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Engineering

Theoretical and Applied Mechanics

Research Reports 1954-

Box 1:

Summary Research Reports 1961-

T&A.M. Report No. 156, The Strain Rate and Temperature Dependence of the Ductile to Brittle Transition in Molybdenum Subjected to Torsional Loading by D. Weinstein, G.M. Sinclair, C.A. Wert, Sponsored by Wright Air Development Center, Contract No. AF 33(616)-5153 Project No. 7024, Department of Theoretical and Applied Mechanics, University of Illinois, Dec. 1959

T & A.M. Report No. 199, Study of Nonlinear Vibration Isolation Systems Part II – One Degree of Freedom, Transient Excitation by Will J. Worley, Frank H. Brittain, Sponsored by Aeronautical Systems Division Contract No. AF 33(616)-6643 Project No. 1370, Task No. 14004, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 267, Stress Distribution in a Notched Semi-Infinite Plate by D. Shadman, Sponsored by U.S. Naval Research Laboratory Contract No. Nonr 2947 (02) (X), NRL Project 62 R05 19A, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 276, Applications of Lasers to Photoelasticity by C.E. Taylor, C.E. Bowman, W.P. North, W.F. Swinson, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 288, Optimum Hardness for Maximum Fatigue Strength of Steel by JoDean Morrow, G.R. Halford, J.F. Millan, Paper No. DI-13, International Conference on Fracture, Presented at Sendai, Japan, September, 1965, Department of Theoretical and Applied Mechanics, University of Illinois, May, 1966

T&A.M. Report No.290, Sixth Technical Report, National Science Foundation Grant NSF GP 903, The Orthopedic Cylinder: An Application to Fiber-Wound Shells Including the Effect of Transverse Stresses by Arthur P. Boresi, John L. Ford, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.292, Mechanisms of Environment Induced Subcritical Flaw Growth in AISI 4340 Steel by William Alan Van Der Sluys, Sponsored by U.S. Army Research Office-Durham, DA Project No. 20014501B320, Intrinsic Studies of Materials DA-31-124-ARO-D-378, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 293, Certain Devices for the Numerical Treatment of Ordinary Differential Equations by Henry L. Langhaar, sponsored by National Science Foundation Grant NSF GK 604, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 295, Smooth Specimen Simulation of Fatigue Behavior of Notches by R.M. Wetzel, Sponsored by Aeronautical Structures Laboratory Naval Air Engineering Center, Contract No. NOO-156-67-C-1875, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 296, Seventh Student Symposium on Engineering Mechanics, List of Contributors: R.N. Nitzsche, J.T. Ryder, B.M. Battle, J.A. Joyce, Faculty Advisors: JoDean Morrow, B.I. Sandor, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 298, Dispersion of Flexural Waves in Circular, Bi-Material Cylinders by Robert Carl Reuter Jr., Sponsored in Part by U.S. Bureau of Naval Weapons Contract No. Now-66-0360-d, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 299, Factors Influencing the Plane Strain Crack Toughness Values of a Structural Steel by Alan Kent Shoemaker, Sponsored by American Iron and Steel Institute, Committee on Properties of Iron and Steel, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 376, Some New Basic Results for Singularly Perturbed Ordinary Differential Equations by M. Balachandra, Sponsored by AF-AF0SR, Grant No. 2284-72, Department of Theoretical and Applied Mechanics, University of Illinois

Critical Review and Interpretation of the Literature on Plastic (Inelastic) Behavior of Engineering Metallic Materials, by M.C. Steele, C.K. Liu and J.O. Smith, A Research Project of the Department of Theoretical and Applied Mechanics Engineering Experiment Station, University of Illinois, Sponsored by Wright Air Development Center, U.S. Air Force Wright-Patterson Air Force Base, Dayton, Ohio, Contract No. AF 33(038)-15677, Urbana, Illinois September, 1952

Box 2:

T&A.M. Report No. 300, On Terminal Crack Velocities in Brittle Materials by Martin Howard Sadd, Sponsored by American Iron and Steel Institute Committee on Properties of Iron and Steel, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 301, Piecewise Polynomials and the Partition Method for Ordinary Differential Equations by Henry L. Langhaar and S.C. Chu, Sponsored by National Science Foundation Grant NSF GK 604, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.302, A Comparison: Plane Strain Fracture Toughness and the Isothermal Flow Properties of a Structural Steel by William John Koves, Sponsored by American Iron and Steel Institute Committee on Properties of Iron and Steel, Department of Theoretical an applied Mechanics, University of Illinois

T&A.M. Report No. 303, Preliminary Investigation of Measurement of Elastic Moduli of Composites Using Strain Gages by Gerald G. Trantina, Sponsored by U.S. Bureau of Naval Weapons Contract No. N0w-66-0360-d, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 304, A Sequentially Modulate Ruby Laser System for Transmitted and Scattered Light Dynamic Photoelasticity by R.E. Rowlands, Sponsored by National Science Foundation Grant NSF GK 1645, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 305, Crack Control in One-Way Slabs Reinforced With Deformed Welded Wire Fabric by John P. Lloyd, Hassan M. Rejali, Clyde E. Kesler, Prepared as a Part of an Investigation Conducted by the Department of Theoretical and Applied Mechanics, University of Illinois, In Cooperation With The Wire Reinforcement Institute, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 306, Splice Requirements for Deformed Wire Fabric in One-Way Slabs, by John P. Lloyd, Clyde E. Kesler, Prepared as a Part of an Investigation Conducted by the Department of Theoretical and Applied Mechanics, University of Illinois in Cooperation With the Wire Reinforcement Institute

T&A.M. Report No. 307, Modes of Failure of Glas Fiber Reinforced Plastics Under Compressive Loads by J.W. Gillman, H.T. Corten, Final Report, Contract No. Nonr 3985 (05), Department of Theoretical and Applied Mechanics, University of Illinois

T & A.M. Report No. 308, Low Cycle Fatigue Properties of an Ausformed Steel by J.E. Matheny Jr., Sponsored by Caterpillar Tractor Company, LaSalle Steel Company, United States Steel Corporation, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 309, Discontinuous Mode of Crack Extension in Unidirectional Composites by Edward M. Wu, Final Technical Report, U.S. Bureau of Naval Weapons Contract No. N0w-66-0360-d, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 310, Turbulent Friction in Eccentric Annular Conduits by James M. Robertson, A Report on “Effect of Inserted Pipe on Flow Capacity in Sewers” Conducted for Task 12 of the ASCE Combined Sewer Separation Project (Contract FWPCA No. 14-12-29), Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 311, Alleviation of Fatigue Damage by B.I. Sandor, JoDean Morrow, Paper to be presented at the Third Conference of the Hungarian Academy of Sciences on Dimensioning

and Strength Calculations, Budapest, Hungary, October 1968, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 312, Environmental Cracking in AISI 4340 Steel by W.A. Van Der Sluys, Final Report Contract ARO-D-31-124-G872, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 314, Fracture Toughness of Portland Cement Concretes by Dan Naus, James Lott, Prepared as a Part of an Investigation Conducted by the Engineering Experiment Station, University of Illinois, In Cooperation with the Division of Highways, State of Illinois, and Bureau of Public Roads, U.S. Department of Transportation

T&A.M. Report No. 315, Conformal Mapping of the Interior of a Unit Circle on to the Interior of a Class of Smooth Curves by Thomas F. Moriarty, Will J. Worley, Prepared Under Grant No. NsG-434/14-005-010, National Aeronautics and Space Administration, Washington D.C., Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 316, Effect of Temperature on the Drying of Concrete by Robert L. Yuan, Hubert K. Hilsdorf, Clyde E. Kesler, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 317, Third Technical Report on the Treatment of Partial Differential Equations by the Partition Method by Henry L. Langhaar, S.C. Chu, Sponsored by National Science Foundation Grant NSF GK 604, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 318, Effects of Mean Stress and Prestrain on Fatigue Damage Summation by T.H. Topper, B.I. Sando, Sponsored by Aeronautical Structures Laboratory, Naval Air Engineering Center, Contract No. N00-156-67-C-1875, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 319, Enhanced Grain Boundary Sliding During Reversed Creep of Lead by Masaki Kitagawa, Sponsored by National Aeronautics and Space Administration, Lewis Research Center, Research Grant NGR 14-005-025, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M> Report No. 320, Cyclic Deformation and Fatigue Behavior of Hardened Steels by R.W. Landgraf, Sponsored by Caterpillar Tractor Company, LaSalle Steel Company, United States Steel Corporation, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 321, Analytical Studies of Turbulent Friction in Annular Conduits by Alan R. Nelson, J.M. Robertson, A second report on “Effect of Inserted Pipe on Flow Capacity of Sewers” Conducted for Task 12 of ASCE Combined Sewer Separation Project (FWPCA Contract No. 14-12-29) for the Federal Water Pollution Control Administration, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 322, An Experimental Evaluation of Plasticity Theories for Anisotropic Metals by R.M.W. Frederking, O.M. Sidebottom, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 323, Behavior of Oe-Way Slabs Reinforced with Deformed Wire and Deformed Wire Fabric by John O. Lloyd, Clyde E. Kesler, Prepared as a Part of an Investigation Conducted by the Engineering Experiment Station, the Department of Theoretical and Applied Mechanics, University of Illinois in Cooperation with the Wire Reinforcement Institute

Box 3:

T&A.M. Report No. 324, Noise of Fluid Power Systems-A Literature Review by C.F. Holt, J.M. Robertson, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 325, Simulation of Overload Effects in Fatigue Based on Neuber's Analysis by S.J. Stadnick, Sponsored by Aeronautical Structures Laboratory, Naval Air Development Center, Contract No. NOO-156-67-C-1875, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 327, An Experimental and Analytical Investigation of the Large Deflections of Curved Beams by J.C. McWhorter III, O.M. Sidebottom, H.R. Wetenkamp, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 328, The Dynamic Response of Two Dimensional Photoelastic Models of the Human Head by Marvin L. Janssen, Cletus E. Bowman, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 329, Holography and its Application to Photoelasticity by D.C. Holloway, Sponsored by National Science Foundation Grant NSF GK 1645, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 330, Small Deflection of a Class of Clamped Thin Plates Using Conformal Mapping by Will J. Worley, Thomas F. Moriarty, Prepared Under Grant No. NsG-434/14-005-010, National Aeronautics and Space Administration, Washington D.C., Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.331, A Finite Element Stress Analysis of a Crack in a Bi-Material Plate by R.K. Leverenz, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 332, Ninth Student Symposium on Engineering Mechanics, List of Contributors: Richard E. Furkert, Owen K.S. Yoshimura, Paul Yarrington, Robert A. Testin, Faculty Advisors: J.P. Gallagher, JoDean Morrow, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 333, Simulation of the Fatigue Behavior at the Notch Root in Spectrum Loaded Notched Members (U) Final Report, T.H. Topper and JoDean Morrow, Editors, Sponsored by Aero Structures Department, Naval Air Development Center, Warminister, Pa. 18974, Contract No. NOO156-67-C-1875, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.335, An Investigation of Polyesters with Variable Optical and Mechanical Properties for Use in Photomechanics by Donald Richard Henley, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.336, Theoretical Thermal Stresses Developed in Railway Car Wheels by the Drag Test by H.R. Wetenkamp, Sponsored by Griffin Wheel Company, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 337, Fatigue Failure Predictions for Complicated Stress-Strain Histories by N.E. Dowling, Sponsored by Naval Air Development Center, Warminster, Pa. 18974, Contract No. NOO156-70-C-1256, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 338, The Conference on Frontiers in Research and Practice in Plain Concrete, Edited by Dan J. Naus, Supported by the National Science Foundation, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 339, Water Table Use in Studies of Pressure Waves in Fluid-Power Systems, by C.F. Holt, T.J. Labus, J.M. Robertson, Prepared under a Research Grant from Sundstrand Aviation Division of Sundstrand Corporation, Rockford, Illinois, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 340, Torsion Analysis of Box Sections by John D. Purvis, R.E. Miller, Sponsored by Caterpillar Tractor Company, Contract No. 44-22-60-311, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 341, Creep of a Uniaxial Metal Matrix Composite Subjected to Axial and Normal Lateral Loads by T.R. Branca, Sponsored by Contract No. NOOO19-71-C-0323, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 342, NASA CR-72949, Creep Deformation Behavior of Metals Under Repeated Stress Reversals, Final Report by Masaki Kitagawa, JoDean Morrow, Sponsored by National Aeronautics and Space Administration, Lewis Research Center, Research Grant NGR-14-005-025, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 343, Stress Analysis of Linear Elastic Solids of Revolution by the Finite Element Displacement Method by R.A. Brocci, Sponsored by Griffin Wheel Company, Chicago, Illinois, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 344, Tensile Strength of Off-Axis Unidirectional Composites by Kristina Lauraitis, Sponsored by Contract No. N0001971-C-0323, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 345, Failure Modes and Strength of Angle-Ply Laminates by Kristina Lauraitis, Sponsored by Contract No. N00019-71-C-0323, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

Box 4:

T&A.M. Report No. 359, Comparison of Thermal Stress Developed in S Plate, Straight Plate and Deep Dish Wheels by H.R. Wetenkamp, Sponsored by Griffin Wheel Company, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 358, Pulse Propagation in Curved Beams-Theory and Experiment by F.B. Crowley, III, Sponsored in part by National Science Foundation Grant NSF GK 25076, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 357, Eleventh Student Symposium on Engineering Mechanics, List of Contributors: Stephen S. Burgener, Anthony M. Melone, August A. VonBehren, Faculty Adviser: J.W. Phillips, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 356, The Elastic Stress Analysis of a Bi-Material Plate with a Crack Normal to the Interfaces by Fong-tsu Lin, Sponsored by Contract No. N00019-72-C-0274, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 355, Temperature Characterization of the Below KIscc Corrosion Fatigue Behavior of HY-130 Steel by J.T. Ryder, J.P. Gallagher, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 354, Fatigue Life and Inelastic Strain Response Under Complex Histories for an Alloy Steel by N.E. Dowling, Department of Theoretical an Applied Mechanics, University of Illinois

T&A.M. Report No. 353, Fracture Mechanics for an Interfacial Crack Between Adhesively Bonded Dissimilar Materials by Charles Yi-jer Wang, Sponsored by Contract No. N00019-72-C-0274, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 352, Combined Mode Crack Extension in Adhesive Joints by G.G. Trantina, Sponsored by Contract No. N00010-71-C-0323, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 351, Tenth Student Symposium on Engineering Mechanics, List of Contributors: Michael Gillen, Roger Mielec, David M. Parks, Stephen A. Sutton, Faculty Advisors: J.P. Gallagher, J.W. Phillips, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 349, Simultaneous Determination of the Isopachic and Isochromatic Fringe patterns for Dynamic Loadings by Holographic Photoelasticity by D.C. Holloway, Sponsored by National Science Foundation Grant NSF GK 25076, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 348, Use of Holographic Interferometry to Determine the Surface Displacement Components of a Deformed Body by W.F. Ranson, Sponsored by National Science Foundation, Grant NSF GK 25076, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 347, Creep of Metals Under Multiaxial States of Stress, by A.P. Boresi, O.M. Sidebottom, Sponsored by National Science Foundation NSF Grant No. GK-13613, Department of Theoretical and Applied Mechanics, University of Illinois

Box 5:

T&A.M. Report No. 370, Diesel Engine Casing Noise An Annotated Bibliography 1950-1972 by D.J. Goding, Sponsored by Electro-Motive Division, General Motors Corporation, LaGrange, Illinois, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 369, Twelfth Student Sympsium on Engineering Mechanics, List of Contributors: Joseph L. Glicker, Robert M. Kipp, John R. Yergers, Faculty Adviser: J.W. Phillips, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No.368, Dependence of Linear Elasticity Solutions on the Elastic Constants III: Elastodynamics by D.E. Carlson, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 367, Relationship Between Tensile Properties and Microscopically Ductile Plane Strain Fracture Toughness by R.H. Sailors, Sponsored by Caterpillar Tractor Company, Peoria, Illinois, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 366, The Rotation Associated with Large Strains by R.T. Shield, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 365, Characterization of High-Speed Ductile Crack Propagation and Arrest in Line-Pipe Steel Specimens by R.J. Podlasek, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 364, Correlation Between Fatigue Crack Propagation and Low Cycle Fatigue Properties by Saurindranath Majumdar, JoDean Morrow, Sponsored by Advanced Research Projects Agency, ARPA Order No. 2169, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 360, Section and Notch Size Effects in Fatigue by D.T. Raske, Sponsored by Naval Air Development Center, Warminster, Pennsylvania, The University of Illinois Fracture Control Program, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 361, Stress Analysis of an Adhesive Lap Joint Subjected to Tension, Shear Force and Bending Moments, by Murlidhar H. Pahoja, Sponsored by Contract No. N00019-72-C-0274, Department of the Navy Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 362, Cyclically Induced Mechanical Hysteresis of a Glass Fiber-Reinforced Plastic by Stephen A. Sutton, Sponsored by Contract No. N00019-72-C-0274, Department of the Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 363, Analysis of Transient Wave Motion in Liquid Filled Cylinders by Charles F. Holt, Prepared Under a Research Grant from Sundstrand Aviation Division of Sundstrand Corporation, Rockford, Illinois, Department of Theoretical and Applied Mechanics, University of Illinois

Box 6:

T&A.M. Report No. 388, Transient Analysis of Fatigue Crack Propagation Under a Step Increase in Loading by Saurindranath Majumdar, Sponsored by Advanced Research Projects Agency, ARPA Order No. 2169, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 371, Characterization of the Cyclic Deformation and Fracture Behavior of Nodular Cast Iron by R.A. Testin, Sponsored by the University of Illinois Fracture Control Program, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 372, Interim Report – Phase 1, Behavior of Shrinkage-Compensating Concretes Suitable for Use in Bridge Decks by Kim E. Seeber, Donald L. Bartlett, Clyde E. Kesler, A Report of the Investigation of the Use of Shrinkage-Compensating Concrete in Bridge Decks, Project IHR-405 Illinois Cooperative Highway Research Program, Conducted by the Department of Theoretical and Applied Mechanics, Engineering Experiment Station University of Illinois at Urbana-Champaign in cooperation with the State of Illinois Department of Transportation and the U.S. Department of Transportation Federal Highway Administration

T&A.M. Report No. 373, Fatigue Crack Propagation in an Epoxy Polymer by Stephen A. Sutton, Sponsored by Contract No. N00019-73-C-0154, Department of Navy, Naval Air Systems Command, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 374, Speckle-Shearing Interferometric Camera-A Tool for Measurement of Derivatives of Surface-Displacement by Yau Yan Hung, Sponsored by National Science Foundation Grant NSF GK 25076, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 375, Ultra High-Speed Photography Using a Pulsed Ruby Laser and An Acousto-Optic Beam Deflector by D.R. Henley, J.L. Turner, C.E. Taylor, Sponsored by National Science Foundation Grant NSF GK 25076, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 377, J-Integral Applied to Fatigue Crack Initiation by H.S. Lamba, Sponsored by Advanced Research Projects Agency ARPA Order No. 2169, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 378, An Averaging Theorem for Two-Point Boundary Value Problems with Applications to Optimal Control by M. Balachandra, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 379, Local Stress-Strain Approach to Cumulative Fatigue Damage Analysis Final Report, by JoDean Morrow, J.F. Martin, N.E. Dowling, Sponsored by Aero Structures Department, Naval Air Development Center, Warminster, Pa. 18974, Contract No. N00156-70-C-1256, Department of Theoretical and Applied Mechanics, Draft Submitted for Navy Approval, April 1973

T&A.M. Report No. 380, Pulse Propagation in a Helix-Theory and Experiment by James W. Phillips, Sponsored by National Science Foundation Initiation Grant NSF GK-37411, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 381, Successive Approximations in Nonlinear Thermoelasticity by Paul Yarrington, Donald E. Carlson, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 382, Fatigue Crack Initiation as a Function of Temperature and Strain Rate by S.J. Stadnick, Sponsored by Advanced Research Projects Agency APRA Order No. 2169, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 383, A History Dependent Parameter for the Cyclic Stress-Strain Behavior of Metals by H.R. Jhansale, Sponsored by Advanced Research Projects Agency ARPA Order No. 2169, Department of Theoretical and Applied Mechanics, University of Illinois

T&A.M. Report No. 384, Failure Analysis of Microflawed Ductile Matrix Materials by Ronald E. Frishmuth, Sponsored by Advanced Research Projects Agency ARPA Order No. 2169, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 385, Simplification of the Analysis of Stress in Conical Shells by C.E. Taylor, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 386, Hot Spot Heating by Composition Shoes by H.R. Wetenkamp, R.M. Kipp, Sponsored by Griffin Wheel Co., Department of Theoretical and Applied Mechanics

T&A.M. Report No. 387, Low Cycle Fatigue Behavior and Crack Propagation in Some Steels by Saurindranath Majumdar, Sponsored by Advanced Research Projects Agency ARPA Order No. 2169, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 478, Early Mechanicists by Jasper O. Draffin (Deceased), Revised and Edited by George H. Thiel, James W. Phillips, February 1986, Department of Theoretical and Applied Mechanics

TAM Report No. 1008, Vortex Crystals by Hassan Aref, Paul K. Newton, Mark A. Stremler, Tadashi Tokieda, Dmitri L. Vainchtein, October 2002

TAM Report No. 1009, Effect of Turbulence on the Drag and Lift of a Particle by Prosenjit Bagchi, S. Balachandar, October 2002

TAM Report No. 1010, Influence of Surface Morphology on the Adhesive Strength of Aluminum/Epoxy Interfaces by Sulin Zhang, Rahul Panat, K. Jimmy Hsia, October 2002

TAM Report No. 1012, Topological Fluid Mechanics of Point Vortex Motions by Philip L. Boyland, Mark A. Stremler, Hassan Aref, October 2002

TAM Report No. 1013, Computational Studies of the Effect of Rotation on Convection During Protein Crystallization by Pratik Bhattacharjee, Daniel N. Riahi, February 2003

TAM Report No. 1014, In Situ Poly(Urea-Formaldehyde) Microencapsulation of Dicyclopentadiene by Eric N. Brown, Michael R. Kessler, Nancy R. Sottos, Scott R. White, February 2003

TAM Report No. 1015, Microcapsule Induced Toughening in a Self-Healing Polymer Composite by Eric N. Brown, Scott R. White, Nancy R. Sottos, February 2003

TAM Report No. 1016, Burning Rate of Energetic Materials With Thermal Expansion by Igor R. Kuznetsov, D. Scott Stewart, March 2003

Box 7:

T&A.M. Report No. 389, Final Report-USDA 19-310, Analysis of Southern Hardwoods as Furnish for a Wood Flake-Resin Composite Structural Material by Eddie W. Price, Clyde E. Kessler, Conducted by the Department of Theoretical and Applied Mechanics, Engineering

Experiment Station in Cooperation with the United States Department of Agriculture, Forest Service, Southern Forest Experiment Station

T&A.M. Report No. 390, On the Construction of Holograms with an Ink Plotter by J.W. Phillips, P.L. Ransom, R.M. Singleton, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 391, Significance of Cyclic History Dependent Deformation Phenomena of Metals on Fatigue Life Estimation by H.R. Jhansale, Sponsored by Advanced Research Projects Agency ARPA Order No. 2169, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 393, Thirteenth Student Symposium on Engineering Mechanics, List of Contributors: Marlin S. Brueggert, Sang J. Lee, Ted B. Wertheimer, Faculty Adviser: J.W. Phillips, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 394, The Influence of Specimen Dimensions on a JM Fracture Toughness Test by Frank Zaverl, Jr., Department of Theoretical and Applied Mechanics

T&A.M. Report No. 395, Measurement of Change of Thickness for a Thin Plate by Holographic Interferometry by Ching-Piao Hu, Sponsored by National Science Foundation Grant NSF GK 25076, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 396, The Behavior of Elastic Heat Conductors With Second-Order Response Functions by Stephen E. Martin, Donald E. Carlson, Sponsored by National Science Foundation, NSF GK 37539, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 397, On the Vibration and Stability of Finitely Inflated Spherical and Cylindrical Elastic Membranes by Lien-Yan Chen, Richard T. Shield, Sponsored by National Science Foundation Grant GK 37539, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 399, A Hybrid Camera System for Dynamic Photoelasticity and Holography by John Lindsey Turner, Sponsored by National Science Foundation Grant NSF GK 25076, Department of Theoretical Mechanics

T&A.M. Report No. 400, The Generalized Scalar Wave Equation in Linear Elasticity by John Joseph Marciniak, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 398, Effective Modulus of Twisted Wire Cables by George A. Costello, James W. Phillips, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 401, Turbulence in Blood Flow? By James M. Robertson, Julia F. Herrick, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 402, Fatigue Life Predictions for a Notched Plate With Analysis of Mean Stress and Overstrain Effects by W.R. Brose, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 403, Viscous Sheets Advancing Over Dry Beds by J. Buckmaster, Department of Theoretical and Applied Mechanics

Box 8:

T&A.M. Report No. 404, Pulse Propagation in Fluid-Filled Tubes by J.S. Walker, J.W. Phillips, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 405, Fourteenth Student Symposium on Engineering Mechanics, List of Contributors: Walter L. Earley, John R. Hilgers, Kenneth D. Kauffmann, Faculty Adviser: J.W. Phillips, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 406, Biaxial Cyclic Hardening of Annealed Copper Cylinders Evaluated by Deformation Plasticity Theories by H.S. Lamba, O.M. Sidebottom, Sponsored by U.S. Army Research Office Grant no. DAHC 04-74-G-0050, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 407, Conservation Laws in Elasticity of the J-Integral Type by Francis H.K. Chen, Richard T. Shield, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 408, Semi-Analytical Finite-Element Analysis for Elastic Solids of Revolution by R,K, Bhattacharyya, Department of Theoretical and Applied Mechanics

T&A.M. Report No. 409, Interim Report-Phase 3, Behavior of Shrinkage-Compensating Concretes Suitable for Use in Bridge Decks by Robert W. Cusick, Clyde E. Kesler, A Report f the Investigation of the Use of Shrinkage-Compensating Concrete in Bridge Decks, Project IHR-405 Illinois Cooperative Highway Research Program, Conducted by the Department of Theoretical and Applied Mechanics Engineering Experiment Station, University of Illinois at Urbana-Champaign in cooperation with the State of Illinois Department of Transportation and the U.S. Department of Transportation Federal Highway Administration

T&A.M. Report No. 410, Linear Elastic and Elasto-Plastic Stress Analysis for Adhesive Lap Joints by An-Ton Liu, Department of Theoretical and Applied Mechanics

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T&A.M. Report No. 416, Final Summary Report, Behavior of Shrinkage-Compensating Concretes Suitable for Use in Bridge Decks by Robert W. Cusick, Clyde E. Kesler, A Report of the Investigation of the Use of Shrinkage-Compensating Concrete in Bridge Decks, Project IHR-405, Illinois Cooperative Highway Research Program, Conducted by the Department of Theoretical and Applied Mechanics Engineering Experiment Station University of Illinois at Urbana-Champaign in cooperation with the State of Illinois Department of Transportation and the U.S. Department of Transportation Federal Highway Administration

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T&A.M. Report No. 418, Small Deflection of a Class of Clamped Thin Plates Using Collocation, Will J. Worley, Prepared Under Grant No. NsG-434/14-005-010 National Aeronautics and Space Administration, Washington D.C., Department of Theoretical and Applied Mechanics

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T&A.M. Report No. 435, The Stability of a Finitely Deformed Cylindrical Orthotropic Elastic Membrane and the Effect of Internal Fluid Flow by J.S.K. Wong & R.T. Shield, November, 1979, Department of Theoretical and Applied Mechanics

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T&A.M. Report No. 464, Extension o the Local Strain Fatigue Analysis Concepts to Incorporate Time Dependent Deformation in Ti-6AI-4V at Room Temperature by Peter Kurath, Sponsored by the David Taylor Naval Ship Research and Development Center under Contract no. N00167-82-C-0087, February 1984, Department of Theoretical and Applied Mechanics

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T&A.M. Report No. 471, *The Arthur Newell Talbot Lecture:* Reflections on the Development of Plasticity Theory and its Successful Application by Daniel C. Drucker, February 1985, Department of Theoretical and Applied Mechanics

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Jonathan C. Trovillion, Faculty Coordinator: Marlyn E. Clark, March 1992, Department of Theoretical and Applied Mechanics

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