water, K. E. Cates, J. G. Knudsen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Capacity Control for Partial Load Operation of Screw Compressor Units, Anders Lundberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Compressor Capacity Control for Air-Conditioning System Partial Load Operation, Milton W. Garland, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Compressor Capacity Control for System Partial Load Operation, Earl W. Newton, Dennis M. Beekman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Direct Cooling Utilizing Aquifer Thermal Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Study of the Effects and Economics of Capacity Modulation on Seasonal Energy Efficiency Ratios (SEER) for Air Conditioners, Russell W. Griffith, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Cooling Towers: Energy Conservation Workhorses, Robert Burger, *ASHRAE Journal*, Vol. 22, No. 4, 1980

CORROSION

- Economic Assessment of Using Nonmetallic Materials in the Direct Utilization of Geothermal Energy, Ramond M. Costello, Ton Ammerlaan, S. V. Cabibbo, L. E. Kukacka, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of Typical HVAC Materials in Two Geothermal Heating Systems, David A. Mitchell, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

CRYOGENIC

- Energy Cost Comparisons: Cryogenics vs Freezing Systems, George C. Briley, *ASHRAE Journal*, Vol. 22, No. 12, 1980

DEHUMIDIFICATION

- The Consumption of Energy and of Capital in Dehumidification Systems, Herbert D. Ball, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Conservation Techniques for Use in Rotary Solid Sorption Dehumidification Systems, James A. Coellner, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- A Review of Currently Available Sorption Equipment for Air Conditioning, Joseph K. Thornton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Solar and Sorption—An Energy Effective Alternative, Stephen D. Fitch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Use of Liquid Sorption Dehumidification to Improve Energy Utilization of Air Systems, William C. Griffiths, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

DESICCANT

- A Review of Currently Available Sorption Equipment for Air Conditioning, Joseph K. Thornton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Use of Liquid Sorption Dehumidification to Improve Energy Utilization of Air Systems, William C. Griffiths, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

DIFFUSION

- Review and Analysis of the Transient Method for Determining Thermal Diffusivity of Fruits and Vegetables, Jerome J. Gaffney, Carl D. Baird, William D. Eshleman, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

DRAFT

Definition and Measurement of Local Thermal Discomfort Parameters, T. Lund Madsen, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

DUCT

Comparison and Advantages of Dual-Duct Variable-Volume Control Assemblies in Controlling the Perimeter of Large Buildings, M. Leon Kloostera, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Controls for Single-Duct Variable Air Volume Terminal Units, Lloyd W. Geake, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

A High Velocity, Low Pressure Air System, J. J. W. Siganto, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

System-Powered Variable Air Volume Terminals, John P. Kettler, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

Simplified Equations for HVAC Duct Friction Factors, J. J. Loeffler, *ASHRAE Journal*, Vol. 22, No. 1, 1980

ECONOMICS

Air-Conditioning Economies Available to Existing Buildings, Alan M. Brown, *International Best Paper*, 1979

Barrier or Incentive: Should Public Utilities Be Involved with Solar Energy?, Mark S. Menzer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

Economics of Converting Thermal Incineration Systems to Catalytic Operation, L. C. Hardison, E. J. Dowd, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Economics of Converting Thermal Incineration Systems to Catalytic Operation, L. C. Hardison, E. J. Dowd, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Life Cycle Cost Analysis for Buildings, Robert P. Charette, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Making State Solar Laws Work: Results of a Study of State Solar Energy Incentives, J. David Roessner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

A Study of the Effects and Economics of Capacity Modulation on Seasonal Energy Efficiency Ratios (SEER) for Air Conditioners, Russell W. Griffith, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Construction Outlook 1980, *ASHRAE Journal*, Vol. 22, No. 2, 1980

Economic Analysis: Water Source Heat Pumps, Gary C. Thomann, Jay A. Fulton, *ASHRAE Journal*, Vol. 22, No. 9, 1980

The Economics of Energy Management, Bruce Schaeffer, *ASHRAE Journal*, Vol. 22, No. 12, 1980

Energy Accounting Systems, Alfred Greenberg, *ASHRAE Journal*, Vol. 22, No. 1, 1980

Estimating Solar Collector Performance, Steven B. Leighton, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Heating Costs: Heat Pumps vs Combustion Furnaces, Lester F. Hubert, *ASHRAE Journal*, Vol. 22, No. 9, 1980

Power Line Carriers: Reducing Control Installation Cost, James P. Tuff, Jayant R. Patel, *ASHRAE Journal*, Vol. 22, No. 7, 1980

The Solar Bottom Line, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 11, 1980

ELECTRIC

Conversion of an Electrically Heated Motel to Geothermal Energy, Kenneth L. Garing, Glenn E. Coury, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Effects of Stratification in Performance and Control of Residential Electric Water Heaters, Robert E. Cook, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Electric-Driven Heat Pump Systems: Simulations and Controls II, Ulrich Bonne, Amin Patani, Richard D. Jacobson, Dale A. Mueller, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

In-Situ Measurements of Residential Energy Performance Using Electric Co-Heating, R. C. Sonderegger, P. E. Condon, M. P. Modera, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

ELECTRIC-HEATING

Effects of Stratification in Performance and Control of Residential Electric Water Heaters, Robert E. Cook, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

ELECTRONIC

Capacity Control for Partial Load Operation of Screw Compressor Units, Anders Lundberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Heat Pump Control Solutions Using Advanced Microelectronic Technology, Dale A. Mueller, Ulrich Bonne, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980

ENERGY

Adaptive Optimal Control—An Algorithm for Direct Control, Donald R. Farris, Thomas E. Mc Donald, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Certification of Energy Analysis Computer Programs in California, Craig W. Hoellwarth, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Community Energy System Supplied from Waste Industrial Energy through Heat Pumps, Lincoln B. Katter, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

The Consumption of Energy and of Capital in Dehumidification Systems, Herbert D. Ball, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Design and Control Strategies for Energy Storage, Gideon Shavit, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

ENERGY (continued)

A Diesel-Driven Heat Pump Centered Integrated Community Energy System, Richard E. Crane, Harold G. Lorsch, Robert G. Werden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Distributed Processing and DDC Control: A Retrofit Application, Arthur E. Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Energy Computer Program Certification—Pros and Cons, Carl H. Fullman, Robert M. Helm, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

The Heat Pump Centered Integrated Community Energy System (HP-C-ICES), Fred S. Dubin, Amos Halfon, Paul Herzog, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Heat Pump Integrated Community Energy System Using Annual Aquifer Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Making State Solar Laws Work: Results of a Study of State Solar Energy Incentives, J. David Roessner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The Pros and Cons of Certification of Energy Analysis Computer Programs, Kenneth D. Hall, Jr, Neil R. Patterson, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Reducing Residential Energy Growth with More Efficient Space Heating Equipment, Dennis L. O'Neal, Eric A. Hirst, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

BEPS and ASHRAE Standard 90: Analysis and Impact, W. S. Fleming, Harry Misuriello, *ASHRAE Journal*, Vol. 22, No. 6, 1980

The Economics of Energy Management, Bruce Schaeffer, *ASHRAE Journal*, Vol. 22, No. 12, 1980

Energy Accounting Systems, Alfred Greenberg, *ASHRAE Journal*, Vol. 22, No. 1, 1980

Energy Conservation through Enforcement of Mandatory Energy Codes, David R. Miller, *ASHRAE Journal*, Vol. 22, No. 6, 1980

Energy Management in Institutional Facilities, Raj Kumar, *ASHRAE Journal*, Vol. 22, No. 7, 1980

Energy Performance Data, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 1, 1980

Energy Performance for New Buildings (BEPS), Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 1, 1980

Is Solar Really the Best Way?, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 1, 1980

On Solar System Performance, A. F. G. Bedinger, *ASHRAE Journal*, Vol. 22, No. 2, 1980

Research Note No. 16: Format and Methodology for Energy Budget (RP-233), *ASHRAE Journal*, Vol. 22, No. 7, 1980

ENERGY-CALCULATION

Energy Cost Comparisons: Cryogenics vs Freezing Systems, George C. Briley, *ASHRAE Journal*, Vol. 22, No. 12, 1980

Energy Performance Data, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 1, 1980

Research Note No. 16: Format and Methodology for Energy Budget (RP-233), *ASHRAE Journal*, Vol. 22, No. 7, 1980

Thermal Storage: Resisting Temperature Blending, Robert T. Tamblin, *ASHRAE Journal*, Vol. 22, No. 1, 1980

ENERGY-CONSERVATION

Barrier or Incentive: Should Public Utilities Be Involved with Solar Energy?, Mark S. Menzer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

Compressor Capacity Control for Air-Conditioning System Partial Load Operation, Milton W. Garland, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980

Conceptual Design Considerations for the Use of Geothermal Energy in a Food Processing Industry, John C. Austin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Conversion of an Electrically Heated Motel to Geothermal Energy, Kenneth L. Garing, Glenn E. Coury, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Dead Band Controls Guide, Joseph P. Paoluccio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Developing Office Building Design and Operation Strategies Using UWENSOL and the Comfort Routine, Dean R. Heerwagen, Ashley F. Emery, Charles J. Kippenhan, Gordon B. Varey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Direct Digital Control System in Cornwall, Ontario, James W. Ford, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Effects of External Heat Traps on Standby Losses from Residential Water Heaters, Greg A. Johnson, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Efficiency Improvement Concepts for Residential Gas-Fired Furnaces and Water Heaters, S. G. Talbert, Abbott A. Putnam, Douglas W. De Werth, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Energy Conservation Ideas for New and Existing Commercial Greenhouses, Ted H. Short, Michael F. Brugger, William L. Bauerle, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Energy Conservation Techniques for Use in Rotary Solid Sorption Dehumidification Systems, James A. Coellner, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980

ENERGY-CONSERVATION (continued)

- Energy Management and Conservation in Greenhouses—A Manufacturer's View, Harold E. Gray, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy-Efficient Crop Production in Greenhouses, Henry M. Cathey, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Experimental Validation of a Rational Model for Dynamic Responses of Buildings, D. Paul Mehta, James E. Woods, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Geothermal Energy for Sugar Beet Processing, Jay J. Seidman, E. Lee Leventhal, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Geothermal Space Heating in Susanville, Philip A. Edwards, Ken Unmack, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Centered Heating and Cooling Utilizing Wastewater Heat Recovery, David W. Wade, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Heat Pump Centered Integrated Community Energy System (HP-C-ICES), Fred S. Dubin, Amos Halfon, Paul Herzog, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- High Temperature Heat Pumps Can Accelerate the Use of Geothermal Energy, Richard C. Niess, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hydronics and Control Valve Selection, John A. Olson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Impact of HVAC Process Dynamics on Energy Use, Dennis E. Miller, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- In-Situ Measurements of Residential Energy Performance Using Electric Co-Heating, R. C. Sonderegger, P. E. Condon, M. P. Modera, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- New Horizons for 55-74: Implications for Energy Conservation and Comfort, Larry G. Berglund, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A New Power Saving Household Refrigerator-Freezer, Toshiyuki Onishi, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Performance Simulation of Residential Heating Systems with HFLAME III, Ulrich Bonne, Amin Patani, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Research on Conservation and Solar Energy Utilization in Greenhouses, William J. Roberts, David R. Mears, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Review of Currently Available Sorption Equipment for Air Conditioning, Joseph K. Thornton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Solar and Sorption—An Energy Effective Alternative, Stephen D. Fitch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A System for Maximizing Solar Collection with Thermal Storage, Robert T. Tamblin, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Thermal Storage and Water Source Heat Pumps in Canada, Thomas W. Rogers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Storage in Robson Square, Vancouver, British Columbia, Edward I. Mackie, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Transient Thermal Behavior of an Externally Insulated Massive Building, P. S. Gujral, Raymond J. Clark, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Use of Liquid Sorption Dehumidification to Improve Energy Utilization of Air Systems, William C. Griffiths, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Using the Heat Pump Annual Utilization Efficiency to Optimize Design and Conservation of Energy, John A. Hughes, Jacek Kasprzycki, Lyle R. Poole, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- ASHRAE Standard 90 Update, Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Aspects of a National Program Plan for Industrial/Commercial Insulation for Mechanical Systems, Frank J. Powell, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Attic Ventilators and Energy Conservation, Ira Block, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- BEPS and ASHRAE Standard 90: Analysis and Impact, W. S. Fleming, Harry Misuriello, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Building Envelope Studies—California Projects, Carl H. Jordan, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Cooling Towers: Energy Conservation Workhorses, Robert Burger, *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Energy Conservation Design Guidelines: Including Mass and Insulation in Building Walls, Michael E. Dexter, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Energy Conservation through Enforcement of Mandatory Energy Codes, David R. Miller, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Engineering Audits at State-Owned Building in Minnesota, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Estimating Solar Collector Performance, Steven B. Leighton, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Indirect/Direct Evaporative Cooling Systems, Neil Eskra, *ASHRAE Journal*, Vol. 22, No. 5, 1980
- The Institutional Building Grants Program: An Overview, Dennis R. Landsberg, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- The New State of Illinois Center: Futuristic Pantheon of Energy Management, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- New York City's Energy Conservation Program, Merja H. Lehtinen, Tobias Namenson, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Owens-Corning Fiberglas Energy Conservation Awards 1980, *ASHRAE Journal*, Vol. 22, No. 12, 1980

ENERGY-CONSERVATION (continued)

- Thermal Insulation Materials Laboratory Accreditation Program, J. Bryson, *ASHRAE Journal*, Vol. 22, No. 3, 1980

ENVIRONMENT

- Assessing Environmental Conditions in Apartments of the Elderly, Ralph O. Turnquist, R. Phillip Volmer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Contaminant Level Control in Parking Garages (RP-223), A. R. Stankunas, Paul T. Bartlett, Kevin C. Tower, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Environmental Design of a Three-Level, Hub-Type Subway Station in a Central Business District, Richard D. Yelvington, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Estimated Rate of Pressurization and Depressurization of Buildings, M. M. Shah, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Continuous Linear Air Diffuser in the Perimeter Zone of an Office Environment, Gordon H. Hart, Daniel Int-Hout, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Physiological Responses of 262 Seated Sedentary Subjects in Neutral and Heat Stress Environments, Stephan A. Konz, William B. Zuti, F. H. Rohles, Jr., Donald E. Skipton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sizing an Air-Cleaning System, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

EVAPORATION

- Evaporation from Free Surfaces—Swimming Pools, Sverre Fossdal, *International Best Paper*, 1979
- Pressure Drop in Evaporative Two-Phase Vertical Upflow of Freon-11 in a Small-Diameter Tube, Abdo H. Abdelmessih, Yemo Adeniji-Fashola, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

EVAPORATOR

- Design and Operation of a Multi-Functional Test Facility for Heat Exchanger Performance Rating, Mal Turaga, Paul Fazio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Control Solutions Using Advanced Microelectronic Technology, Dale A. Mueller, Ulrich Bonne, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Heat Transfer and Pressure Drop during Condensation Inside Horizontal Tubes with Static Mixer Inserts, S. T. Lin, Naim Z. Azer, L. T. Fan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- EBTR Compliance and Comfort Cooling Tool, C. Mike Scofield, *ASHRAE Journal*, Vol. 22, No. 6, 1980
- Indirect/Direct Evaporative Cooling Systems, Neil Eskra, *ASHRAE Journal*, Vol. 22, No. 5, 1980

EXTENDED-SURFACE

- Evaporation from Free Surfaces—Swimming Pools, Sverre Fossdal, *International Best Paper*, 1979

FAN

- The Effect of Flow and Pressure Transients on Axial Flow Fans, John A. Murphy, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- System-Powered Variable Air Volume Terminals, John P. Kettler, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Variable Pitch Axial Flow Fans for Tunnel Ventilation: A Comparison to Centrifugal Fans, Hans D. Baesel, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Attic Ventilators and Energy Conservation, Ira Block, *ASHRAE Journal*, Vol. 22, No. 2, 1980

FILTRATION

- Sizing an Air-Cleaning System, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

FIN-TUBE

- Enhancement of Horizontal In-Tube Condensation of R-113 (RP-219), Minh Luu, Arthur E. Bergles, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

FIRE-SAFETY

- The Atrium as a Fresh Air Channel—A Different Concept in Smoke Control, John W. Fothergill, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Vestibule Pressurization System for the Protection of Escape Routes of a 17-Story Hotel, G. T. Tamura, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Stairwell Pressurization, John H. Klote, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Testing of the IDS Tower Smoke Control System, John W. Fothergill, Jr., G. Clinton Hedsten, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

FLUID-FLOW

- Selection of Working Fluids Appropriate for Solar Rankine Cycle Cooling of Buildings, Ezzat I. Wali, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Two-Phase Flow in Horizontal Condensate Return Lines of Steam Thermal Systems (RP-167), Richard A. Fleschner, Ronald H. Howell, Harry J. Sauer, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

FOOD

- Mathematical Treatment of Heat Transfer during Freezing of Food, Yujiro Hayaishi, Kunihiko Yamaguchi, *International Best Paper*, 1979
- Conceptual Design Considerations for the Use of Geothermal Energy in a Food Processing Industry, John C. Austin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Geothermal Energy for Sugar Beet Processing, Jay J. Seidman, E. Lee Leventhal, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Nutritional Value of Frozen Pizzas (RP-192), Basil Kamel, Amihud Kramer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Rail Vehicle Air-Conditioning Equipment with Overload Relieving System, Toshiharu Matsuda, Seigo Miyamoto, Yasuo Minoshima, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Survey of Published Heat Transfer Coefficients Encountered in Food Refrigeration Processes (RP-228), Javier Arce, Vincent E. Sweat, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy Cost Comparisons: Cryogenics vs Freezing Systems, George C. Briley, *ASHRAE Journal*, Vol. 22, No. 12, 1980

FREEZE-PROTECTION

- Nutritional Value of Frozen Pizzas (RP-192), Basil Kamel, Amihud Kramer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

FREEZING

- Mathematical Treatment of Heat Transfer during Freezing of Food, Yujiro Hayaishi, Kunihiko Yamaguchi, *International Best Paper*, 1979
- Conceptual Design Considerations for the Use of Geothermal Energy in a Food Processing Industry, John C. Austin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Nutritional Value of Frozen Pizzas (RP-192), Basil Kamel, Amihud Kramer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Cost Comparisons: Cryogenics vs Freezing Systems, George C. Briley, *ASHRAE Journal*, Vol. 22, No. 12, 1980

FRICITION

- Simplified Equations for HVAC Duct Friction Factors, J. J. Loeffler, *ASHRAE Journal*, Vol. 22, No. 1, 1980

FRUIT

- Review and Analysis of the Transient Method for Determining Thermal Diffusivity of Fruits and Vegetables, Jerome J. Gaffney, Carl D. Baird, William D. Eshleman, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Air Conditioning for Summer and Winter Comfort, W. H. Carrier, *ASHRAE Journal*, Vol. 22, No. 5, 1980

FUEL-OIL

- Simultaneous Firing of Coal with Oil or Gas in Boilers 60-600 hp (589-5886 kW), William F. Zunker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980

FURNACE

- Efficiency Improvement Concepts for Residential Gas-Fired Furnaces and Water Heaters, S. G. Talbert, Abbott A. Putnam, Douglas W. De Werth, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Field Measurement of a Gas Furnace in a Mobile Home and Determination of Steady-State, Cyclic and Seasonal Efficiencies, Victor W. Goldschmidt, R. Reid White, Robert G. Leonard, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heating Costs: Heat Pumps vs Combustion Furnaces, Lester F. Hubert, *ASHRAE Journal*, Vol. 22, No. 9, 1980

GAS

- The Effect of Noncondensable Gases in Water Chiller Condensers—Literature Survey and Theoretical Predictions (RP-225), Ralph L. Webb, A. S. Wanniarachchi, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effect of Noncondensable Gases on the Performance of an R-11 Centrifugal Water Chiller Condenser (RP-225), Ralph L. Webb, A. S. Wanniarachchi, T. M. Rudy, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Intercomparison of Tracer Gases Used for Air Infiltration Measurements, David T. Grimsrud, Max H. Sherman, John E. Janssen, A. Noel Pearman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Simultaneous Firing of Coal with Oil or Gas in Boilers 60-600 hp (589-5886 kW), William F. Zunker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- A Small-Sized, Oblong, Universal Burner with Low NO_x Emission, Takashi Hashimoto, Shigeyuki Yamazaki, Tadashi Shinozaki, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

GAS-FIRED

- Efficiency Improvement Concepts for Residential Gas-Fired Furnaces and Water Heaters, S. G. Talbert, Abbott A. Putnam, Douglas W. De Werth, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Field Measurement of a Gas Furnace in a Mobile Home and Determination of Steady-State, Cyclic and Seasonal Efficiencies, Victor W. Goldschmidt, R. Reid White, Robert G. Leonard, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of a Pulse Combustion Gas-Fired Water Heater, S. T. Vogt, M. S. Yen, R. J. Schoenhals, W. Soedel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

GEOTHERMAL

- Conceptual Design Considerations for the Use of Geothermal Energy in a Food Processing Industry, John C. Austin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Conversion of an Electrically Heated Motel to Geothermal Energy, Kenneth L. Garing, Glenn E. Coury, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Economic Assessment of Using Nonmetallic Materials in the Direct Utilization of Geothermal Energy, Ramond M. Costello, Ton Ammerlaan, S. V. Cabibbo, L. E. Kukacka, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The El Centro Geothermal Energy Heating and Cooling Field Experiment, Roger N. Yamasaki, Peter B. Sherwood, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Geothermal Energy for Sugar Beet Processing, Jay J. Seidman, E. Lee Leventhal, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Geothermal Space Heating in Susanville, Philip A. Edwards, Ken Unmack, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- High Temperature Heat Pumps Can Accelerate the Use of Geothermal Energy, Richard C. Niess, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of Typical HVAC Materials in Two Geothermal Heating Systems, David A. Mitchell, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

GREENHOUSE

- Energy Conservation Ideas for New and Existing Commercial Greenhouses, Ted H. Short, Michael F. Brugger, William L. Bauerle, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy Management and Conservation in Greenhouses—A Manufacturer's View, Harold E. Gray, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy-Efficient Crop Production in Greenhouses, Henry M. Cathey, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Research on Conservation and Solar Energy Utilization in Greenhouses, William J. Roberts, David R. Mears, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Waste Heat Saves Greenhouse, William Fearn, *ASHRAE Journal*, Vol. 22, No. 8, 1980

HEALTH

- Air Quality Levels in a Two-Zone Space, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Contaminant Level Control in Parking Garages (RP-223), A. R. Stankunas, Paul T. Bartlett, Kevin C. Tower, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Physiological Responses of 262 Seated Sedentary Subjects in Neutral and Heat Stress Environments, Stephan A. Konz, William B. Zuti, F. H. Rohles, Jr., Donald E. Skipton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sizing an Air-Cleaning System, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Temperature or Temperament: A Psychologist Looks at Thermal Comfort, F. H. Rohles, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Thermal Comfort during Cyclical Temperature Fluctuations (RP-198), F. H. Rohles, Jr., George A. Milliken, Donald E. Skipton, Ivanka Krstic, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Air Conditioning for Summer and Winter Comfort, W. H. Carrier, *ASHRAE Journal*, Vol. 22, No. 5, 1980
- Vitreous Insulations: Are They Hazardous?, J. P. Leineweber, *ASHRAE Journal*, Vol. 22, No. 3, 1980

HEAT-EXCHANGE

- Field Measurement of a Gas Furnace in a Mobile Home and Determination of Steady-State, Cyclic and Seasonal Efficiencies, Victor W. Goldschmidt, R. Reid White, Robert G. Leonard, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimum Heat Transfer through Turbulent Recirculated Plane Air Curtains, Ronald H. Howell, Masaru Shibata, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Research Note No. 17: Heat and Mass Transfer on Heat Exchange Surfaces (RP-155), *ASHRAE Journal*, Vol. 22, No. 10, 1980

HEAT-EXCHANGER

- The Bidirectional Coil Loop Thermosiphon Heat Exchanger (RP-188), Thomas W. Mc Donald, S. Sampath, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Calcium Carbonate Scaling Characteristics of Cooling Tower Water, K. E. Coates, J. G. Knudsen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Collector Sizing Procedure for Residential Solar Hot Water Systems with Prescribed Thermal Performance Requirements, Michael E. Mc Cabe, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design and Operation of a Multi-Functional Test Facility for Heat Exchanger Performance Rating, Mal Turaga, Paul Fazio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effects of Air Flow Maldistributions on Air-to-Refrigerant Heat Exchanger Performance, Thomas J. Fagan, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

HEAT-PUMP

- A Community Energy System Supplied from Waste Industrial Energy through Heat Pumps, Lincoln B. Katter, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Control of a Heat Pump/Storage/Solar Hot Water-Chilled Water Central Plant, Howard Nordeen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Cooling and Heat Pump Heating Seasonal Performance Effects Evaluation Model, Raymond J. Rettberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HEAT-PUMP (continued)

- Development of a Northern Climate Residential Air-Source Heat Pump, David J. Young, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Diesel-Driven Heat Pump Centered Integrated Community Energy System, Richard E. Crane, Harold G. Lorsch, Robert G. Werden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Electric-Driven Heat Pump Systems: Simulations and Controls II, Ulrich Bonne, Amin Patani, Richard D. Jacobson, Dale A. Mueller, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Field Measurements of a Mobile Home Unitary Heat Pump (in a Heating Mode), Gordon H. Hart, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Heat Pump Centered Heating and Cooling Utilizing Wastewater Heat Recovery, David W. Wade, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Heat Pump Centered Integrated Community Energy System (HP-C-ICES), Fred S. Dubin, Amos Halfon, Paul Herzog, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Control Solutions Using Advanced Microelectronic Technology, Dale A. Mueller, Ulrich Bonne, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- A Heat Pump Integrated Community Energy System Using Annual Aquifer Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- High Temperature Heat Pumps Can Accelerate the Use of Geothermal Energy, Richard C. Niess, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Maximizing COP of Water-to-Air Heat Pumps through Condenser Water Temperature Optimization, J. Robert Snyder, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- A Note on the Transient Performance and Degradation Coefficient of a Field Tested Heat Pump—Cooling and Heating Mode, Victor W. Goldschmidt, Gordon H. Hart, Richard C. Reiner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Optimal Refrigerant Compressor for Low Pressure Ratio Applications, Amir L. Ecker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Reducing Residential Energy Growth with More Efficient Space Heating Equipment, Dennis L. O'Neal, Eric A. Hirst, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Residential Hybrid Heat Pump State-of-the-Art Assessment, Morton H. Blatt, Robert C. Erickson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Small-Sized, Oblong, Universal Burner with Low NOx Emission, Takashi Hashimoto, Shigeyuki Yamazaki, Tadashi Shinozaki, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Study of the Effects and Economics of Capacity Modulation on Seasonal Energy Efficiency Ratios (SEER) for Air Conditioners, Russell W. Griffith, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Thermal Storage and Water Source Heat Pumps in Canada, Thomas W. Rogers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Using the Heat Pump Annual Utilization Efficiency to Optimize Design and Conservation of Energy, John A. Hughes, Jacek Kasprzycki, Lyle R. Poole, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- An Alternate Source of Cooling: The Ejector-Compression Heat Pump, Richard M. Hamner, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Economic Analysis: Water Source Heat Pumps, Gary C. Thomann, Jay A. Fulton, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Heat Pumps in Northern Europe, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Heating Costs: Heat Pumps vs Combustion Furnaces, Lester F. Hubert, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Is Solar Really the Best Way?, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- Solar Assisted Heat Pumps for Residential Use, Warren F. Bessler, Bao C. Hwang, *ASHRAE Journal*, Vol. 22, No. 9, 1980

HEAT-RECOVERY

- A Community Energy System Supplied from Waste Industrial Energy through Heat Pumps, Lincoln B. Katter, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Comparison of Performance and Computer Simulation of a Thermal Storage System for Commercial Buildings, Gary Calobrisi, James M. Henderson, Harry L. Brown, Bernard B. Hamel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design Charts to Size Direct Gain Passive Systems, James W. Taul, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Direct Cooling Utilizing Aquifer Thermal Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Economics of Converting Thermal Incineration Systems to Catalytic Operation, L. C. Hardison, E. J. Dowd, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Heat Pump Centered Heating and Cooling Utilizing Wastewater Heat Recovery, David W. Wade, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Heat Pump Centered Integrated Community Energy System (HP-C-ICES), Fred S. Dubin, Amos Halfon, Paul Herzog, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Heat Pump Integrated Community Energy System Using Annual Aquifer Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HEAT-RECOVERY (continued)

- Maximizing COP of Water-to-Air Heat Pumps through Condenser Water Temperature Optimization, J. Robert Snyder, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Ontario Government's Experience with Thermal Storage in New and Existing Buildings, Walter S. Chick, Sr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A System for Maximizing Solar Collection with Thermal Storage, Robert T. Tamblin, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Thermal Storage and Water Source Heat Pumps in Canada, Thomas W. Rogers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Transient Thermal Behavior of an Externally Insulated Massive Building, P. S. Gujral, Raymond J. Clark, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Economics of Energy Management, Bruce Schaeffer, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Energy Management in Institutional Facilities, Raj Kumar, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Reducing Heat Loss through Window Retrofitting, N. E. Hager, Jr., W. H. Phillips, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Waste Heat Saves Greenhouse, William Fearn, *ASHRAE Journal*, Vol. 22, No. 8, 1980

HEAT-TRANSFER

- Mathematical Treatment of Heat Transfer during Freezing of Food, Yujiro Hayashi, Kunihiko Yamaguchi, *International Best Paper*, 1979
- Heat Transfer and Pressure Drop during Condensation Inside Horizontal Tubes with Static Mixer Inserts, S. T. Lin, Naim Z. Azer, L. T. Fan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Infrared Audits of Roof Heat Loss, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Laminar Heat Transfer in a Circular Tube with Twisted Tapes during Condensation, Wayne A. Helmer, Javaid Iqbal, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Phase-Change Heat Transfer in Solar Hot Water Heating Using R-11 and R-114, Ralph C. Downing, Vincent H. Waldin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Pressure Drop in Evaporative Two-Phase Vertical Upflow of Freon-11 in a Small-Diameter Tube, Abdo H. Abdelmessih, Yemo Adeniji-Fashola, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Survey of Published Heat Transfer Coefficients Encountered in Food Refrigeration Processes (RP-228), Javier Arce, Vincent E. Sweat, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy Conservation Design Guidelines: Including Mass and Insulation in Building Walls, Michael E. Dexter, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- A Technical Review of the "M" Factor Concept, R. D. Godfrey, K. E. Wilkes, A. G. Lavine, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Measurement of the Thermal Performance of Insulated Vehicle Bodies and Containers and the Interpretation of Results, G. R. Scrine, K. C. Hales, J. E. Mansfield, *International Best Paper*, 1980

HEATING

- A Contractor's View of HVAC Noise and Vibration Problems, D. J. Mosshart, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Conversion of an Electrically Heated Motel to Geothermal Energy, Kenneth L. Garing, Glenn E. Coury, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Dead Band Controls Guide, Joseph P. Paoluccio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Development of a Northern Climate Residential Air-Source Heat Pump, David J. Young, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficient Computation of Zone Loads, E. F. Sowell, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The El Centro Geothermal Energy Heating and Cooling Field Experiment, Roger N. Yamasaki, Peter B. Sherwood, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Impact of HVAC Process Dynamics on Energy Use, Dennis E. Miller, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Performance Simulation of Residential Heating Systems with HFLAME III, Ulrich Bonne, Amin Patani, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Space Shuttle: Today's System for Tomorrow's World, John L. Fisher, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Thermal Comfort in a Room Heated by Different Methods, B. W. Olesen, E. Mortensen, J. Thorshauge, B. Berg-Munch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Calorimetry Testing and HVAC&R, Robert T. Topper, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Developing Consensus Standards for Solar Systems, Jordan L. Heiman, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Economic Analysis: Water Source Heat Pumps, Gary C. Thomann, Jay A. Fulton, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Efficiency Study: Preheating Outdoor Air for Industrial and Institutional Applications, Frank Bridgers, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Heat Pumps in Northern Europe, *ASHRAE Journal*, Vol. 22, No. 9, 1980

HEATING (continued)

- Heating Costs: Heat Pumps vs Combustion Furnaces, Lester F. Hubert, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- The HVAC&R Industry in the 80's, Ray Durazo, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- On Solar System Performance, A. F. G. Bedinger, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Predicting the Performance of Solar Heating and Cooling Systems, Alwin B. Newton, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Solar Assisted Heating of a Highway Rest Station, W. C. Dries, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Solar Pond Energy Systems, Robert K. Multer, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Solar Technology Update—Worldwide, *ASHRAE Journal*, Vol. 22, No. 11, 1980

HERMETIC

- Hermetic Magnetic Wire Coating Adherence to Conductor After Heat Cycling in R-22, Harold L. Emmons, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HIGH-RISE

- Methods for Conducting Small-Scale Pressurization Tests and Air Leakage Date of Multi-Story Apartment Buildings, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Vestibule Pressurization System for the Protection of Escape Routes of a 17-Story Hotel, G. T. Tamura, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HOT-WATER

- A Collector Sizing Procedure for Residential Solar Hot Water Systems with Prescribed Thermal Performance Requirements, Michael E. Mc Cabe, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Comparison of Experimental and Computer-Predicted Performance for Six Solar Domestic Hot Water Systems, Stanley T. Liu, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 5, 1980
- Effects of External Heat Traps on Standby Losses from Residential Water Heaters, Greg A. Johnson, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Effects of Stratification in Performance and Control of Residential Electric Water Heaters, Robert E. Cook, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficiency Improvement Concepts for Residential Gas-Fired Furnaces and Water Heaters, S. G. Talbert, Abbott A. Putnam, Douglas W. De Werth, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The El Centro Geothermal Energy Heating and Cooling Field Experiment, Roger N. Yamasaki, Peter B. Sherwood, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- High Temperature Heat Pumps Can Accelerate the Use of Geothermal Energy, Richard C. Niess, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hot Water Consumption and Performance of an Automatic Storage-Type Service Water Heating Installation in a School Building, Leslie Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of a Pulse Combustion Gas-Fired Water Heater, S. T. Vogt, M. S. Yen, R. J. Schoenhals, W. Soedel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Phase-Change Heat Transfer in Solar Hot Water Heating Using R-11 and R-114, Ralph C. Downing, Vincent H. Waldin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Program to Involve the Homeowner in the Fabrication and Installation of a Solar Water Heater, Stanley A. Mumma, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Proposed Procedure of Testing for Rating Solar Domestic Hot Water Systems, James E. Hill, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Solar Assisted Heating of a Highway Rest Station, W. C. Dries, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Solar Pond Energy Systems, Robert K. Multer, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Solar Technology Update—Worldwide, *ASHRAE Journal*, Vol. 22, No. 11, 1980

HOTEL-MOTEL

- Conversion of an Electrically Heated Motel to Geothermal Energy, Kenneth L. Garing, Glenn E. Coury, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Vestibule Pressurization System for the Protection of Escape Routes of a 17-Story Hotel, G. T. Tamura, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HUMAN-FACTORS

- Assessing Environmental Conditions in Apartments of the Elderly, Ralph O. Turnquist, R. Phillip Volmer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Comfort Limits for Heated Ceilings, P. O. Fanger, L. Bahidi, B. W. Olesen, G. Langkilde, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Definition and Measurement of Local Thermal Discomfort Parameters, T. Lund Madsen, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- New Horizons for 55-74: Implications for Energy Conservation and Comfort, Larry G. Berglund, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Physiological Responses of 262 Seated Sedentary Subjects in Neutral and Heat Stress Environments, Stephan A. Konz, William B. Zuti, F. H. Rohles, Jr., Donald E. Skipton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

HUMAN-FACTORS (continued)

- Temperature or Temperament: A Psychologist Looks at Thermal Comfort, F. H. Rohles, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Thermal Comfort during Cyclical Temperature Fluctuations (RP-198), F. H. Rohles, Jr., George A. Milliken, Donald E. Skipton, Ivanka Krstic, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Comfort in a Room Heated by Different Methods, B. W. Olesen, E. Mortensen, J. Thorshauge, B. Berg-Munch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Research: Clothing Comfort at EBTR Levels, Larry G. Berglund, *ASHRAE Journal*, Vol. 22, No. 3, 1980

HYDRONIC

- Hydronics and Control Valve Selection, John A. Olson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

INCINERATION

- Economics of Converting Thermal Incineration Systems to Catalytic Operation, L. C. Hardison, E. J. Dowd, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

INDUSTRIAL

- A Community Energy System Supplied from Waste Industrial Energy through Heat Pumps, Lincoln B. Katter, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Geothermal Energy for Sugar Beet Processing, Jay J. Seidman, E. Lee Leventhal, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimum Heat Transfer through Turbulent Recirculated Plane Air Curtains, Ronald H. Howell, Masaru Shibata, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Cooling/Towers: Energy Conservation Workhorses, Robert Burger, *ASHRAE Journal*, Vol. 22, No. 4, 1980
- Efficiency Study: Preheating Outdoor Air for Industrial and Institutional Applications, Frank Bridgers, *ASHRAE Journal*, Vol. 22, No. 2, 1980

INSULATION

- Design Charts to Size Direct Gain Passive Systems, James W. Taul, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy Conservation Ideas for New and Existing Commercial Greenhouses, Ted H. Short, Michael F. Brugger, William L. Bauerle, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Energy-Efficient Crop Production in Greenhouses, Henry M. Cathey, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Mathematical Model for Predicting Attic Ventilation Rates Required for Preventing Condensation on Roof Sheathing, Douglas M. Burch, D. E. Luna, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Transient Thermal Behavior of an Externally Insulated Massive Building, P. S. Gujral, Raymond J. Clark, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Aspects of a National Program Plan for Industrial/Commercial Insulation for Mechanical Systems, Frank J. Powell, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Building Envelope Studies—California Projects, Carl H. Jordan, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Development of New Federal Criteria for Underground Heat Distribution Systems, T. C. Hildebrand, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Energy Conservation Design Guidelines: Including Mass and Insulation in Building Walls, Michael E. Dexter, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Model Codes and Thermal Insulation Requirements, G. F. Clyde, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Owens-Corning Fiberglas Energy Conservation Awards 1980, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Reducing Heat Loss through Window Retrofitting, N. E. Hager, Jr., W. H. Phillips, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Refrigeration, Insulation and Design: The Thermal Performance Team at Lake Placid, W. Stephen Comstock, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- A Technical Review of the "M" Factor Concept, R. D. Godfrey, K. E. Wilkes, A. G. Lavine, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Thermal Insulation Materials Laboratory Accreditation Program, J. Bryson, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Thermal Storage: Resisting Temperature Blending, Robert T. Tamblin, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- Vitreous Insulations: Are They Hazardous?, J. P. Leineweber, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Measurement of the Thermal Performance of Insulated Vehicle Bodies and Containers and the Interpretation of Results, G. R. Scrine, K. C. Hales, J. E. Mansfield, *International Best Paper*, 1980

LABORATORY

- Thermal Insulation Materials Laboratory Accreditation Program, J. Bryson, *ASHRAE Journal*, Vol. 22, No. 3, 1980

LEAKAGE

- Measurement of the Thermal Performance of Insulated Vehicle Bodies and Containers and the Interpretation of Results, G. R. Scrine, K. C. Hales, J. E. Mansfield, *International Best Paper*, 1980

LIGHTING

New York City's Energy Conservation Program, Merja H. Lehtinen, Tobias Namenson, *ASHRAE Journal*, Vol. 22, No. 7, 1980

LIQUID-OVERFEED

Research Note No. 18: Two-Phase Pressure Drop in Refrigerant Liquid Overfeed Systems (RP-134), *ASHRAE Journal*, Vol. 22, No. 10, 1980

LOAD-CALCULATION

Application of a Generalized Model of Air Infiltration to Existing Homes, James T. Cole, Thomas S. Zawacki, Robert H. Elkins, Jon W. Zimmer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The British Gas Multi-Cell Model for Calculating Ventilation, David W. Etheridge, Donald K. Alexander, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Calculating Infiltration: An Examination of Handbook Models, John E. Janssen, A. Noel Pearman, Thomas J. Hill, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Effects of External Heat Traps on Standby Losses from Residential Water Heaters, Greg A. Johnson, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Efficient Computation of Zone Loads, E. F. Sowell, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Energy Computer Program Certification—Pros and Cons, Carl H. Fullman, Robert M. Helm, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Environmental Design of a Three-Level, Hub-Type Subway Station in a Central Business District, Richard D. Yelvington, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

An Experimental Comparison of Energy Requirements for Space Heating with Radiant and Convective Systems (RP-177B), Herbert R. Bailey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Heat Pump Integrated Community Energy System Using Annual Aquifer Energy Storage, Walter J. Schaetzle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A New Algorithm for Radiant Interchange in Room Loads Calculations, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The Pros and Cons of Certification of Energy Analysis Computer Programs, Kenneth D. Hall, Jr, Neil R. Patterson, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Residential Ice Storage as a Load Management Tool, Richard H. Auris, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Thermal Modeling of Passive Solar Buildings on a Programmable Calculator, Joseph T. Kohler, Paul W. Sullivan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

ASHRAE Standard 101P: An Analysis, Robert Lee Boyd, *ASHRAE Journal*, Vol. 22, No. 7, 1980

Building Envelope Studies—California Projects, Carl H. Jordan, *ASHRAE Journal*, Vol. 22, No. 3, 1980

Energy Conservation Design Guidelines: Including Mass and Insulation in Building Walls, Michael E. Dexter, *ASHRAE Journal*, Vol. 22, No. 3, 1980

Microcomputers Hail New Era in Controls, William F. Chapman, *ASHRAE Journal*, Vol. 22, No. 7, 1980

A Technical Review of the "M" Factor Concept, R. D. Godfrey, K. E. Wilkes, A. G. Lavine, *ASHRAE Journal*, Vol. 22, No. 3, 1980

MAINTENANCE

Life Cycle Cost Analysis for Buildings, Robert P. Charette, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

MASS-TRANSFER

Research Note No. 17: Heat and Mass Transfer on Heat Exchange Surfaces (RP-155), *ASHRAE Journal*, Vol. 22, No. 10, 1980

MEASUREMENT

Evaporation from Free Surfaces—Swimming Pools, Sverre Fossdal, *International Best Paper*, 1979

Definition and Measurement of Local Thermal Discomfort Parameters, T. Lund Madsen, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Field Measurement of a Gas Furnace in a Mobile Home and Determination of Steady-State, Cyclic and Seasonal Efficiencies, Victor W. Goldschmidt, R. Reid White, Robert G. Leonard, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Field Measurements of a Mobile Home Unitary Heat Pump (in a Heating Mode), Gordon H. Hart, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

In-Situ Measurements of Residential Energy Performance Using Electric Co-Heating, R. C. Sonderegger, P. E. Condon, M. P. Modera, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Indoor Sound Rating Criteria, Lewis S. Goodfriend, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

An Intercomparison of Tracer Gases Used for Air Infiltration Measurements, David T. Grimsrud, Max H. Sherman, John E. Janssen, A. Noel Pearman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

The Solar Bottom Line, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Measurement of the Thermal Performance of Insulated Vehicle Bodies and Containers and the Interpretation of Results, G. R. Scrine, K. C. Hales, J. E. Mansfield, *International Best Paper*, 1980

MOBILE-HOME

Field Measurement of a Gas Furnace in a Mobile Home and Determination of Steady-State, Cyclic and Seasonal Efficiencies, Victor W. Goldschmidt, R. Reid White, Robert G. Leonard, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Field Measurements of a Mobile Home Unitary Heat Pump (in a Heating Mode), Gordon H. Hart, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

MODELING

Adaptive Optimal Control—An Algorithm for Direct Control, Donald R. Farris, Thomas E. Mc Donald, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Air Quality Levels in a Two-Zone Space, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Application of a Generalized Model of Air Infiltration to Existing Homes, James T. Cole, Thomas S. Zawacki, Robert H. Elkins, Jon W. Zimmer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The British Gas Multi-Cell Model for Calculating Ventilation, David W. Etheridge, Donald K. Alexander, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The Bruce Hunn Residence as Simulated by the DEROB System, David O. Northrup, Francisco Arumi-Noe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Calculating Infiltration: An Examination of Handbook Models, John E. Janssen, A. Noel Pearman, Thomas J. Hill, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Certification of Energy Analysis Computer Programs in California, Craig W. Hoellwarth, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Comparison of Experimental and Computer-Predicted Performance for Six Solar Domestic Hot Water Systems, Stanley T. Liu, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 5, 1980

Comparison of Performance and Computer Simulation of a Thermal Storage System for Commercial Buildings, Gary Calobrisi, James M. Henderson, Harry L. Brown, Bernard B. Hamel, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Cooling and Heat Pump Heating Seasonal Performance Effects Evaluation Model, Raymond J. Rettberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Developing Office Building Design and Operation Strategies Using UWENSOL and the Comfort Routine, Dean R. Heerwagen, Ashley F. Emery, Charles J. Kippenhan, Gordon B. Varey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Direct Digital Control System in Cornwall, Ontario, James W. Ford, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Efficient Computation of Zone Loads, E. F. Sowell, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Electric-Driven Heat Pump Systems: Simulations and Controls II, Ulrich Bonne, Amin Patani, Richard D. Jacobson, Dale A. Mueller, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Energy Computer Program Certification—Pros and Cons, Carl H. Fullman, Robert M. Helm, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Experimental and Numerical Study of Air Movement in Slot-Ventilated Enclosures, Michael B. Timmons, Louis D. Albright, Ronald B. Furry, Kenneth E. Torrance, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

An Experimental Validation of a Rational Model for Dynamic Responses of Buildings, D. Paul Mehta, James E. Woods, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

In-Situ Measurements of Residential Energy Performance Using Electric Co-Heating, R. C. Sonderegger, P. E. Condon, M. P. Modera, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Infiltration-Pressurization Correlation: Simplified Physical Modeling, Max H. Sherman, David T. Grimsrud, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

A Mathematical Model for Predicting Attic Ventilation Rates Required for Preventing Condensation on Roof Sheathing, Douglas M. Burch, D. E. Luna, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A New Algorithm for Radiant Interchange in Room Loads Calculations, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Performance Simulation of Residential Heating Systems with HFLAME III, Ulrich Bonne, Amin Patani, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Program to Involve the Homeowner in the Fabrication and Installation of a Solar Water Heater, Stanley A. Mumma, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Proposed Procedure of Testing for Rating Solar Domestic Hot Water Systems, James E. Hill, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

The Pros and Cons of Certification of Energy Analysis Computer Programs, Kenneth D. Hall, Jr, Neil R. Patterson, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Thermal Modeling of Passive Solar Buildings on a Programmable Calculator, Joseph T. Kohler, Paul W. Sullivan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Two-Phase Flow in Horizontal Condensate Return Lines of Steam Thermal Systems (RP-167), Richard A. Fleschner, Ronald H. Howell, Harry J. Sauer, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Using the Heat Pump Annual Utilization Efficiency to Optimize Design and Conservation of Energy, John A. Hughes, Jacek Kasprzycki, Lyle R. Poole, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Wind and Temperature Induced Pressure Differentials and an Equivalent Pressure Difference Model for Predicting Air Infiltration in Schools, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Model Codes and Thermal Insulation Requirements, G. F. Clyde, *ASHRAE Journal*, Vol. 22, No. 10, 1980

MODELING (continued)

- Research Note No. 19: Simulating Central Chilled Water Systems (RP-141), *ASHRAE Journal*, Vol. 22, No. 10, 1980
- A Review of the Building Controls Industry—1980, Vincent D. Lee-Thorp, *ASHRAE Journal*, Vol. 22, No. 7, 1980

MOISTURE

- The Keiper Method for Moisture Design in Buildings, H. A. Trethowen, *International Best Paper*, 1979

MONITORING

- Effects of External Heat Traps on Standby Losses from Residential Water Heaters, Greg A. Johnson, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hot Water Consumption and Performance of an Automatic Storage-Type Service Water Heating Installation in a School Building, Leslie Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Infrared Audits of Roof Heat Loss, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Intercomparison of Tracer Gases Used for Air Infiltration Measurements, David T. Grimsrud, Max H. Sherman, John E. Janssen, A. Noel Pearman, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- ASHRAE Standard 101P: An Analysis, Robert Lee Boyd, *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Estimating Solar Collector Performance, Steven B. Leighton, *ASHRAE Journal*, Vol. 22, No. 11, 1980

MOTOR

- A Diesel-Driven Heat Pump Centered Integrated Community Energy System, Richard E. Crane, Harold G. Lorsch, Robert G. Werden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hermetic Magnetic Wire Coating Adherence to Conductor After Heat Cycling in R-22, Harold L. Emmons, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Selection of Working Fluids Appropriate for Solar Rankine Cycle Cooling of Buildings, Ezzat I. Wali, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Thermodynamic Cycle of the Minto Solar Wheel, Sui Lin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

NOISE

- A Contractor's View of HVAC Noise and Vibration Problems, D. J. Mosshart, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980
- A High Velocity, Low Pressure Air System, J. J. W. Siganto, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Indoor Sound Rating Criteria, Lewis S. Goodfriend, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Noise Control and Specifications—A Developer's View, James C. Rosenfeld, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sound Off, Robert M. Parsky, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

NURSING-HOME

- Assessing Environmental Conditions in Apartments of the Elderly, Ralph O. Turnquist, R. Phillip Volmer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Physiological Responses of 262 Seated Sedentary Subjects in Neutral and Heat Stress Environments, Stephan A. Konz, William B. Zuti, F. H. Rohles, Jr, Donald E. Skipton, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

OFFICE-BUILDING

- Developing Office Building Design and Operation Strategies Using UWENSOL and the Comfort Routine, Dean R. Heerwagen, Ashley F. Emery, Charles J. Kippenhan, Gordon B. Varey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Noise Control and Specifications—A Developer's View, James C. Rosenfeld, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Ontario Government's Experience with Thermal Storage in New and Existing Buildings, Walter S. Chick, Sr, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Performance of a Continuous Linear Air Diffuser in the Perimeter Zone of an Office Environment, Gordon H. Hart, Daniel Int-Hout, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Comfort in a Room Heated by Different Methods, B. W. Olesen, E. Mortensen, J. Thorshauge, B. Berg-Munch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Construction Outlook 1980, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Efficiency Study: Preheating Outdoor Air for Industrial and Institutional Applications, Frank Bridgers, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- The Solar Bottom Line, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 11, 1980

PIPING

- Economic Assessment of Using Nonmetallic Materials in the Direct Utilization of Geothermal Energy, Ramond M. Costello, Ton Ammerlaan, S. V. Cabibbo, L. E. Kukacka, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Development of New Federal Criteria for Underground Heat Distribution Systems, T. C. Hildebrand, *ASHRAE Journal*, Vol. 22, No. 10, 1980

PLASTIC

- Economic Assessment of Using Nonmetallic Materials in the Direct Utilization of Geothermal Energy, Ramond M. Costello, Ton Ammerlaan, S. V. Cabibbo, L. E. Kukacka, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

POLLUTION

- Fort McHenry Tunnel Ventilation System, Paul K. Hinkley, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

PRESSURE

- The Effect of Flow and Pressure Transients on Axial Flow Fans, John A. Murphy, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Estimated Rate of Pressurization and Depressurization of Buildings, M. M. Shah, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Infiltration-Pressurization Correlation: Simplified Physical Modeling, Max H. Sherman, David T. Grimsrud, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Methods for Conducting Small-Scale Pressurization Tests and Air Leakage Date of Multi-Story Apartment Buildings, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimal Refrigerant Compressor for Low Pressure Ratio Applications, Amir L. Ecker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Performance of a Vestibule Pressurization System for the Protection of Escape Routes of a 17-Story Hotel, G. T. Tamura, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Stairwell Pressurization, John H. Klote, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Testing of the IDS Tower Smoke Control System, John W. Fothergill, Jr, G. Clinton Hedsten, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Wind and Temperature Induced Pressure Differentials and an Equivalent Pressure Difference Model for Predicting Air Infiltration in Schools, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Predicting Natural Ventilation Forces Upon Low-Rise Buildings, B. E. Lee, M. Hussain, B. Soliman, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Research Note No. 18: Two-Phase Pressure Drop in Refrigerant Liquid Overfeed Systems (RP-134), *ASHRAE Journal*, Vol. 22, No. 10, 1980

PRESSURE-LOSS

- Heat Transfer and Pressure Drop during Condensation Inside Horizontal Tubes with Static Mixer Inserts, S. T. Lin, Naim Z. Azer, L. T. Fan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Pressure Drop in Evaporative Two-Phase Vertical Upflow of Freon-11 in a Small-Diameter Tube, Abdo H. Abdelmessih, Yemo Adeniji-Fashola, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Simplified Equations for HVAC Duct Friction Factors, J. J. Loeffler, *ASHRAE Journal*, Vol. 22, No. 1, 1980

RADIANT

- Infrared Audits of Roof Heat Loss, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A New Algorithm for Radiant Interchange in Room Loads Calculations, George N. Walton, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

RADIATION

- An Experimental Comparison of Energy Requirements for Space Heating with Radiant and Convective Systems (RP-177B), Herbert R. Bailey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

RATING

- Certification of Energy Analysis Computer Programs in California, Craig W. Hoellwarth, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Collector Sizing Procedure for Residential Solar Hot Water Systems with Prescribed Thermal Performance Requirements, Michael E. Mc Cabe, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Cooling and Heat Pump Heating Seasonal Performance Effects Evaluation Model, Raymond J. Rettberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Design and Operation of a Multi-Functional Test Facility for Heat Exchanger Performance Rating, Mal Turaga, Paul Fazio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Computer Program Certification—Pros and Cons, Carl H. Fullman, Robert M. Helm, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Estimated Rate of Pressurization and Depressurization of Buildings, M. M. Shah, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Indoor Sound Rating Criteria, Lewis S. Goodfriend, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Note on the Transient Performance and Degradation Coefficient of a Field Tested Heat Pump—Cooling and Heating Mode, Victor W. Goldschmidt, Gordon H. Hart, Richard C. Reiner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Performance of a Continuous Linear Air Diffuser in the Perimeter Zone of an Office Environment, Gordon H. Hart, Daniel Int-Hout, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Proposed Procedure of Testing for Rating Solar Domestic Hot Water Systems, James E. Hill, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

RATING (continued)

- The Pros and Cons of Certification of Energy Analysis Computer Programs, Kenneth D. Hall, Jr, Neil R. Patterson, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Energy Performance Data, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- Engineering Audits at State-Owned Building in Minnesota, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 6, 1980

REFRIGERANT

- Characteristics of Refrigerant Flow in a Capillary Tube, Hisao Koizumi, Kunio Yokoyama, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effect of Noncondensable Gases in Water Chiller Condensers—Literature Survey and Theoretical Predictions (RP-225), Ralph L. Webb, A. S. Wanniarachchi, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Effects of Air Flow Maldistributions on Air-to-Refrigerant Heat Exchanger Performance, Thomas J. Fagan, Jr, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Enhancement of Horizontal In-Tube Condensation of R-113 (RP-219), Minh Luu, Arthur E. Bergles, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Hermetic Magnetic Wire Coating Adherence to Conductor After Heat Cycling in R-22, Harold L. Emmons, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Optimal Refrigerant Compressor for Low Pressure Ratio Applications, Amir L. Ecker, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Phase-Change Heat Transfer in Solar Hot Water Heating Using R-11 and R-114, Ralph C. Downing, Vincent H. Waldin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Pressure Drop in Evaporative Two-Phase Vertical Upflow of Freon-11 in a Small-Diameter Tube, Abdo H. Abdelmessih, Yemo Adeniji-Fashola, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Research Note No. 18: Two-Phase Pressure Drop in Refrigerant Liquid Overfeed Systems (RP-134), *ASHRAE Journal*, Vol. 22, No. 10, 1980

REFRIGERATION

- Characteristics of Refrigerant Flow in a Capillary Tube, Hisao Koizumi, Kunio Yokoyama, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Heat Transfer and Pressure Drop during Condensation Inside Horizontal Tubes with Static Mixer Inserts, S. T. Lin, Naim Z. Azer, L. T. Fan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Rail Vehicle Air-Conditioning Equipment with Overload Relieving System, Toshiharu Matsuda, Seigo Miyamoto, Yasuo Minoshima, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Spray Head Design on Fishing Vessels Using Sprayed Refrigerated Seawater, Edward R. Kolbe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Survey of Published Heat Transfer Coefficients Encountered in Food Refrigeration Processes (RP-228), Javier Arce, Vincent E. Sweat, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Controlling Chiller Tube Fouling, Gordon Leitner, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Defrosting Industrial Refrigeration With Hot Coils (RP-193), W. V. Richards, W. F. Stoecker, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- The Economics of Energy Management, Bruce Schaeffer, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Efficiency Considerations for Two-Stage Systems, Raymond Klingler, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Refrigeration and Preservation of Fish, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Refrigeration, Insulation and Design: The Thermal Performance Team at Lake Placid, W. Stephen Comstock, *ASHRAE Journal*, Vol. 22, No. 3, 1980

REFRIGERATOR

- A New Power Saving Household Refrigerator-Freezer, Toshiyuki Onishi, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

RESEARCH

- Comfort Limits for Heated Ceilings, P. O. Fanger, L. Banhidi, B. W. Olesen, G. Langkilde, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Ontario Government's Experience with Thermal Storage in New and Existing Buildings, Walter S. Chick, Sr, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Research on Conservation and Solar Energy Utilization in Greenhouses, William J. Roberts, David R. Mears, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The New State of Illinois Center: Futuristic Pantheon of Energy Management, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Research: Clothing Comfort at EBTR Levels, Larry G. Berglund, *ASHRAE Journal*, Vol. 22, No. 3, 1980

RESEARCH-REPORTS

- The Bidirectional Coil Loop Thermosiphon Heat Exchanger (RP-188), Thomas W. Mc Donald, S. Sampath, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Contaminant Level Control in Parking Garages (RP-223), A. R. Stankunas, Paul T. Bartlett, Kevin C. Tower, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Effect of Noncondensable Gases in Water Chiller Condensers—Literature Survey and Theoretical Predictions (RP-225), Ralph L. Webb, A. S. Wanniarachchi, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

RESEARCH-REPORTS (continued)

- The Effect of Noncondensable Gases on the Performance of an R-11 Centrifugal Water Chiller Condenser (RP-225), Ralph L. Webb, A. S. Wanniarachchi, T. M. Rudy, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Experimental Comparison of Energy Requirements for Space Heating with Radiant and Convective Systems (RP-177B), Herbert R. Bailey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Nutritional Value of Frozen Pizzas (RP-192), Basil Kamel, Amihud Kramer, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Survey of Published Heat Transfer Coefficients Encountered in Food Refrigeration Processes (RP-228), Javier Arce, Vincent E. Sweat, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Comfort during Cyclical Temperature Fluctuations (RP-198), F. H. Rohles, Jr, George A. Milliken, Donald E. Skipton, Ivanka Krstic, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Defrosting Industrial Refrigeration With Hot Coils (RP-193), W. V. Richards, W. F. Stoecker, *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Research Note No. 16: Format and Methodology for Energy Budget (RP-233), *ASHRAE Journal*, Vol. 22, No. 7, 1980
- Research Note No. 17: Heat and Mass Transfer on Heat Exchange Surfaces (RP-155), *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Research Note No. 18: Two-Phase Pressure Drop in Refrigerant Liquid Overfeed Systems (RP-134), *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Research Note No. 19: Simulating Central Chilled Water Systems (RP-141), *ASHRAE Journal*, Vol. 22, No. 10, 1980
- Research Note No. 20: Contaminant Level Control in Parking Garages (RP-223), *ASHRAE Journal*, Vol. 22, No. 12, 1980
- Shades Up Edison (RP-258), Harry J. Sauer, Jr, *ASHRAE Journal*, Vol. 22, No. 10, 1980

RESIDENTIAL

- An Analysis of Code Related Responses from the Solar Demonstration Program, Joseph Greenberg, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Application of a Generalized Model of Air Infiltration to Existing Homes, James T. Cole, Thomas S. Zawacki, Robert H. Elkins, Jon W. Zimmer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Bruce Hunn Residence as Simulated by the DEROB System, David O. Northrup, Francisco Arumi-Noe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Calculating Infiltration: An Examination of Handbook Models, John E. Janssen, A. Noel Pearman, Thomas J. Hill, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Collector Sizing Procedure for Residential Solar Hot Water Systems with Prescribed Thermal Performance Requirements, Michael E. Mc Cabe, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Cooling and Heat Pump Heating Seasonal Performance Effects Evaluation Model, Raymond J. Rettberg, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Development of a Northern Climate Residential Air-Source Heat Pump, David J. Young, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Effects of External Heat Traps on Standby Losses from Residential Water Heaters, Greg A. Johnson, Victor W. Goldschmidt, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Effects of Stratification in Performance and Control of Residential Electric Water Heaters, Robert E. Cook, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Efficiency Improvement Concepts for Residential Gas-Fired Furnaces and Water Heaters, S. G. Talbert, Abbott A. Putnam, Douglas W. De Werth, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- In-Situ Measurements of Residential Energy Performance Using Electric Co-Heating, R. C. Sonderegger, P. E. Condon, M. P. Modera, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A New Power Saving Household Refrigerator-Freezer, Toshiyuki Onishi, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Performance Simulation of Residential Heating Systems with HFLAME III, Ulrich Bonne, Amin Patani, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Reducing Residential Energy Growth with More Efficient Space Heating Equipment, Dennis L. O'Neal, Eric A. Hirst, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Residential Hybrid Heat Pump State-of-the-Art Assessment, Morton H. Blatt, Robert C. Erickson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Residential Ice Storage as a Load Management Tool, Richard H. Auris, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Construction Outlook 1980, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Heat Pumps in Northern Europe, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- Is Solar Really the Best Way?, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 1, 1980
- Solar Assisted Heat Pumps for Residential Use, Warren F. Bessler, Bao C. Hwang, *ASHRAE Journal*, Vol. 22, No. 9, 1980
- The Solar Bottom Line, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 11, 1980

ROOF

- Infrared Audits of Roof Heat Loss, Douglas M. Burch, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Mathematical Model for Predicting Attic Ventilation Rates Required for Preventing Condensation on Roof Sheathing, Douglas M. Burch, D. E. Luna, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

ROTARY

Energy Conservation Techniques for Use in Rotary Solid Sorption Dehumidification Systems, James A. Coellner, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980

SCHOOL

Hot Water Consumption and Performance of an Automatic Storage-Type Service Water Heating Installation in a School Building, Leslie Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Wind and Temperature Induced Pressure Differentials and an Equivalent Pressure Difference Model for Predicting Air Infiltration in Schools, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

SEAFOOD

Spray Head Design on Fishing Vessels Using Sprayed Refrigerated Seawater, Edward R. Kolbe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Refrigeration and Preservation of Fish, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 12, 1980

SENSOR

ASHRAE Standard 101P: An Analysis, Robert Lee Boyd, *ASHRAE Journal*, Vol. 22, No. 7, 1980

SOLAR

An Analysis of Code Related Responses from the Solar Demonstration Program, Joseph Greenberg, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

Barrier or Incentive: Should Public Utilities Be Involved with Solar Energy?, Mark S. Menzer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

The Bruce Hunn Residence as Simulated by the DEROB System, David O. Northrup, Francisco Arumi-Noe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

A Collector Sizing Procedure for Residential Solar Hot Water Systems with Prescribed Thermal Performance Requirements, Michael E. Mc Cabe, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Comparison of Experimental and Computer-Predicted Performance for Six Solar Domestic Hot Water Systems, Stanley T. Liu, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 5, 1980

Control of a Heat Pump/Storage/Solar Hot Water-Chilled Water Central Plant, Howard Nordeen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Design Charts to Size Direct Gain Passive Systems, James W. Taul, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Energy Conservation Ideas for New and Existing Commercial Greenhouses, Ted H. Short, Michael F. Brugger, William L. Bauerle, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Energy Management and Conservation in Greenhouses—A Manufacturer's View, Harold E. Gray, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Making State Solar Laws Work: Results of a Study of State Solar Energy Incentives, J. David Roessner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Phase-Change Heat Transfer in Solar Hot Water Heating Using R-11 and R-114, Ralph C. Downing, Vincent H. Waldin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Program to Involve the Homeowner in the Fabrication and Installation of a Solar Water Heater, Stanley A. Mumma, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Proposed Procedure of Testing for Rating Solar Domestic Hot Water Systems, James E. Hill, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Research on Conservation and Solar Energy Utilization in Greenhouses, William J. Roberts, David R. Mears, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Selection of Working Fluids Appropriate for Solar Rankine Cycle Cooling of Buildings, Ezzat I. Wali, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

Solar and Sorption—An Energy Effective Alternative, Stephen D. Fitch, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A System for Maximizing Solar Collection with Thermal Storage, Robert T. Tamlyn, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 11, 1980

Thermal Modeling of Passive Solar Buildings on a Programmable Calculator, Joseph T. Kohler, Paul W. Sullivan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

The Thermodynamic Cycle of the Minto Solar Wheel, Sui Lin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

An Alternate Source of Cooling: The Ejector-Compression Heat Pump, Richard M. Hamner, *ASHRAE Journal*, Vol. 22, No. 7, 1980

Developing Consensus Standards for Solar Systems, Jordan L. Heiman, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Estimating Solar Collector Performance, Steven B. Leighton, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Federal Role in the Development and Commercialization of Solar Technology, Mike Mc Cormack, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Is Solar Really the Best Way?, Eric A. Hirst, *ASHRAE Journal*, Vol. 22, No. 1, 1980

The New State of Illinois Center: Futuristic Pantheon of Energy Management, Merja H. Lehtinen, *ASHRAE Journal*, Vol. 22, No. 11, 1980

On Solar System Performance, A. F. G. Bedinger, *ASHRAE Journal*, Vol. 22, No. 2, 1980

SOLAR (continued)

Predicting the Performance of Solar Heating and Cooling Systems, Alwin B. Newton, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Solar Assisted Heat Pumps for Residential Use, Warren F. Bessler, Bao C. Hwang, *ASHRAE Journal*, Vol. 22, No. 9, 1980

Solar Assisted Heating of a Highway Rest Station, W. C. Dries, *ASHRAE Journal*, Vol. 22, No. 11, 1980

The Solar Bottom Line, L. G. Spielvogel, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Solar Pond Energy Systems, Robert K. Multer, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Solar Technology Update—Worldwide, *ASHRAE Journal*, Vol. 22, No. 11, 1980

SPACE-ENVIRONMENT

The Space Shuttle: Today's System for Tomorrow's World, John L. Fisher, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

SPACE-HEATING

Comparison of Experimental and Computer-Predicted Performance for Six Solar Domestic Hot Water Systems, Stanley T. Liu, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 5, 1980

An Experimental Comparison of Energy Requirements for Space Heating with Radiant and Convective Systems (RP-177B), Herbert R. Bailey, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Geothermal Space Heating in Susanville, Philip A. Edwards, Ken Unmack, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Heat Pump Centered Heating and Cooling Utilizing Wastewater Heat Recovery, David W. Wade, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Performance of Typical HVAC Materials in Two Geothermal Heating Systems, David A. Mitchell, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Reducing Residential Energy Growth with More Efficient Space Heating Equipment, Dennis L. O'Neal, Eric A. Hirst, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

STADIUM

Refrigeration, Insulation and Design: The Thermal Performance Team at Lake Placid, W. Stephen Comstock, *ASHRAE Journal*, Vol. 22, No. 3, 1980

STANDARDS

New Horizons for 55-74: Implications for Energy Conservation and Comfort, Larry G. Berglund, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

ASHRAE Standard 101P: An Analysis, Robert Lee Boyd, *ASHRAE Journal*, Vol. 22, No. 7, 1980

ASHRAE Standard 90 Update, Neil R. Patterson, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Aspects of a National Program Plan for Industrial/Commercial Insulation for Mechanical Systems, Frank J. Powell, *ASHRAE Journal*, Vol. 22, No. 10, 1980

BEPS and ASHRAE Standard 90: Analysis and Impact, W. S. Fleming, Harry Misuriello, *ASHRAE Journal*, Vol. 22, No. 6, 1980

Developing Consensus Standards for Solar Systems, Jordan L. Heiman, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Development of New Federal Criteria for Underground Heat Distribution Systems, T. C. Hildebrand, *ASHRAE Journal*, Vol. 22, No. 10, 1980

The Institutional Building Grants Program: An Overview, Dennis R. Landsberg, *ASHRAE Journal*, Vol. 22, No. 11, 1980

Research Note No. 16: Format and Methodology for Energy Budget (RP-233), *ASHRAE Journal*, Vol. 22, No. 7, 1980

STEAM

Two-Phase Flow in Horizontal Condensate Return Lines of Steam Thermal Systems (RP-167), Richard A. Fleschner, Ronald H. Howell, Harry J. Sauer, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Development of New Federal Criteria for Underground Heat Distribution Systems, T. C. Hildebrand, *ASHRAE Journal*, Vol. 22, No. 10, 1980

Waste Heat Saves Greenhouse, William Fearn, *ASHRAE Journal*, Vol. 22, No. 8, 1980

SYSTEMS-BUILDING

Energy Management in Institutional Facilities, Raj Kumar, *ASHRAE Journal*, Vol. 22, No. 7, 1980

TESTING

The El Centro Geothermal Energy Heating and Cooling Field Experiment, Roger N. Yamasaki, Peter B. Sherwood, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Hot Water Consumption and Performance of an Automatic Storage-Type Service Water Heating Installation in a School Building, Leslie Jones, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

Methods for Conducting Small-Scale Pressurization Tests and Air Leakage Date of Multi-Story Apartment Buildings, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

A Note on the Transient Performance and Degradation Coefficient of a Field Tested Heat Pump—Cooling and Heating Mode, Victor W. Goldschmidt, Gordon H. Hart, Richard C. Reiner, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

TESTING (*continued*)

- A Proposed Procedure of Testing for Rating Solar Domestic Hot Water Systems, James E. Hill, A. Hunter Fanney, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Residential Hybrid Heat Pump State-of-the-Art Assessment, Morton H. Blatt, Robert C. Erickson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Testing of the IDS Tower Smoke Control System, John W. Fothergill, Jr., G. Clinton Hedsten, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Calorimetry Testing and HVAC&R, Robert T. Topper, *ASHRAE Journal*, Vol. 22, No. 10, 1980

THERMAL-RESPONSE

- The Bruce Hunn Residence as Simulated by the DEROB System, David O. Northrup, Francisco Arumi-Noe, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- An Experimental Validation of a Rational Model for Dynamic Responses of Buildings, D. Paul Mehta, James E. Woods, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Modeling of Passive Solar Buildings on a Programmable Calculator, Joseph T. Kohler, Paul W. Sullivan, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Thermal Storage in Robson Square, Vancouver, British Columbia, Edward I. MacKie, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Two-Phase Flow in Horizontal Condensate Return Lines of Steam Thermal Systems (RP-167), Richard A. Fleschner, Ronald H. Howell, Harry J. Sauer, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Refrigeration, Insulation and Design: The Thermal Performance Team at Lake Placid, W. Stephen Comstock, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Thermal Insulation Materials Laboratory Accreditation Program, J. Bryson, *ASHRAE Journal*, Vol. 22, No. 3, 1980
- Thermal Storage: Resisting Temperature Blending, Robert T. Tamblin, *ASHRAE Journal*, Vol. 22, No. 1, 1980

THERMODYNAMIC

- The Thermodynamic Cycle of the Minto Solar Wheel, Sui Lin, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980

TRANSPORT

- Environmental Design of a Three-Level, Hub-Type Subway Station in a Central Business District, Richard D. Yelvington, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Fort McHenry Tunnel Ventilation System, Paul K. Hinkley, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Rail Vehicle Air-Conditioning Equipment with Overload Relieving System, Toshiharu Matsuda, Seigo Miyamoto, Yasuo Minoshima, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Variable Pitch Axial Flow Fans for Tunnel Ventilation: A Comparison to Centrifugal Fans, Hans D. Baesel, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Solar Assisted Heating of a Highway Rest Station, W. C. Dries, *ASHRAE Journal*, Vol. 22, No. 11, 1980
- Measurement of the Thermal Performance of Insulated Vehicle Bodies and Containers and the Interpretation of Results, G. R. Scrine, K. C. Hales, J. E. Mansfield, *International Best Paper*, 1980

TREATMENT

- Mathematical Treatment of Heat Transfer during Freezing of Food, Yujiro Hayaishi, Kunihiko Yamaguchi, *International Best Paper*, 1979

TUBE

- Characteristics of Refrigerant Flow in a Capillary Tube, Hisao Koizumi, Kunio Yokoyama, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Enhancement of Horizontal In-Tube Condensation of R-113 (RP-219), Minh Luu, Arthur E. Bergles, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Laminar Heat Transfer in a Circular Tube with Twisted Tapes during Condensation, Wayne A. Helmer, Javaid Iqbal, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Pressure Drop in Evaporative Two-Phase Vertical Upflow of Freon-11 in a Small-Diameter Tube, Abdo H. Abdelmessih, Yemo Adeniji-Fashola, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Controlling Chiller Tube Fouling, Gordon Leitner, *ASHRAE Journal*, Vol. 22, No. 2, 1980

URBAN

- A Community Energy System Supplied from Waste Industrial Energy through Heat Pumps, Lincoln B. Katter, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Diesel-Driven Heat Pump Centered Integrated Community Energy System, Richard E. Crane, Harold G. Lorsch, Robert G. Werden, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- The Heat Pump Centered Integrated Community Energy System (HP-C-ICES), Fred S. Dubin, Amos Halfon, Paul Herzog, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- A Heat Pump Integrated Community Energy System Using Annual Aquifer Energy Storage, Walter J. Schaeztle, Charles E. Brett, David M. Grubbs, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- New York City's Energy Conservation Program, Merja H. Lehtinen, Tobias Namenson, *ASHRAE Journal*, Vol. 22, No. 7, 1980

UTILITY

- Barrier or Incentive: Should Public Utilities Be Involved with Solar Energy?, Mark S. Menzer, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Energy Accounting Systems, Alfred Greenberg, *ASHRAE Journal*, Vol. 22, No. 1, 1980

VALVE

- Hydronics and Control Valve Selection, John A. Olson, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

VARIABLE-VOLUME

- Comparison and Advantages of Dual-Duct Variable-Volume Control Assemblies in Controlling the Perimeter of Large Buildings, M. Leon Kloostera, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Controls for Single-Duct Variable Air Volume Terminal Units, Lloyd W. Geake, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- System-Powered Variable Air Volume Terminals, John P. Kettler, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980

VEGETABLE

- Geothermal Energy for Sugar Beet Processing, Jay J. Seidman, E. Lee Leventhal, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Review and Analysis of the Transient Method for Determining Thermal Diffusivity of Fruits and Vegetables, Jerome J. Gaffney, Carl D. Baird, William D. Eshleman, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- A Velocity-Type Forced-Air Vegetable Precooler, A. H. Bennett, A. Aharoni, H. L. Strum, *ASHRAE Journal*, Vol. 22, No. 12, 1980

VENTILATION

- Air Quality Levels in a Two-Zone Space, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The British Gas Multi-Cell Model for Calculating Ventilation, David W. Etheridge, Donald K. Alexander, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Contaminant Level Control in Parking Garages (RP-223), A. R. Stankunas, Paul T. Bartlett, Kevin C. Tower, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Dead Band Controls Guide, Joseph P. Paoluccio, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Experimental and Numerical Study of Air Movement in Slot-Ventilated Enclosures, Michael B. Timmons, Louis D. Albright, Ronald B. Furry, Kenneth E. Torrance, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Fort McHenry Tunnel Ventilation System, Paul K. Hinkley, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- A Mathematical Model for Predicting Attic Ventilation Rates Required for Preventing Condensation on Roof Sheathing, Douglas M. Burch, D. E. Luna, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Performance of Typical HVAC Materials in Two Geothermal Heating Systems, David A. Mitchell, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Sizing an Air-Cleaning System, L. C. Rodgers, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- The Space Shuttle: Today's System for Tomorrow's World, John L. Fisher, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980; *ASHRAE Journal*, Vol. 22, No. 8, 1980
- Variable Pitch Axial Flow Fans for Tunnel Ventilation: A Comparison to Centrifugal Fans, Hans D. Baesel, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Attic Ventilators and Energy Conservation, Ira Block, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Calorimetry Testing and HVAC&R, Robert T. Topper, *ASHRAE Journal*, Vol. 22, No. 10, 1980
- The HVAC&R Industry in the 80's, Ray Durazo, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Predicting Natural Ventilation Forces Upon Low-Rise Buildings, B. E. Lee, M. Hussain, B. Soliman, *ASHRAE Journal*, Vol. 22, No. 2, 1980
- Research Note No. 20: Contaminant Level Control in Parking Garages (RP-223), *ASHRAE Journal*, Vol. 22, No. 12, 1980

VIBRATION

- A Contractor's View of HVAC Noise and Vibration Problems, D. J. Mosshart, Jr., *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980; *ASHRAE Journal*, Vol. 22, No. 4, 1980

WATER-TREATMENT

- Calcium Carbonate Scaling Characteristics of Cooling Tower Water, K. E. Coates, J. G. Knudsen, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980

WEATHER

- Infiltration-Pressurization Correlation: Simplified Physical Modeling, Max H. Sherman, David T. Grimsrud, *ASHRAE Transactions*, Vol. 86, Pt. 2, 1980
- Wind and Temperature Induced Pressure Differentials and an Equivalent Pressure Difference Model for Predicting Air Infiltration in Schools, C. Y. Shaw, *ASHRAE Transactions*, Vol. 86, Pt. 1, 1980
- Air Conditioning for Summer and Winter Comfort, W. H. Carrier, *ASHRAE Journal*, Vol. 22, No. 5, 1980
- Predicting Natural Ventilation Forces Upon Low-Rise Buildings, B. E. Lee, M. Hussain, B. Soliman, *ASHRAE Journal*, Vol. 22, No. 2, 1980

WINDOW

Reducing Heat Loss through Window Retrofitting, N. E. Hager, Jr, W. H. Phillips,
ASHRAE Journal, Vol. 22, No. 3, 1980
Shades Up Edison (RP-258), Harry J. Sauer, Jr, *ASHRAE Journal*, Vol. 22, No.
10, 1980