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- 670738 The Michigan Tractor Scraper Suspension System - A. R. Swanson, Clark Equipment
- 670739 Army's New Hinged-Frame Tractor and Companion 18 Cubic Yard Scraper - L. L. Osteen, Jr. and A. J. Vrooman, U.S. Army Engrg. Res. and Dev. Labs.
- 670740 Design Considerations When Applying Hydraulic Drives to Vehicles - M. M. Hann, Sundstrand Hydro-Transmission
- 670741 Hydraulic Drives in Forage Harvesting - W. A. Arnold, Lowe Machinery
- 670742 Hydraulic Systems for Grain Harvesting - E. J. Krukow, International Harvester
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- 670747 The Technical Data Package for Procurement of Military Design Equipment - H. H. Gillespie and R. E. Armbruster, U.S. Army Res. and Dev. Labs.
- 670748 The Government Engineering Role During The Procurement of Military Equipment - T. G. Timberlake and C. R. Gurski, U.S. Army Engineer Res. and Dev. Labs.
- 670749 Orboresonance, a Mechanical Elastic Circuit Discipline as Applied in a New Kind of Earth Working Equipment - A. G. Bodine, Bodine Soundrive Co.
- 670750 A Model of Vibratory Soil Cutting - R. J. Boyd and C. L. Nalezny, Bell Telephone Labs.
- 670751 Comparison of Vibratory Soil Compaction with Other Field Methods - E. T. Selig, IIT Res. Inst.
- 670903 Frequency Response of a Proportional Fluid Amplifier - R. D. Strunk and D. E. Bowman, Deere & Co.
- 670932 A Hydromechanical Transmission Development - D. M. Latson and M. Gordanier, U. S. Army Tank-Automotive Command; R. J. Dorgan and R. L. Rio, GE

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- 670933 Hydrostatic Transmission Assists for Transit Mixers - A. E. Arnosti and W. R. Master, Dynex
- 680029 Development of a Snowmobile for Recreational Use - G. D. Payne, Outboard Marine
- 680030 Parameters of Over-Snow Vehicle Design - R. W. Eskelson, Thiokol
- 680047 Applications of Inertia Welding - T. L. Oberle, Caterpillar Tractor
- 680048 The Electron Beam Welding of Common Engineering Materials - J. King, Sciaky Bros.
- 680049 The Continuing Development of Resistance Welding Controls - R. J. Gasser, Mgr., Sciaky Bros.
- 680095 Design for Limited Warfare Environment - A. Rieli, LTV Aerospace
- 680096 Environmental Effects on the Design of Engineer Construction Equipment - P. E. Jaquish and G. B. Erickson, Allison Div., GMC
- 680097 Design for the Riverine Environment - H. Dugoff and G. M. Worden, Stevens Inst. of Tech.
- 680098 Design for the Rough Terrain Environment - C. H. Hoppe, Chrysler
- 680099 Design for the Lunar Environment - R. E. Wong, L. Galan, Bendix and L. L. Bradford, Marshall Space Flight Center, NASA
- 680100 Design for Remote Control Environment - E. Markow, Grumman
- 680101 Design for the Military Logistical Environment - W. H. Kind and J. S. Logan, Ford
- 680247 Earthmover Tires; After Design, Then What? - R. S. Lee, Firestone Tire and Rubber
- 680248 The Cushion Hitch Tractor-scraper—From Concept to Market - J. W. Carter, O. D. McWilliams and H. A. Knell, Caterpillar Tractor
- 680249 Environmental and Operating Characteristics of an Axial Piston Hydraulic Pump - S. R. Schoening, Sundstrand
- 680250 The Modern Gear Pump for Earthmoving Machines - J. M. Eley, Tyrone Hydraulics
- 680251 The Gas Turbine for Earthmoving Equipment - J. H. Myers and T. K. Pembleton, International Harvester
- 680252 The Federal Aid Highway Program - F. B. Farrell, Federal Highway Admin.

- * 680253 GOER's The Army's High Mobility Logistics Carriers - K. G. Comstock, U. S. Army
- * 680254 Crawler Tractors, F. A. Schick, Allis-Chalmers
- * 680255 The Rubber Jungle - P. F. Stoeck, International Harvester
- * 680257 Vane Pumps—A Power Source for Mobile Equipment - D. G. Snow, Vickers
- * 680258 How To Select Filters - D. Fairchild, Fram
- * 680259 Hydrostatic Transmission Application - C. O. Weisenbach, General Signal
- * 680260 A Review of Self Aligning Bearings - N. L. Cook and L. D. Reese, Torrington
- * 680261 Electric Controls for Powershift Transmissions - R. L. Black and R. H. Schaeffer, Commercial Transmission
- * 680263 Experience With a Gas Turbine Prime Mover - H. L. Krewson, General Electric
- * 680264 Anaconda's Experience with Diesel Electric and Turbine Electric Off Highway Trucks at Butte - B. A. Kennedy, Anaconda
- * 680265 Electric Drive for Haulage Vehicles - J. P. Nadzum, General Electric
- * 680266 Excavation of a Sea Level Canal in The American Isthmus - H. G. Woodbury, U.S. Army Corps

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- 670007 Ignition Delay in Diesel Engines - Naëim Henein and J. A. Bolt, Univ. of Mich.
- 670468 A Study on the Behavior of a Fuel Droplet Injected Into the Combustion Chamber of a Diesel Engine - Mitsunobu Ogasawara, Osaka Univ., and Hiroshi Sami, Toyota Motor
- 670469 Piston Temperature in Compression-Ignition Engines - L. Gross-Gronowski, Technion Israel Institute of Technology
- 670480 Parametric Studies Using a Mathematically Simulated Diesel Engine Cycle - H. Weber and G. Borman, Univ. of Wis.
- 670743 The Waukesha Models H1077 and L1616 Diesel and Gas Engines - J. P. Kelly, Waukesha Motor
- 670950 Why Has the Medium-Speed Diesel Become Competitive in Marine Propulsion? - Dr.-Ing. Wolfgang Hempel, Obering, Maschinenfabrik Augsburg-Nurnberg AG, Germany

- 670951 An American--Made Marine Diesel Engine--Its Place in the World's Ocean Going Merchant Fleet - G. F. Schumacher and W. M. Fowden, Fairbanks Morse
- 670952 U. S. Navy PGM-84 Class CODOG Propulsion Plant - M. R. Hauschildt and C. L. Miller, U. S. Naval Ship Engineering Cen.
- 670953 Engine Selection and Rating for Military Ship Application - C. F. Perry, U. S. Naval Ship Engineering Cen.
- 680022 Light Weight, High Performance, Air-Cooled Diesel Engine—Honda GD90 - Y. Nozawa and H. Uno, Honda
- 680089 Daimler-Benz Passenger Car Diesel Engines—Highlights of 30 Years of Development - E. Eisele, Daimler-Benz
- 680102 The Effects of Physical Factors on Ignition Delay - W. T. Lyn, Univ. of London and E. Valdmans, Cummins Engine
- 680103 Unaided Starting of Diesel Engine - W. T. Lyn, Univ. of London and T. W. Biddulph, Ford
- * 680405 A Contribution to the Noise Problem on Air-cooled Diesel Engines. Means to its Reduction Including General Conclusions and Specific Results - O. Cordier and G. Reyl, Klockner-Humboldt-Deutz, A.G.
- 680406 Does Turbocharging Increase Diesel Engine Noise? Observations on the Generation, Emission and Reduction of Diesel Engine Noise - R. E. W. Hempel, Maschinenfabrik Augsburg-Nurnberg
- * 680407 Methods and Problems in Noise Reduction on High Speed Diesel Engines - G. E. Thien, Anstalt fur Verbrennungsmotoren

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- 670004 Ford of Britains Vee Engine Range - Allen Aitken, Ford, England
- 670019 Automotive Piston Rings—1967 State-of-the-Art - H. F. Prasse, H. E. McCormick, and R. D. Anderson, TRW
- 670020 Designing an Automotive Engine Piston - J. W. Winship, Bohn Aluminum & Brass
- 670029 Evaluating Scavenging Efficiency of Two-Stroke Cycle Gasoline Engines - R. R. Booy, Outboard Marine Corp.

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- 670046 Ignition and Battery Charging with Permanent Magnet Alternators - T. F. Carmichael, Syncro
- 670047 Growing Power in a Growing Market - E. L. Fisher and D. J. Wahlen, Kohler
- 670066 Mark II—427 GT Engine - J. F. Macura and Jonathan Bowers, Ford
- 670067 Mark II—427 GT Engine Induction System - A. O. Rominsky, Ford
- 670082 American Motors Typhoon V-8 Engine - R. A. Peterson and C. E. Burke, American Motors
- 670083 Buick's New V-8 Engines - C. G. Studaker, Buick Motor Div., GMC
- 670102 Silicon Power Plastic Transistor for Automotive Applications - F. D. Richardson, Bendix
- 670103 Taming the Radio Transmitters under your Hood—Ignition Suppression Updated - Frederick Bauer, Ford
- 670109 Performance with Economy—The RamAire System - W. H. Percival and W. H. Ahrens, Res. Labs., GMC
- 670110 The Differential Compound Engine - F. J. Wallace, Bath Univ.
- 670114 Electrical to Thermal Energy Conversion in Spark Ignition - R. T. Lovrenich and J. T. Hardin, Prestolite
- 670115 Capacitor Discharge Ignition, A Design Approach - Charles Shano and Arthur Hufon, Motorola
- 670116 Engineering C-D Ignition for Modern Engines - L. R. Hetzler and P. C. Kline, Delco - Remy Div., GMC
- 670147 High Altitude Can Affect Automotive Ignition System Performance - G. M. Galster and D. A. Garner, Champion Spark Plug
- 670148 Development of a new Automotive Spark Plug - W. R. Edwards and G. E. Roy, AC Spark Plug Div., GMC
- 670149 It Has All Been Done Before - I. B. K. Gough, Smiths Industries
- 670199 Spark Ignition Engine Progress - A. G. Lucas, Engrg. Staff, GMC
- 670477 The Pressure-Time History in the Exhaust System of a High-Speed Reciprocating Internal Combustion Engine - G. P. Blair and J. R. Goulburn, The Queen's Univ. of Belfast, Ireland
- 670478 The Simulation of Single Cylinder Intake and Exhaust Systems - M. R. Goyal, Univ. of Roorkee, India, G. Scharpf, Engrg. Staff, GMC, and G. Borman, Univ. of Wis.
- 670479 The Effect of Heat Transfer on the Steady Flow Through a Poppet Valve - D. N. Kapadia, Crane Co., and G. Borman, Univ. of Wis.
- 670685 The Next Decade for Piston Engines - W. E. Adams and R. V. Kerley, Ethyl
- 670928 Heat Flow in Engine Pistons - S. J. Pachernegg, Institute Prof. Dr. h. c. List (AVL), Austria
- 670931 A Universally Applicable Equation for the Instantaneous Heat Transfer Coefficient in the Internal Combustion Engine - G. Woschni, Maschinenfabrik, Augsburg-Nürnberg AG, Germany
- 670935 Piston Ring Coatings for High Performance Diesel Engines - G. F. Hyde, J. E. Cromwell and W. C. Arnold, Koppers
- 670939 Corrosive Ring Wear—Does It Exist? - H. Siegel and W. E. Partridge, Texaco
- 670940 Cylinder Wall Drying of Oils and the Relation to Cold Engine Wear - J. C. Firey and W. J. Thayer, Univ. of Washington
- 670948 A Study of Marginal Compression Ignition - C. M. Urban and J. T. Gray, Southwest Res. Inst.
- 670949 Development of a Turbocharged Two Stroke Twenty Cylinder Diesel Engine for Marine Applications - J. R. Ware, Electro-Motive Div., GMC
- 680019 Chrysler's New 340 V-8 Engines - J. W. Dean and H. M. Casebeer, Chrysler
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- 680041 A New Concept of Stratified Charge Combustion—The Ford Combustion Process (FCP) - I. N. Bishop and A. Simko, Ford
- 680042 Design and Evaluation of a Stratified Charge Multifuel Military Engine - E. Mitchell, J. Cobb and R. A. Frost, Texaco
- 680043 A New Distributing Injection System and Its Potential for Improving Exhaust Gas Emission - H. May and H. Schulz, Tech. Univ. Aachen
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- 680159 A New Type of Engine Governor - R. Kern, GenerAC
- * 680461 NSU's Double Bank Production Rotary Engine - W. Froede, NSU Motorenwerke A.G.
- * 680468 Scavenging and Other Problems of Two-Stroke Cycle Spark-Ignition Engines - A. Jante, Technischen Universität Dresden
- * 680469 Investigation and Tuning of the Exhaust System of Small Two-Stroke Cycle Engines - W. A. Huelssse, Dipl. Ing., Germany
- * 680470 The Exhaust System of the Two-Stroke Cycle Engine - M. Leiker, Klöckner-Humboldt-Deutz AG

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- 670060 Rolling Bearing Selection For Turbine Engines - P. S. Given, SKF Industries
- 670061 Non-Linear Vibration Damping Functions for Fluid Film Bearings - H. J. Wood, Power Dynetics
- 670062 The Circumferential Seal: Its Application, Its Place in the Seal Spectrum Relative to Gas Turbines, J. A. Heck, Koppers
- 670063 Design and Application of Plain Journal Bearings to Small Gas Turbine Engines - D. L. Carriere, Ford
- 670143 An Engine Manufacturer's Requirements for Start—Safety Controls on Industrial Gas Turbine Engines - W. S. Curtis and W. H. Belke, Caterpillar Tractor
- 670201 Experimental Determination of the Velocity and Pressure Profiles in the Combustion Zone in a Model of a Gas Turbine Combustion Chamber - T. E. A. Youssef, Cairo University
- 670693 Applications of the ST6 Gas Turbine Engine - G. Hardy, United Aircraft of Canada
- 670694 Industrial Applications of an 1100 Horsepower Gas Turbine - J. H. Myers, International Harvester
- 670695 Gas Turbine Powers—Chipper - Peter Cervenak, Nicholson Mfg.
- 670727 High Speed Powershifting Transmission for Gas Turbines - D. J. Fergie, Eaton Yale & Towne
- 670732 Air Filtration for Prime Mover Gas Turbines - H. L. Krewson, GE

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670733 Development of an Advanced Air Cleaner Concept for Army Vehicular Gas Turbines - Lionel DuRocher, U. S. Army Tank-Automotive Command; and Hugo Giannotti, Giannotti Assoc.

670936 A Combustion System for a Vehicular Regenerative Gas Turbine Featuring Low Air Pollutant Emissions - W. Cornelius, D. L. Stivender and R. E. Sullivan, Sr., Detroit Diesel Engine Div., GMC

670937 A Glow Ignition System for the Gas Turbine - J. A. Saintsbury, United Aircraft of Canada

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670955 A 3-Shaft Versus a 2-Shaft Cycle for Automotive Gas Turbines - P. J. Collet, Rover Gas Turbines

670959 Gas Turbine Powered Mobile Hospital Service Unit - C. K. Kummerlowe and M. D. Parker, Garrett

670960 Analog Simulation of a Turbo-Alternator System Used in a Vehicle Drive - H. V. Heuser, U. S. Army Eng. Res. & Dev. Labs.

670961 Development of a Rapid-Start System for a Small Gas Turbine - L. Hull, Boeing and H. Santo, Army Tank-Automotive Command

670965 Applications and Operation of the LM100 Gas Turbine Engine in the Bell SK-5 Hovercraft - T. E. Copinger, GE

670966 Initial Applications of the Orenda OT-4 Recuperated Gas Turbine - G. C. Best, Orenda

670967 Gas Turbine Propulsion System for Budd/LIRR Railcar - P. B. Garner and W. L. Hull, AiResearch

670968 Gas Turbine Engines Applied to Passenger Trains - T. R. Wheaton, United Aircraft

680034 The Future of Gas Turbine Engines in Racing Cars - P. Spear, Owen & Co.

680035 Application of Turbine Power at the Indianapolis 500 - A. Granatelli, Studebaker

680054 Free Turbine Overspeed Protection - L. M. Hendrick, GE

680056 Environmental Control Accessories Test Facilities Needed for Life and Reliability of Future Projects - D. E. Izon and E. H. Warne, Lucas Gas Turbine Equip.

680057 Designing for V/L Performance in a Main Engine Fuel Pump - J. F. DiStefano and A. V. Pradhan, Borg-Warner

680058 Structural Requirements for Aircraft Engine Main Fuel Pumps and Controls - A. F. Eckert, Chandler Evans

680446 Advanced High Temperature Combustor Research For Small Gas Turbine Engines - R. Anderson and D. Wagner, Curtiss-Wright

680447 Design Requirements of Small High Temperature Rise Combustors - L. E. Bell, Jr., U.S. Army Aviation Materiel Labs.

680448 Small Turbine Aspect Ratio Investigation - C. Rogo, Continental Aviation & Engineering

680450 Accessories for Small Gas Turbine Engines - R. G. Furgurson, U.S. Army Aviation Materiel Labs.

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670002 The Autobianchi "Primula" Transverse Powerplant - Ettore Cordiano, Fiat S. p. A., Italy

670003 The Rootes 54 Cubic Inch Light Alloy Engine and Transaxle Unit—Design and Development - Leo Kuzmicki, Rootes Motors

670015 American Motors—The '67 Concept - J. T. Moore, American Motors

670016 Chevrolet Camaro - D. H. McPherson, C. M. Rubly, and V. D. Valade, Chevrolet Motor Div., GMC

670017 The Mercury Cougar—Why and How - B. T. Andren and T. J. Feaheny, Ford

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670022 Load-Deflection Characteristics of Vehicle Suspension Systems - D. F. Livermore, Univ. of Wis.

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670036 Weighted Impulse Criterion for Estimating Injury Hazards - J. P. Danforth and C. W. Gadd, Engine Res. Labs., GMC

670038 Stopping the Occupant of a Crashing Vehicle—A Fundamental Study Adolph Egli, Ford

670039 The General Motors Energy Absorbing Column - D. P. Marquis, Saginaw Steering Gear Div., GMC

670048 Rolling Element Bearings in Passenger Car Automatic - J. R. Hull, Torrington

670049 Roller One-Way Clutches for Today's Passenger Car Automatic Transmissions - R. L. Marrell and E. F. Bowie, New Departure-Hyatt Bearings Div., GMC

670050 An Action Analysis of Gear Teeth with Modified Lead and Profile - Alex Hardy, Hydra-Matic Div., GMC

670051 Putting Automatic Transmission Clutch Friction Researchers on Speaking Terms - G. R. Smith, Engrg. Staff, GMC; W. D. Ross, Ford; P. L. Silbert, Chrysler and W. B. Herndon, Hydramatic Div., GMC

670065 Ford GT Sports Car - R. C. Lunn, Ford

670068 Mark II—GT Ignition and Electrical System - R. C. Hogle, Ford

670069 Mark II—GT Sports Car Transaxles - H. L. Gragorich and C. D. Jones, Ford

670070 Mark II—GT Sports Car Disc Brake System - J. J. Ihnackik and J. F. Maak, Ford

670078 The Influence of Vehicle Design Parameters on Characteristic Speed and Understeer - R. T. Bundorf, Engrg. Staff, GMC

670086 New Developments in Automotive Lighting - K. J. Jones, Joseph Lucas Ltd.

670099 Directional Control Dynamics of Automobile-Travel Trailer Combinations - R. T. Bundorf, Engrg. GMC Staff

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- 670162 Tools and Methods for Automotive Vehicle Noise and Vibration Testing - A. M. Sogoian and W. V. Paliga, Ford
- 670173 Analysis of Tire Lateral Forces and Interpretation of Experimental Tire Data - D. L. Nordeen, Engrg. Staff, GMC
- 670174 A Quantitative Analysis of the Enveloping Forces of Passenger Tires - S. A. Lippmann and J. D. Nanny, U. S. Rubber
- 670175 Electrovan—A Battery Electric Car - E. A. Rishavy, W. D. Bond, and T. A. Zechin, Engrg. Staff, GMC
- 670176 Electrovan—A Fuel Cell Powered Vehicle - Craig Marks, E. A. Rishavy, and F. A. Wyczalek, Power Development, GMC
- 670177 Minimum Road Load for Electric Cars - H. A. Graetzel and D. M. Tenniswood, Ford
- 670178 A High Performance A. C. Electric Drive System - P. D. Agarwal, Defense Res. Labs., and I. M. Levy, Delco Products Div., GMC
- 670179 Ford Sodium—Sulphur Battery Invention - Neil Weber and J. T. Kummer, Ford
- 670181 A Vehicle Fuel Cell System - F. A. Wyczalek, D. L. Frank, and G. E. Smith, Engrg. Staff, GMC
- 670182 The Hydrogen-Oxygen Thin Electrode Fuel Cell Module - C. E. Winters and W. L. Morgan, Union Carbide
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- 670204 The Role of NBS in Motor Vehicle Safety Research - P. J. Brown, National Bureau of Standards
- 670457 Evaluation of Market Samples of Motor Vehicle Lighting and Safety Devices - C. O. Jones, D. R. Dunlop and D. M. Finch, Prof., Univ. of Calif.
- 670458 Collision Performance, Liberty Mutual Safety Car - D. M. Severy, H. M. Brink, and J. D. Baird, Univ. of Calif.
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- 670470 Design and Construction Considerations of Radial Tires - Fred Buddenhagen, B. F. Goodrich
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- 670472 Application of Radial Tires for American Cars - J. L. Martin, Ford
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- 670501 Conditions Upsetting Brake Lining and Drum Compatibility - R. W. Kickel, Carlisle Corp.
- 670502 Brake Linings as Related to Brake Performance - R. E. Nelson, Abex
- 670505 Trends in Braking Techniques of the European Passenger Cars - Andre Furia, Sully Schachter and Pierre Gancel, DBA, France
- 670509 The Story of the "Beta" Group—An Unusual Organization Working on Brake Lining Problems - R. E. Antheil, Inland Mfg. Div., GMC
- 670510 Laboratory Evaluation of Brake Lining Materials - A. J. Burkman and F. H. Highley, Engrg. Staff, GMC
- 670511 Chemical Changes at Brake Wear Surfaces - R. L. Gatrell and T. P. Schreiber, Res. Labs., GMC
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- 670514 Application of Infrared Spectroscopic and Gas Chromatographic Techniques to Brake Lining Development - George Rappaport and Gerald Goldfinger, Inland Mfg. Div., GMC
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- 680006 Brake Fluids with Low Moisture Avidity - R. A. C. Ker, Castrol Ltd.
- 680007 A Look at New Types of Brake Fluids - R. W. Shiffler, P. B. Sullivan and L. J. Ertle, Union Carbide
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- 680009 Design Practice—Automotive Driveline Splines & Serrations - W. B. McCardell, Michigan Tool, D. Cameron, Chrysler and J. E. Mahoney, Chevrolet Motor Div., GMC
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- 680026 Thermal Loads in Gasketed Joints - E. M. Smoley, Armstrong Cork
- 680027 Getting to the Core of Gasket Sealing - S. M. Lillis, Dana
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- 680032 Effective Use of Restraint Systems in Passenger Cars - W. G. Cichowski, General Motors Proving Ground, GMC
- 680033 Automatic Inflatable Occupant Restraint System - Part I - Concept Feasibility & Systems Development, R. M. Kemmerer, Ford, R. Chute and D. P. Haas, Eaton Yale & Towne Res. Cen. Part II - Performance Requirements and Product Implications, W. K. Slack, Ford
- 680036 The Chrysler Torque Flite and Automatic Transmission Fluid - R. A. Kobe and J. C. Wagner, Chrysler
- 680037 ATF-Type "F" Keeps Pace with "Fill-For-Life" Requirement - W. D. Ross and B. A. Pearson, Ford
- 680038 DEXRON Automatic Transmission Fluid - R. L. Anderson and N. A. Hunstad, General Motors Research Labs., GMC
- 680039 The Development of Type F Automatic Transmission Fluids - L. E. Coleman, Lubrizol
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- 680052 Automotive Cardio-thoracic Injuries (A Medical-Engineering Analysis of 70 Cases) - I. I. Lasky, A. W. Siegel and A. M. Nahum, Univ. of Calif.
- 680053 Systems Versus Laboratory Impact Tests for Estimating Injury Hazard - C. W. Gadd, Res. Labs., GMC and L. M. Patrick, Wayne State Univ.
- 680076 Gear Design for Automotive Axles - B. Griffith, Ford
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- 680080 Whiplash: Tests of the Influential Variables - R. J. Berton and C. D. Yost, Ford
- 680087 Development of an Integral Micro-electronic Alternator Voltage Regulator - A. J. Thibodeau, Ford
- 680088 The Application of Integral Circuits to Automotive Charging Systems - E. J. Newill, R. L. Larson, Delco-Remy Div., and G. E. Harland, Sr., Delco Radio Div., GMC
- 680104 Driver's Sight Point and Dynamics of the Driver-Vehicle-System Related to It - M. Kondo, Tokyo Inst. of Tech. and A. Ajimine, Nissan Motor
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- 680106 Computer Assisted Packaging for Driver's Rear Viewing - W. A. Devlin and M. R. Pajas, Ford
- 680107 Scientific Application of Optics and Accident Prevention to Mirror Vision for Commercial Drivers - C. G. Seashore and E. C. Lundquist, Seashore & Assoc.
- 680115 Automotive Printed Circuit Packaging and Termination Concepts - F. B. Stark, W. W. Loose and F. J. Maltais, AMP Inc.
- 680116 Flat Cable and the Automotive Wiring System - J. Strobel, G. T. Schjeldahl Co.
- 680117 Highway—Bridge—and Airport Runway Detection Systems—Predicts Frost and Ice Before They Occur - M. F. Ciernochowski, Holley Carburetor
- 680135 Definition of Tire Skid and Traction Problems - C. I. Carr, Uniroyal
- 680138 Factors Affecting Passenger Tire Traction on the Wet Road - J. D. Kelley, Firestone
- 680139 Ice vs Snow Tire Traction - T. Sapp, Goodrich
- 680140 Tire Development Relating to Vehicle Safety on Wet Roads - B. J. Allbert, Dunlop Co.
- 680146 Driveline Critical Speed—A Practical Approach - J. K. Sauter, Chrysler Corp.
- *680193 Engineering to Meet Federal Vehicle Safety Standards - H. C. MacDonald, Ford
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- *680194 Dynamics of the Automobile Related to Driver Control - D. H. Weir, C. P. Shortwell, and W. A. Johnson, Systems Technology
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- *680389 The Lead Acid Battery—New Horizons in Power by the Use of Plastics - V. M. Halsall, Globe-Union
- *680390 Polypropylene Batteries—Product Characteristics and Advantages - A. Sabatino, Gould-National Batteries
- *680391 Evaluation of Automotive Starting Batteries - R. C. Griffis, Ford
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- *680397 The Urbmobile—A Dual-Mode Vehicle System Design Concept - M. I. Weinberg, Cornell Aeronautical Lab.
- *680403 Periscopes for Rear Vision - W. L. Hyde, Univ. of Rochester
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- *680409 Application of Characterizing Functions to Tire Development - D. L. Nordeen, Engrg. Staff, GMC
- *680423 Approximate Analysis of Stresses in Multiple Disc Clutch Teeth - E. F. Finkin, McDonnell Douglas
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- *680425 Improving the Performance of Sleeve Bushings and Thrust Washers in Transmissions - J. J. Parthum, Federal Mogul
- *680426 Current Design Trends of Sleeve Bearings & Thrust Washers in Passenger Car Automatic Transmissions - L. J. Pesek, Clevite
- *680427 The Marketeer - F. C. Murdock, Westinghouse Electric
- *680428 The Ford Comuta—An Electric Car for Use in City and Suburb - L. Martland, A. E. Lynes, Ford Motor, Ltd., England; and L. R. Foote, Ford
- *680429 Mars II - R. R. Aronson, Electric Fuel Propulsion
- *680430 The GE Electric Vehicle - B. R. Laumeister, GE

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- 680431 Emission Limited Citycars for Metropolitan Areas - T. H. Floyd, Jr., Urban Transp. Admin.; and Manfred Altman, Univ. of Pa.
- 680452 Electrochemical Vehicle Powerplants - D. A. J. Swinkels, Res. Labs., GMC
- 680453 Review of Battery Systems for Electrically Powered Vehicles - D. V. Ragone, Carnegie-Mellon Univ.
- 680454 The New High Energy Lithium/Nickel Fluoride Battery System in Electric Vehicle Propulsion - H. N. Seiger, Gulton Industries
- 680455 Brushless Synchronous Propulsion Motor - W. Slabiak, U.S. Army Tank-Automotive Command; and G. C. Collins, Delco-Remy Div., GMC
- 680456 A New "Fuel" Gauge for Electrically Powered Vehicles - C. C. Beusman and E. P. Finger, Curtis Instruments
- 680457 The Eaton Yale & Towne Anti-Skid System - Q. L. Anderson, Eaton
- 680458 Design and Performance Consideration for Passenger Car Anti-Skid Systems - T. S. Scafer, D. W. Howard and R. W. Carp, Bendix
- 680471 Automotive Suspension Bumpers—A Correlation of Parameters Affecting Impact Response and a Technique for Achieving Effective Design - D. F. Kruse, Enjay Polymer Labs., and R. C. Edwards, Enjay Chemical
- 680472 The Design of a Shock Absorber to Improve Ride Comfort by Reducing Jerk - F. H. Speckhart, Univ. of Tenn.; and E. Harrison, Clemson Univ.
- 680477 Effective Impact Velocity From Vehicle Deformation—A Preliminary Study - D. J. Van Kirk and J. Hirsch, Wayne State Univ.; and T. B. Sato, Keio Univ., Japan
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- 680482 Collision Simulation Using the GM Proving Ground Impact Sled - D. L. Veenstra, Safety Test Engrg., GMC
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- 680493 The American Motors AMX 390 V8 Engine - G. F. Leydorf, Jr. and G. E. Onishi, American Motors
- 680498 Cavitation-Erosion Damage Control in Aluminum Water Pumps for Cars - J. B. Clark, Jr., Engr. Staff, GMC

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- 670006 Engineering Approach to Truck and Tractor Train Stability - Ingobert Schmid, Battelle-Institut e. V., Germany
- 670025 Post Office Vehicle Crash Study - J. C. Gilkey, U. S. Post Office Dept., R. A. Rogers, GM Proving Ground, GMC
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- 670493 Road Contact Forces of Truck Tires as Measured in the Laboratory - J. L. Ginn and R. L. Marlowe, B. F. Goodrich
- 670506 Characteristics and Applications of Trailer Surge Brake Systems - Burdette Douglass, Atwood Vacuum Machine Co.
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- 680432 Effects of Shoe Force Geometry on Heavy Duty Internal Shoe Brake Performance - M. H. Lawrence, G. B. Stroh and W. T. Deibel, Eaton

- 680433 Abstract of Fatigue Design Handbook - J. A. Graham, Deere; and J. F. Millan, Caterpillar Tractor
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- 670090 Diesel Engine Exhaust Smoke—Its Measurement, Regulation and Control - N. M. F. Vulliamy and J. Spiers, Perkins Manufacturing
- 670091 Diesel Fuel Properties and Exhaust Gas—Distant Relations? - G. McConnell and H. E. Howells, British Petroleum
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- 670093 Diesel Smoke Suppression by Fuel Additive Treatment - C. O. Miller, Lubrizol
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- 670128 The Effect of Fuel Antiknock Compound and Deposits on Exhaust Emissions - J. C. Gagliardi, Ford

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- 670200 Smoke Abatement in Gas Turbine Engines Through Combustor Design - J. G. Gleason, Univ. of Arkansas and J. J. Faitani, United Aisc
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- 680112 A Tracer Method for Exhaust Hydrocarbon Study - L. S. Caretto, E. S. Starkman and R. Chin, Univ. of Calif.
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- *680398 Human and Traffic Control Factors in Automotive Exhaust Emission - L. Duckstein, M. Tom and L. L. Beard, University of Arizona
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- 670807 Rule 66—A Part of Total Air Pollution Control - W. M. Dorn, Bd. of Supvs., County of L. A.

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- 670814 Availability and Evaluation of Non-Photochemically Reactive Primers and Topcoats for Aerospace Applications - J. C. George and G. R. Morris, Lockheed-California

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- 670452 Thermoelectric Generators for Military Portable Power - A. B. Neild, USN Marine Engineering Laboratory
- 670453 An Evaluation of Fuel Cell Systems for Vehicle Propulsion - M. J. Schlatter, Chevron Res.
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- 670455 Developing an Electrically Driven Hydrogen Blower for a Vehicular Fuel Cell Installation - C. A. Amann and G. D. Skellenger, Res. Labs., GMC
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- *680346 Smoke Measurement Techniques - W. M. Shaffernocker and C. M. Stanforth, General Electric
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- 670364 Thickened Fuels for Aircraft Safety - A. Beerbower, W. Philippoff, J. Nixon, and T. J. Wallace, Esso-Res. and Engrg.
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- 670366 Initial Experience with Emulsified Fuels at AVCO-Lycoming - George Opdyke, Avco
- 670367 Environmental Testing of a Gas Turbine Engine with Emulsified JP.4 Fuel - John Monarch, Continental Avia. and Engrg.
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- 680014 Holographic Applications, Present and Future - E. Leith, Univ. of Michigan

- *680196 Basic Introduction to the Analog Computer - F. D. Jury, Fisher Governor
- *680197 Use of Digital Computer in Design - D. I. Manor, Deere Dubuque Tractor
- *680195 Writing Technical Reports That Communicate - K. L. Hoer, Deere Waterloo Tractor
- *680233 A. Unique Use of Undimensioned Drawings as a Tooling Aid - A. H. Moore, North American Rockwell
- *680270 Underseas Work Vehicles - F. G. Archbold, North American Rockwell
- *680451 The Goals Report as Viewed by the Practicing Engineer - A. Weber, Corning Glass Works

SPECIAL PUBLICATIONS

Are booklets on related groups of papers, reports or SAE Journal articles. They are produced when sufficient interest in the material they contain justifies distribution as a group rather than as individual items.

AEROSPACE

- SP 293 ADVANCED FASTENERS - A group of technical papers covering environmental conditions, structural fasteners for extreme temperature utilization, fastener applications for aircraft gas turbine engines, fastener applications for aerospace vehicles, fastener technology, and airline operation and maintenance requirements for fasteners.

4.50 Mem. 6.00 List

- SP 264 A COMPUTERIZED STATIC AND DYNAMIC AIRCRAFT STRUCTURAL ANALYSIS SYSTEM - Covered are the use of computer programs in aircraft design, engineering aspects and mathematical formulation of the problem, and programming the system.

3.00 Mem. 4.00 List

- SP 261 MOBILITY OF TERRAIN - Covers the assessment of air cushion vehicles with other off-road vehicles, a lunar surface vehicle computer evaluation program, mobility prediction of ground support vehicles, system evaluation of military vehicle concepts and terrain vehicles, and vehicle mission analysis.

4.50 Mem. 6.00 List

ENGINES (SURFACE VEHICLE)

- *SP 337 GASKETS - Areas covered are: Compression creep behavior of compressible nonmetallic gaskets; proper material selection for gaskets; fasteners; recent innovations in gasket materials for static seals; new ASTM gasket classification

system; relationship between density and stress relaxation of non-metallic gasket material; and improved laboratory gasket test methods. Discussion of each area also included.

5.75 Mem. 7.50 List

- SP 290 HIGH-OUTPUT DIESELS - Contains two papers: Daimler-Benz High Output Engines - A Study in Compact Design (670519) by Otto Herschmann, and Design and Development of a Very High Output Multifuel Engine (670520) by R. T. Paluska, J. S. Saletzki, and G. E. Cheklisch.

2.00 Mem. 2.75 List

- SP 284 ENGINE COOLING SYSTEMS FOR MOTOR TRUCKS - An L. Ray Buckendale Lecture by P. K. Beatenbough. Covers engine cooling, temperature control, coolant circuit, radiator structure and mountings, and auxiliary cooling requirements.

1.00 Mem. 2.00 List

- SP 282 FOUR DECADES OF ENGINE-FUEL TECHNOLOGY FORECAST FUTURE ADVANCES - 1966 SAE Horning Memorial Lecture by Earl Bartholomew. Discusses the mutual adaptation of engines and fuels during the past forty years. The resulting technology is a background for a more sophisticated attack required to meet a different but equal challenge in the future as automotive engines become more refined and operate in a more demanding environment.

1.00 Mem. 2.00 List

- SP 287 SYMPOSIUM ON AIR POLLUTION (Mexico City) - A collection of 23 technical papers (primarily in Spanish, including some English translation) on various aspects of air pollution resulting from vehicle emissions. Combustion principles, antismog hardware, and health hazards created by air pollution are discussed by engineers and medical experts. Co-sponsored by the Mexican Sections of SAE and ASME, and the Mexican Society of Pneumology and Chest Surgery. (1966)

12.00 Mem. and List

- SP 280 HIGH OUTPUT DIESEL ENGINES - Contains two papers, one titled Diesel Combustion at High MEP with Low Compression Ratio by W. P. Mansfield and W. S. May, Sr. The other paper, Recent Developments in Variables Compression Ratio Engine, is by E. F. Blackburne and J. C. Basiletti.

2.00 Mem. 2.75 List

- SP 270 POWERPLANTS FOR INDUSTRIAL AND COMMERCIAL VEHICLES - Spark-ignition, diesel, and gas turbine engines for industrial and commercial vehicles are related to the future. Performance and economic objectives for over-the-road powerplants are discussed.

4.00 Mem. 5.75 List

- SP 236 ENGINE AND CHASSIS TEST FACILITIES - Design and operational experience of indoor testing facilities for engine, chassis and vehicle testing under controlled temperature, humidity, wind, and loading conditions. Four domestic and one Spanish installation are detailed to demonstrate improved consistency of results and correlation with field tests.

3.75 Mem. 5.00 List

*New

- SP 157 **ENGINE NOISE SYMPOSIUM** - Consists of 11 papers presented in 1958 on engine combustion chamber noises, especially rumble in high compression ratio engines.
4.50 Mem. 7.00 List
- SP 193 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Complete set of the series as shown below.
25.00 Mem. 45.00 List
- * SP 335 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 16 - Includes papers on computer time sharing and engine design, air pollution from automotive exhaust, automobiles and air pollution, instrumentation, and fuel injection for high speed diesel engines.
3.50 Mem. 7.00 List
- SP 292 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 15 - Computer aided Engine Design (670523) by Gary L. Borman, Univ. of Wisconsin, Heat Rejection and Cooling Requirements of Internal Combustion Engines (670524) by Robert Cramer, Jr., Murphy Diesel Co., Engine Cooling Radiators (670525) by James D. Morse, Modine Manufacturing Co., Small Internal Combustion Engine Design Cooling and Associated Parameters, Heat Rejection Methods (670526) by R. E. Perlewitz, Lon Mooney, and William Kalweit, Tecumseh Products Co., and Solid State Ignition (670527) by Arthur G. Hufton, Motorola, Inc.
3.50 Mem. 7.00 List
- SP 283 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 14 - Covers fundamentals of valve design and material selection, crankshaft design, turbochargers, piston design, and how to design bushings and thrust bearings for engine applications.
3.50 Mem. 7.00 List
- SP 271 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 13 - Covers surface ignition and rumble, piston ring shape, gas engine valve and seat wear, basic concepts involved in using digital computers for solving engineering problems, and a specific example of how a computer is used to solve a heat conduction problem. (1965)
3.50 Mem. 7.00 List
- SP 256 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 12 - Covers performance of a digital engine, engine wear, crankshaft testing in the laboratory, and the development of lubricating oils for small 2-cycle engines.
3.00 Mem. 4.50 List
- SP 243 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part II - (1963) - Covered are pumpless injection systems; hybrid engines; design, development, and application of the 17.6 engine; power producing characteristics of diesel engines.
3.50 Mem. 7.00 List

- SP 237 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 10 - (1962) Covered are lube oil refining, specifications and tests; piezoelectric ignition system; deterioration of engine oils; and contemporary ignition systems.
3.50 Mem. 7.00 List
- SP 192 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 9 - (1961) - Discussed are small engine hydraulic governor design and application, a guide to disc clutch design and application, hydrostatic transmissions for vehicle propulsion, performance and structure of mechanical transmissions, and the selection of converters. 3.50 Mem. 7.00 List
- SP 178 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 8 - (1960) - Discussed in this part are evaluating valve train dynamics, dynamometers for engine testing, radio-isotopes, instrumentation for engine testing, and field testing diesel engines.
3.50 Mem. 7.00 List
- SP 143 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 4 - (1956) - Discussed are gear design and manufacture, supercharging, development of small engines, automotive gasoline injection, and diesel fuel injection
3.50 Mem. 7.00 List
- SP 137 **ENGINEERING KNOW-HOW IN ENGINE DESIGN** - Part 3 - (1955) - Information on materials in engine design, reciprocating engine dynamics, applying gasoline and diesel fuels, light two-cycle engines, the outboard motor, and design features of an opposer piston diesel.
3.50 Mem. 7.00 List

FUELS AND LUBRICANTS

- * SP 340 **FUEL-ENGINE RESEARCH IN UNIVERSITIES—HORNING MEMORIAL LECTURE BY PROFESSORS P. S. MYERS AND O. A. UYEHARA, UNIV. OF WISCONSIN** - Reasons for conducting research in a university are presented and discussed. It is concluded that fuel-engine studies are compatible with these reasons, and, therefore, are well suited for university research. Past studies in this field are summarized, and unanswered questions and future topics suitable for university investigation are suggested. Included in the topics discussed are: instrumentation, thermodynamic description of working fluids, fuel atomization and vaporization, combustion and instantaneous heat transfer, and mass flow rates. The steps that need to be taken to insure continuing university interest in fuel-engine studies are presented.
1.00 Mem. 2.00 List

- SP 285 **LP-GAS FOR ENGINES** - Many facets of LP-gas are covered in this collection of papers. Discussed are effects of LPG on engine performance, use of LPG as a motor fuel, the effects of altitude, humidity and temperature, as well as carburetion and other factors affecting propane fueled engines.
5.25 Mem. 7.00 List
- SP 263 **ENERGY DEPOT CONCEPT** - Nuclear powered energy depot concept is discussed in terms of reducing the Military supply burden. Fuel production and utilization is covered along with ammonia as an engine fuel.
2.25 Mem. 3.00 List
- SP 254 **ALCOHOLS AND HYDROCARBONS AS MOTOR FUELS** - Four papers providing information on comparative performance of alcohol and hydrocarbon fuels, ethyl alcohol and gasoline as a motor fuel, and exhaust hydrocarbon and nitrogen oxide concentrations from ethyl alcohol-gasoline fuel.
3.00 Mem. 4.00 List

MATERIALS

- SP 291 **PLASTICS AND PLASTICS PROCESSING FOR THE AUTOMOTIVE ENGINEER** - Provides information on plastic fundamentals, processing and its relation to performance, blow molding, machinery and equipment injection molding, tools for plastic processing and their relation to product design, and current and future applications of plastics in the automotive industry.
4.50 Mem. 6.00 List
- SP 268 **EVALUATING THE SURFACE TEXTURE OF COLD ROLL SHEET STEEL FOR AUTOMOTIVE PANELS** - Development of a procedure and equipment for determining surface texture peak count, operation of measuring instrumentation, evaluation of measuring methods, and correlation of instrumentation with painted appearance are among the topics covered.
3.00 Mem. 4.00 List
- SP 181 **MECHANICAL PRESTRESSING** - Summary of reports presented at a 1960 meeting of SAE ISTC Division 20 on Mechanical Prestressing of Metals. Discussed are: Simplified theory for dynamic failure in solid materials; optimum method, intensity, and coverage of mechanical prestressing; selection of optimum conditions of mechanical prestressing; choosing optimum method, intensity, and coverage of shot peening; evaluations of fine particle abrasive blasting and other methods of surface movement; and shock forming.
1.00 Mem. 2.00 List

*New

SP 126a WHAT'S BEEN WRITTEN ABOUT PEENING (2) - Abstracts of 36 treatises on shot peening and other forms of peening. Written to give a quick, factual review of the entire field and to catalog literature. Indexed by author and subject. (1960)
1.00 Mem. 2.00 List

SP 288 BIBLIOGRAPHY ON RESIDUAL STRESS (SUPPLEMENT 3) - Contains 698 abstracts gathered from pertinent literature published between 1961 and 1963. The subject index is broken down into the following sections: Measurement; occurrence; origin, control and removal; effects; and miscellaneous.
5.00 Mem. 8.00 List

SP 231 BIBLIOGRAPHY ON RESIDUAL STRESS (SUPPLEMENT 2) - Contains 702 abstracts gathered from pertinent literature published between 1957 and 1960.
5.00 Mem. 10.00 List

SP 125 BIBLIOGRAPHY OF RESIDUAL STRESS - For engineers, metallurgists, production men, scientists and researchers. 1545 references to domestic and foreign literature that bears on residual stress. Each reference is detailed as to author and source, with descriptive paragraph on contents.
5.00 Mem. 10.00 List

PARTS AND COMPONENTS

* SP 239 DESIGN AND APPLICATION OF HEAVY-DUTY CLUTCHES - Ninth Buckendale Lecture by G. R. Harting. Covers basic design factors, testing procedures, and application considerations for clutches used in motor trucks, farm tractors, construction equipment, and stationary power units.
.75 Mem. 1.00 List

SP 274 ENGINE BEARINGS - Three papers presented before the Society in 1964 appear along with 10 never-before-published discussions generated at the session. The subject papers include Automotive Engine Bearings - 1964 (873A), Aluminum-On-Steel Bearings Alter Design Practice (873B), and Imperfect Journal Geometry - Its Effect on Sleeve Bearing Performance (873C).
3.00 Mem. 4.00 List

SP 238 ROTATING DERRICKS AND HYDRAULIC SYSTEMS - Utility Vehicle Workshop - Covers requirements for rotating derricks for line constructions; types and operation of rotating derricks; requirements of truck chassis for rotating derricks; design and layout of hydraulic systems; hydraulic pumps, valves and motors; effect of hydraulic surge on hose performance; and hydraulic system maintenance.
5.25 Mem. 7.00 List

SP 228 REAR AXLE GEAR TOOTH SURFACE FAILURES - Consists of 4 papers presented before SAE in January, 1962. Gear Design as it Affects Gear Tooth Surface Failures; Metals and Their Heat Treatment as They Affect Gear Tooth Surface Failures; and Lubricants as Related to Gear Tooth Surface Failure Problems.
2.00 Mem. 4.00 List

SP 221 DESIGN AND MANUFACTURE OF SPIRAL BEVEL AND HYPOID GEARS FOR HEAVY-DUTY DRIVE AXLES - In the Eighth L. Ray Buckendale Lecture, author Wells Coleman emphasizes spiral bevel and hypoid drive gears. Covered are gear type selection, gear loading, service conditions, gear size, number of teeth and diametral pitch, face width, hypoid pinion offset, spiral angle, pressure angle, hand of spiral, tooth proportions, load ratings, design of gear and pinion blanks, gear materials, forgings, carburizing, quenching, hardness, surface treatment, gear manufacturing tolerances, cutting methods. (1962)
.75 Mem. 1.00 List

SP 186 THE DESIGN OF SINGLE-STAGE, THREE-ELEMENT TORQUE CONVERTER - 7th L. Ray Buckendale Lecture. Includes determination of torus diameter, blading design, performance estimation, fabrication, effect of fluid density and viscosity engine matching, altitude performance and cooling. (1961)
.75 Mem. 1.00 List

SP 168 ANTI-FRICTION BEARINGS SEMINAR - Bearings are covered from a design, materials, lubrication, and service standpoint. Types considered: High-speed moderate-temperature; high-temperature, moderate-speed and oscillatory motion; high-speed high-temperature; and unusual environments. (1959)
2.50 Mem. 5.00 List

PASSENGER CARS

* SP 338 AUTOMOTIVE BRAKE EVALUATION UNDER CUSTOMER USAGE CONDITIONS - A report of AMA Passenger Car Brake Committee. Some major U. S. car producers participated in brake performance evaluation to obtain data under severe customer usage conditions. Cars were instrumented to obtain brake lining and brake fluid temperatures, and loaded to maximum recommended weights. Sixty-seven 4-color graphs illustrate results.
6.00 Mem. 10.00 List

SP 296 PARKING BRAKES - Covers use of hydraulic service brakes for heavy duty or high frequency parking, parking and emergency braking systems, and emergency brakes for utility vehicles.
2.00 Mem. 2.75 List

SP 294 SURVEY OF RESEARCH PROJECTS ON HUMAN TOLERANCE TO IMPACT FORCES - Recent, current, and planned studies on human tolerance to impact are described in this publication. Compiled by the SAE Automotive Safety Committee, SP 294 provides information on research projects relating to maximum occupant safety in motor vehicles. Details are given on research project sponsors.
3.00 Mem. 4.00 List

SP 279 VISUAL CONSIDERATIONS: MAN, THE VEHICLE AND THE HIGHWAY - By Ingeborg Schmidt and Dr. P. L. Connolly. Physiological optics are reviewed for designers and users of automobiles. Eye movements, visual field and fixation field are described, together with the sensory mechanisms which comprise adaptation, contrast, sensitivity, visual acuity, perception of motion and distance. Physiological and perceptual capabilities of man's visual system as it was 50,000 years ago are related to what is required of him in a vehicle-highway environment today.
1.50 Mem. 2.00 List

SP 275 THE VARIABLE-STABILITY AUTOMOBILE - Describes the application of the variable stability and response automobile for determining the dynamic characteristics of automobiles. Also covered is the use of the GMR variable stability passenger car in a brief study of driver performance in maneuvering. Of related interest is HS J670a. (See pg. 7 of this checklist.)
1.50 Mem. 2.00 List

SP 266 HUMAN SIMULATIONS FOR AUTOMOTIVE RESEARCH - By D. M. Severy. Covers methods of human simulation, anthropometric dummy uses, instrumentation for human simulation, medical scientist opinion on the anthropometric dummy, and trends in human simulation for automotive research. (1965)
2.00 Mem. 4.00 List

SP 255 EXPERIENCE WITH TRANSISTORIZED IGNITION SYSTEMS - An evaluation of transistorized systems is given along with views expressed by three fleet operators and five manufacturers.
3.00 Mem. 5.00 List

SP 253 DESIGN ASPECTS FOR REAR VISION IN MOTOR VEHICLES - Discussion of the physiological aspects of rear vision, the application of these principles to design of the vehicle for total vision, and the assessment of the completed vehicle (including road testing) in light of the principles.
2.25 Mem. 3.00 List

*New

- SP 242 **BONDING OF BRAKE LININGS** - Developed by members of the SAE Brake Committee. Covers Laboratory Tests on the Adhesive, original equipment bonding and testing, chisel tests their place in the replacement field, sample preparation and dynamometer tests, vehicle abuse test of a bonded brake shoe, and a copy of the SAE Recommended Practice, Test Procedures for Brake Shoe and Lining Adhesives and Bonds-SAE J840.
4.50 Mem. 6.00 List

- SP 185 **AIR CONDITIONING FORUM** - Includes discussions of general automotive design considerations, engine and assembly cooling, passenger compartment noise and vibration considerations, drive components, compressors, developments in thermoelectric design, electrical and control systems, and design for compact and foreign cars. (1961)
3.00 Mem. 6.00 List

- SP 174 **AUTOMOBILE SIDE - IMPACT COLLISIONS** by D.M. Severy, J.H. Mathewson and A.W. Siegel covers Air Force steps on three precision controlled collision experiments. Reported are the first fully instrumented side impacts in which both cars are in motion. Drawings give three dimensional sequential portrayal of vehicles as they spin and roll over following impact. Force system analysis, deformation analysis and cabin-occupant relations during impact are presented. (1960).
3.00 Mem. 6.00 List

- SP 142A **HUMAN BODY SIZE AND PASSENGER VEHICLE DESIGN** - The "general driving population" is described for the first time in terms of 5th, 50th, and 95th percentiles for 18 body mechanisms, as specially relating to passenger car design. Utilizing this information, it has been possible to determine new design recommendations for 14 different dimensions of the driver's seat and work space of passenger vehicles. Both static and dynamic body size are considered. (1961)
1.50 Mem. 3.00 List

PRODUCTION AND MANAGEMENT

- SP 273 **QUALITY CONTROL** - The function of quality control as related to the broad subject of product assurance, customer demand for high quality and reliability as related to product and production process complexity, value achievement and quality control, and integrated test planning and analysis.
3.00 4.00
- SP 250 **STATISTICS FOR THE ENGINEER** - Describes summary of data, significant differences, linear regression analysis, and analysis of variance. Intended as an introduction to statistics for the engineer with no background in the subject. (1964)
SP 250 was written by experts from General Motors.
3.00 Mem. 4.00 List

- SP 277 **VALUE ENGINEERING AND ANALYSIS** - Includes three papers. One takes you from selection of items for study, through functional analysis, to implementation of proposals. Another describes an approach to better value through recognition of the interfaces that exist between design parameters, item capabilities, item design and an item's unit cost. A third paper goes into how to put the creative phase of value engineering to the best possible use.
2.25 Mem. 3.00 List

- SP 269 **ENGINEERING MANAGEMENT FOR YOUNG ENGINEERS** - Should you be an engineering manager, and if so, what are the first principles of engineering supervision, basic approaches toward management, and scientific management methods. These are angles found in four papers presented before the Detroit Section Junior Activity.
3.00 Mem. 4.00 List

TRANSPORTATION AND MAINTENANCE

- SP 299 **SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS FOR AUTOMOTIVE VEHICLES** - Brake system performance requirements for cars, trucks and busses are given along with a status report on applications and supplemental requirements. Also included in this publications are copies of SAE J786, Brake System Road Test Code - Truck and Bus; J992, Service Brake System Performance Requirements - Truck and Bus; J843a, Passenger Car Rear Vision; and J937 - Service Brake Performance Requirements - Passenger Car.
3.00 Mem. 4.00 List

- SP 298 **UTILITY VEHICLE WORKSHOP - POWER TAKE OFF** - Front engine power takeoff and hydraulic pump drives as well as recent trends in the application and design of side mounted power take-offs are covered in this publication.
.75 Mem. 1.00 List

- SP 295 **ELECTRONIC DATA PROCESSING IN LARGE OR SMALL FLEETS** - A practical account of EDP as related to municipal and private fleet records, maintenance cost control, scheduling, vehicle replacement, and/machine accounting in utility transportation.
4.00 Mem. 6.00 List

- SP 249 **WHEEL ALIGNMENT - MODERN SETTING FOR MODERN VEHICLES** Six representatives of the trucking industry from tire and truck manufacturers to truck operators discuss the subject of irregular front tire wear due to crowned roads, underloading

of front axle, and high speeds. The solution of different front wheel settings is examined. Various front wheel settings are given, together with some results of successful tests. (1964)
2.25 Mem. 3.00 List

- SP 235 **ENGINE FAILURE ANALYSIS AT SHOP LEVEL** - A catalogue of engine failures showing how to predict, prevent, and analyse them. Included is data on pistons, rings, cylinders, valves, bearings, lubrication system, governors, flywheels, and clutches.
2.50 Mem. 5.00 List

TRUCKS AND BUSES

- SP 286 **MATCHING UTILITY EQUIPMENT TO THE CHASSIS** - Medium and heavy-duty vehicles and equipment are appraised, problems of selecting chassis for utility vehicles up to 16,000 G.V.S. and of mounting equipment on truck chassis are also discussed.
3.00 Mem. 4.00 List

- SP 276 **HIGHWAY TRUCK FRAME DESIGN** - Twelfth L. Ray Buckendale Lecture by W. J. Sidelko. A complete, theoretical approach and evaluation, using actual physical tests for validation of theory in highway truck frame design. This treatise establishes the ability of a frame designer, using all or any part of a valid theory, in designing a truck frame.
1.00 Mem. 2.00 List

- SP 262 **TRUCK DRIVE LINE SYSTEMS** - Eleventh L. Ray Buckendale Lecture by P. J. Mazzioti Functions, construction, and operating characteristics of truck drive-line systems are covered. Universal joint-propeller shaft constructions used in a wide range of applications are discussed along with constant velocity joints, wheel drive installations and dynamic characteristics.
1.00 Mem. 2.00 List

- SP 260 **TANDEM TRUCK RIDE** - Covers basic approaches to improving ride performance of heavy-duty, tandem, rear axle types of on-highway vehicles both with single-unit bodies and tractor semi-trailers. Twelve technical papers are categorized under two section headings titled: Effects of Chassis Components and Effect of Wheels, Tires, Hubs, and Drums. Also Included is a glossary of ride, vibration, and suspension terminology (SAE J670).
7.50 Mem. 10.00 List

- SP 259 **TRAILER TOWING** - Engineering principles of weight equalizing and sway resistant hitches as well as how design and construction relates to towability are discussed in three technical papers.
2.25 Mem. 3.00 List

SP 258 RETARDERS - THEIR EFFECT ON VEHICLE COMPONENTS - The effect of retarders on engines, transmissions, drivelines, axles, and tires is discussed.
2.25 Mem. 3.00 List

SP 251 ART AND SCIENCE OF BRAKING HEAVY DUTY VEHICLES - Describes the functional relationship of the components making up shoe-drum type brake systems for heavy-duty on-highway commercial vehicles. Theory versus practice is emphasized by discussing vehicle and laboratory testing, the usage of commercial vehicles, and the empiric nature of friction. The author of this L. Ray Buckendale Lecture is G. P. Mathews. (1964)
1.00 Mem. 2.00 List

SP 244 TRUCK TIRE TRENDS - Covers effects of design and construction on truck tire wear and noise; trends in truck tire traction, noise and fuel consumption; truck tire constructions - duplex and tubeless; new synthetic rubbers; and repair.
3.75 Mem. 5.00 List

SP 240 COMPUTER EXPLOSION IN TRUCK ENGINEERING - Design Procedures Adapted to Computer Techniques - Covered are design reliability of components; driveline - Optimum Design; vehicle dynamics; computer simulated vehicle performance, use of computers in steering geometry analysis; independent front suspension, and computer application in drafting.
5.25 Mem. 7.00 List

SP 229 NEW BRAKE SYSTEM ROAD TEST CODE - BACKGROUND AND EVALUATION - Background on the development of this new SAE test code are given by the experts who prepare it. (The code is intended for "flat road" brake evaluation of trucks and buses.) SP 229 contains an introduction and sections on; Industry's Need for Code and History of Its Development; Scope and Interpretation of Standardized Code for "Flat Road" Brake Test for Trucks and Buses; and Status Report on Proposed Code for "Flat Road" Brake Evaluation for Passenger Cars.
2.00 Mem. 4.00 List
(Note: The test code, "Brake System Road Test Code - Truck and Bus-SAE J786", is available as a Handbook Supplement (HS 70).

SP 226 UTILITY VEHICLE WORKSHOP: ENGINE SPEED CONTROLS POWER TAKE-OFF DRIVES - Contains seven papers. The Need for Load Sensing Governors on Truck Engines Operating Hydraulic Utility Equipment; Installation of Engine Speed Governors on Public Utility Trucks; Development of a Speed Regulating, Load Sensing Auxiliary Governor for Power Take-Off Driven Equipment; Eight Bolt Power Take-Off Drives for Transmitting Higher Torques for Auxiliary Equipment; A Look at Geared Split-Shaft Power Take-Offs for the Public Utility Industry; Continuous Running Flywheel Power Take-Offs; Chassis Design for Full Torque PTO Installations. (1962)
3.00 Mem. 6.00 List

SP 194 COOLANT TEMPERATURE EFFECTS ON ENGINE LIFE AND PERFORMANCE - Discussions covering coolant temperature effects on engine life and performance, temperature control of truck cooling system, engine cooling system design for optimum temperature control, temperature control as it affects engine life, efficiency and economy, and 20 years of fleet experience with engine temperature control. (1961)
2.25 Mem. 4.50 List

SP 154 A BETTER TRUCK RIDE FOR DRIVER AND CARGO - Ride of commercial vehicles as affected by suspension system and configuration of vehicle. Includes cooperative recommendations made by SAE Committee on Ride, plus recent developments reported by R. N. Janeway. Mechanical and air springs are covered for truck-tractors and trailers. (1958)
5.00 Mem. 10.00 List

MISCELLANEOUS

*SP 341 PLANNING A PRODUCT - 14th L. Ray Buckendale Lecture by V. G. Raviolo. A need exists for the designer of a product to understand the planning process so that he may relate his work to the whole. The process involves functions which are outside the engineer's responsibility. This paper describes the process broadly in order to encourage the designer to extend the range of his thinking beyond purely technical requirements.
1.00 Mem. 2.00 List

SP 281 PLEASURE BOAT SAFETY - Provides a ready reference for manufacturers of pleasure boat to factors directly influencing the manner in which marine products should be produced. It indicates who's who in the industry and where to go for answers relating to State, Federal and Coast Guard regulations affecting safety.
5.00 Mem. 7.00 List

SP 272 KINEMATIC ANALYSIS METHOD - Titles encompass a computer-aided design analysis system, programmed systems, position calculation, determining velocity and acceleration, force and torque, and application of a vector approach to mechanisms. (1965)
4.50 Mem. 6.00 List

SP 247 DIMENSIONING AND TOLERANCING STANDARDS - A reprint of Dimensioning (A6), Form Tolerancing (A7), and Positional Tolerancing (A8) sections of the SAE Aerospace Automotive Drawing Standards Manual. These standards are similar to and in general conform to MIL-STD-8.
3.00 Mem. 4.50 List

SP 222 INSTINCTS IN ACTION, a new book by Norman Shidle, contains 140 "For Sake of Argument" pieces selected from those printed in SAE Journal between 1948 and 1961. Shidle, editor of SAE Journal, says of this collection of his work: "Most of these essays are commentaries on how people act; and why they act the way they do."
4.00 Mem. and List

SP 189 HOW TO WRITE REPORTS THAT GET READ - A report by Tyler G. Hicks, McGraw-Hill Book Co. (1960)
.75 Mem. 1.00 List

SP 162 MAKE SLIDES WORTH WHILE - Description of preparing slides to supplement oral presentations. Different graphic techniques available and date on layout of slide for clarity (including use of color). (1959)
1.00 Mem. 2.00 List

SAE HANDBOOK SUPPLEMENTS

Contain Society-approved surface vehicle standards, recommended practices, and information reports. They have the same standing as reports appearing in the SAE Handbook.

CONSTRUCTION AND

AGRICULTURAL EQUIPMENT

HS 61 AGRICULTURAL EQUIPMENT - A special edition of 34 subject reports reprinted from the 1968 SAE Handbook. Included are standards and recommended practices on lighting, disc wheels, three-point free-link hitch attachments, hydraulic remote control devices, power take-off, break-away connectors, minimum access dimensions, power driveline shielding, test codes and other areas.
3.00 Mem. 4.00 List

HS 39 CONSTRUCTION AND INDUSTRIAL MACHINERY - Reprint of related reports appearing in the 1968 SAE Handbook. Test codes for commercial and industrial vehicles, power outlets, engine cooling systems, loading ability, crane hoist line speed and power, crane load stability, hydraulic power pumps, motors, and equipment appear in HS 39. There are reports on nomenclature for tractors, scrapers, bulldozers, cable control units, shovel and loaders, rippers, rooters

and scarifiers. Vehicle lubrication intervals are also covered.
3.00 Mem. 4.00 List

J939 OFF-ROAD VEHICLE MOBILITY EVALUATION - SAE Recommended Practice. Provides a uniform procedure for evaluating off-road mobility of self-propelled vehicles, and criteria for defining design requirements. Emphasizes those qualitative and quantitative evaluations essential in determining a vehicle's ability to meet demands placed on it by off-road environments. Major factors directly influencing mobility performance are considered.
2.00 Mem. 4.00 List

MATERIALS

HS 84 **MANUAL ON SHOT PEENING - SAE J808a** - Intended as a practical aid to engineers, designers, and men in the shop, HS 84 points out some of the possibilities and some of the limitations of the process. Chapters are devoted to a description of the process, the effect of shot peening, shot peening machines, peening media, quality control, fatigue properties, and X-ray diffraction.
2.00 Mem. 4.00 List

J965 **ABRASIVE WEAR**-SAE Information Report. Covers fundamentals of abrasive wear phenomena, testing for abrasive wear resistance, and solutions to abrasive wear problems.
1.00 Mem. 2.00 List

J936 **METHODS OF RESIDUAL STRESS MEASUREMENT.** SAE Information Report. Emphasizing mechanical methods of residual stress measurement, this report will help engineers select appropriate measurement techniques. Selected methods are described, classified, and compared. Layer removal, sectioning, hole drilling, slitting, and other qualitative methods are covered along with measurement of Hertzian hardness and analysis.
3.00 Mem. 4.00 List

J447a **PREVENTION OF CORROSION OF METALS - SAE Information Report.** A guide to principles of metal corrosion and methods of dealing with its prevention. Materials are described and evaluated. Chemical treatments are covered along with coatings of metal, paints, and ceramics.
1.25 Mem. 2.00 List

HS 145 **CLASSIFICATION OF MAJOR VISIBLE IMPERFECTIONS IN SHEET STEEL**-SAE J810 - Contains illustrations and definitions of major surface imperfections that sometimes occur in sheet steel.
2.00 Mem. 4.00 List

HS 3 **SURFACE ROLLING AND OTHER METHODS FOR MECHANICAL PRESTRESSING OF METALS**-SAE J811 - Covered are applications of mechanical prestressing, theory of surface rolling for fatigue improvement, calculations for the surface rolling process, tooling for surface rolling, control and inspection, and the effect of surface rolling on properties other than fatigue.
2.00 Mem. 4.00 List

HS 169 **LOW TEMPERATURE PROPERTIES OF FERROUS MATERIALS**-SAE J794 - Covers factors affecting ductility of ferrous materials. Methods of evaluation are discussed and related to service problems. The significance of composition, microstructure and welding are brought out for different production methods such as casting, rolling, and forging.
1.00 Mem. 2.00 List

HS 124 **SAE MANUAL ON BLAST CLEANING**-SAE J792 - Instructs engineers, designers, and shop men in blast cleaning know-how. Discusses blasting abrasives, blast cleaning machines, production procedures, and process specifications.
2.50 Mem. 5.00 List

HS 147 **EVALUATION OF METHODS FOR MEASUREMENT OF RESIDUAL STRESS**-SAE J793 - The residual stress distribution obtained from measurements of six standard specimens by 20 different research laboratories using five different methods of analysis are compared.
2.50 Mem. 5.00 List

HS 182 **MEASUREMENT OF STRESS BY X-RAY**-SAE J784 - Considered from both technical and practical points of view. Techniques are presented which enable satisfactory measurements of stress even when diffraction lines are diffused. Techniques are based on two-exposure method and use of diffractometers.
1.00 Mem. 2.00 List

HS 198 **INFLUENCE OF RESIDUAL STRESS ON FATIGUE OF STEEL**-SAE J783- Summarized results of cooperative research program on cold-drawn steel bars, strain-peened flat leaf springs, residual stresses induced by sub-critical quench, steel strips plastically deformed, relaxation of residual stresses due to fatigue loading, and varying residual stress bars. (1961)
1.00 Mem. 2.00 List

HS 190 **REINFORCED PLASTICS FOR GROUND VEHICLE APPLICATIONS**-SAE J762 - This Information Report established an engineering approach to selection and use of reinforced plastic materials. Also acquaints engineers with varied classes of fibrous reinforced plastic materials available and their general range of properties and applications.
.75 Mem. 1.50 List

HS 191 **AUTOMOBILE PAINTING PRACTICES**-SAE J761 - SAE Information Report covering surface coatings in the automotive industry. Included for discussion are cleaning (emulsion, alkaline, acid, vapor, solvent, mechanical, pickling, flame, and steam); chemical treatment of surfaces; primers; and color coating.
1.00 Mem. 2.00 List

HS 22 **REPAIR OF FERROUS CASTINGS**-SAE J804 - Shop procedure for repairing apparent imperfections in new automotive gray iron castings, malleable iron castings, and local steel castings.
1.00 Mem. 2.00 List

PARTS AND COMPONENTS

HS 6 **RIDE AND VIBRATION DATA MANUAL.** SAE Information Report. Provides a graphical presentation of damped vibrating system

characteristics aimed at applications to vehicle ride and vibration problems. Basic relationships, vibration systems, energy absorption and impact, and vibration limits for passenger comfort are covered.
2.00 Mem. 4.00 List

J670a **VEHICLE DYNAMICS TERMINOLOGY.** SAE Recommended Practice. Defines mechanical vibration - qualitative terminology, vibrating systems, components and characteristics of suspension systems, vibrations of vehicle suspension systems, suspension geometry, tires and wheels, and directional control. Of related interest is SP 275, The Variable-Stability Automobile.
1.25 Mem. 2.00 List

HS 49 **SPEEDOMETERS, ODOMETERS, AND TACHOMETERS** - Contains SAE Information Report, Factors Affecting Odometer-Speedometer Accuracy - J862, and SAE Recommended Practice, Speedometers and Tachometers - J678a.
1.00 Mem. 2.00 List

HS 34 **LIGHTING EQUIPMENT AND PHOTOMETRIC TESTS - 1968 Edition** - Contains lighting standards and recommended practices appearing in the 1968 SAE Handbook. Designers and manufacturers of this type of equipment will find HS 34 of interest.
2.00 Mem. 4.00 List

HS 150 **TUBE, PIPE, HOSE, AND LUBRICATION FITTINGS** - Reprint of all reports appearing in the tubing and fitting section of the 1968 SAE Handbook. Fittings tubing, connections, hoses, "O" rings, plugs and flanges are among the subjects covered. In addition, it includes a recommended coding system for the identification of these products.
2.50 Mem. 4.00 List

HS 9 **MANUAL ON DESIGN AND APPLICATION OF HELICAL AND SPIRAL SPRINGS**-SAE J795 - A concise and simple account of essentials involved in the design and application of helical and spiral springs to help the engineer and designer as a means to better appreciate the nature of spring problems and to supply them with a ready reference and guide.
4.00 Mem. 8.00 List

HS 26 **MANUAL ON DESIGN AND MANUFACTURE OF TORSION BAR SPRINGS**-SAE J796 - Presents information pertinent to high efficiency springs as used on suspensions of automotive vehicles. Covers many types of torsion bar springs for a wide variety of uses. (1966)
2.00 Mem. 4.00 List

*New

VPD-81-0001664

HS 63 MANUAL ON DESIGN AND MANUFACTURE OF CONED DISK SPRINGS OR BELLEVILLE SPRINGS - SAE J798 - Complete engineering package on Belleville springs. Tells how to design Belleville springs, where and how they are used, materials they are made of and how to fabricate them.
2.00 Mem. 4.00 List

J904 RADIATOR DETERMINATION - SAE Information Report. Is a radiator data sheet showing information necessary for radiator manufacturers to decide upon basic radiator design.
.50 Mem. 1.00 List

PASSENGER CARS

***HS 19 SAE TECHNICAL REPORTS REFERENCED IN FEDERAL MOTOR VEHICLE SAFETY STANDARDS -** Includes all SAE standards referenced in the most recent Federal legislation relating to motor vehicle safety. Standards are in loose-leaf form in a special folder so that the very latest SAE reports relating to safety may be included.
3.00 Mem. 5.00 List

***HS 24 MOTOR VEHICLE BRAKING SYSTEMS AND COMPONENTS -** Unique because it is always "current". As a loose-leaf, spiral-bound publication, HS 24 provides the very latest SAE Standards and Recommended Practices relating to braking systems and components. The present edition contains 37 reports. This is subject to change as new reports are added.
3.00 Mem. 4.00 List

HS 58 DIESEL FUEL INJECTION EQUIPMENT AND TEST METHODS - Of interest to designers and manufacturers of diesel engines and fuel injection components as well as to producers of diesel fuels. Contains seven reports reprinted from the 1967 SAE Handbook, plus a new report designated J981, Master Calibrating Fuel Injection Pump.
1.00 Mem. 2.00 List

HS 160 LUBE OIL FILTER PERFORMANCE TEST-SAE J806 - Prescribes materials, apparatus, methods and practices compiled for laboratory testing and evaluation of automotive type filters. Partial and full flow types are covered.
.75 Mem. 1.50 List

J905 FUEL FILTER TEST METHOD. SAE Recommended Practice. Describes laboratory testing of final stage fuel filters used to protect engines from abrasive contaminant. Provides a standard method of rating fuel filter

performance in terms of flow, pore size, contaminant holding capacity, efficiency, and media migration. Applicable to all types of liquid fuel filters used on automotive type internal combustion engines.
1.00 Mem. 2.00 List

J73 MULTIPURPOSE PETROLEUM BASE FLUIDS. SAE Information Report. Specifications for multipurpose petroleum base fluids are given to reflect current industry usage of such materials in agricultural, construction, industrial and other special-purpose vehicles. Covered is a wide range of fluid properties and their suitability for use at various ambient temperatures depending on vehicle design.
1.50 Mem. 2.50 List

J906 AUTOMOTIVE SAFETY GLAZING MANUAL. SAE Information Report. Provides a basic guide to characteristics of safety glazing materials and information on usage for those unfamiliar with glazing. Also includes two SAE Recommended Practices, Safety Glazing Materials - J674 and Automotive Glazing - J673.
1.00 Mem. 2.00 List

J900 CRANKCASE EMISSION CONTROL TEST CODE - SAE Standard. Provides standard test procedures for crankcase emission control systems and/or devices. Procedures included for determining flow rate of blowby of an engine and flow rates through the crankcase emission control system inlet and outlet.
.75 Mem. 1.00 List

HS 48 PERFORMANCE CHARTS FOR HYDRODYNAMIC DRIVE VEHICLES (Referred to in SAE J644)

Curve Sheets:

HE - For 0-200 installed net horsepower	.50	1.00
HF - For 0-400 installed net horsepower	.50	1.00
HG - For 0-900 installed net horsepower	.50	1.00
HH - Without printed scales	.50	1.00
Total	2.00	4.00

TRANSPORTATION AND MAINTENANCE

HS 40 MAINTENANCE OF AUTOMOTIVE ENGINE COOLING SYSTEMS - This comprehensive guide to servicing modern truck and passenger-car cooling systems clearly defines limitations of coolants in regard to leakage, evaporation, overheating,

and loss of capacity. Interrelations between cooling, fuel, lubrication, and exhaust systems are examined.
2.00 Mem. 4.00 List

HS 70 BRAKE SYSTEM ROAD TEST CODE-TRUCK AND BUS-SAE J786 - Establishes a uniform procedure for the level road test of the brake systems of all weight classes of trucks and buses. Covered are deceleration vs. input as affected by vehicle speed, brake temperature and usage, lining characteristics and life, and drum characteristics.
1.25 Mem. 2.50 List

HS 27 MOBILE RADIO TELEPHONE FOR AUTOMOTIVE USE - SAE J797 - Supplies essential information to ultimate user of vehicles and mobile radio equipment. Also gives equipment manufacturers useful data. Report contains general information, physical dimensions, equipment and space requirements, vehicle power, supply system, installation and maintenance, user's manual at base station, user's manual at mobile station, and selective calling.
1.50 Mem. 3.00 List

HS 82 TRUCK ABILITY PREDICTION PROCEDURE-SAE J688 - Provides practical method for predicting truck performance. By following directions, it is possible to select a truck on the basis of readily available specifications, information provided, and a minimum of calculation.
3.00 Mem. 5.00 List

HS 83 TRUCK ABILITY WORK SHEET PAD- Gives procedure form for determining grade ability at a given road speed and equivalent acceleration rate. Pad contains 150 work sheets. One copy of HS 83a (which is suitable for reproduction) is supplied with each pad.
2.00 Mem. 4.00 List

HS 83a SAE COMMERCIAL VEHICLE ABILITY REPORT FORM - Available as a single sheet for reproduction or may be purchased in quantity.
.25 Mem. .50 List

MISCELLANEOUS

HS 156 SCALES FOR USE WITH DECIMAL-INCH DIMENSIONING-SAE J805 - Standards on scales for draftsmen to implement the decimal dimensioning practices in the automotive industry. These standards are intended to promote uniformity of scales. Such uniformity may stimulate mass production of scales heretofore considered specials by drafting equipment manufacturers.
.75 Mem. 1.50 List

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TECHNICAL REPORT PREPRINTS

Printed as individual reports from the 1968 SAE Handbook or in some cases in advance of their inclusion in the 1969 SAE Handbook which will become available in January, 1969. Unless otherwise noted, member price per copy is \$.50. List price is \$1.

1969 HANDBOOK REPORTS

- J318 (CONTROL) AND EMERGENCY (SUPPLY) LINE COUPLERS - SAE Recommended Practice. November 1967.
- J319 MINIMUM PERFORMANCE CRITERIA FOR BRAKE SYSTEMS FOR OFF-HIGHWAY, RUBBER-TIRED, SELF-PROPELLED SCRAPERS - SAE Recommended Practice. November 1967.
- J320 MINIMUM PERFORMANCE CRITERIA FOR ROLL-OVER PROTECTIVE SYSTEMS FOR RUBBER-TIRED, SELF-PROPELLED SCRAPERS - SAE Recommended Practice. November 1967.
- J321 FENDERS FOR PNEUMATIC-TIRED EARTHMOVING HAULAGE EQUIPMENT - SAE Recommended Practice. November 1967.
- J573c LAMP BULBS AND SEALED UNITS - SAE Standard. February 1968.
- *J879a MOTOR VEHICLE SEATING SYSTEMS - SAE Recommended Practice. February 1968.
- J901a UNIVERSAL JOINT AND DRIVE SAFETY NOMENCLATURE AND TERMINOLOGY - SAE Recommended Practice. August 1967.
- *J908 LIGHTING AND MARKING OF FARM AND LIGHT INDUSTRIAL EQUIPMENT ON PUBLIC ROADS - SAE Standard. November 1967.
- *J921a INSTRUMENT PANEL LABORATORY IMPACT TEST PROCEDURE—HEAD AREA - SAE Recommended Practice. November 1967.
- J980 BUMPER EVALUATION TEST PROCEDURE - SAE Recommended Practice. February 1968.
- J988 LABELING OF MOTOR VEHICLE BRAKE FLUID CONTAINERS - SAE Recommended Practice. October 1967.
- *J989 CARBON MONOXIDE CONCENTRATION TEST PROCEDURE - SAE Recommended Practice. January 1968.
- J994 CRITERIA FOR BACKUP ALARM DEVICES - SAE Recommended Practice. July 1967.
- *J996 INVERTED VEHICLE DROP TEST PROCEDURE - SAE Recommended Practice. August 1967.

1968 HANDBOOK REPORTS

- J4c MOTOR VEHICLE SEAT BELT ASSEMBLIES - SAE Standard. July 1965.
1.00 Mem. 1.50 List
- J65 RUBBER BOOTS FOR USE ON HYDRAULIC BRAKE ACTUATING CYLINDERS - SAE Standard. December 1964.
- J90a NONMETALLIC GASKETS FOR GENERAL AUTOMOTIVE PURPOSES - SAE Recommended Practice. April 1963.
- J590b AUTOMOTIVE TURN SIGNAL FLASHERS - SAE Standard. October 1965.
- J593b BACK UP LAMPS - SAE Standard. May 1966.
- J673a AUTOMOTIVE GLAZING - SAE Recommended Practice. August 1967.
- J774b EMERGENCY REFLEX REFLECTORS - SAE Recommended Practice. March 1967.
- J787b MOTOR VEHICLE SEAT BELT ANCHORAGE - SAE Standard. September 1966.
- J800b MOTOR VEHICLE SEAT BELT ASSEMBLY INSTALLATIONS - SAE Recommended Practice. September 1965.
- J826 MANIKINS FOR USE IN DEFINING VEHICLE SEATING ACCOMMODATION - SAE Standard. November 1962.
- J834a PASSENGER CAR REAR VISION - SAE Recommended Practice. January 1967.
- J839b PASSENGER CAR SIDE DOOR LATCH SYSTEMS - SAE Recommended Practice. August 1966.
- J843a BRAKE SYSTEM ROAD TEST CODE - SAE Recommended Practice. September 1965.
- J850 BARRIER COLLISIONS TESTS - SAE Recommended Practice. February 1963.
- J866a FRICTION IDENTIFICATION SYSTEM FOR BRAKE LININGS AND BRAKE BLOCKS FOR MOTOR VEHICLES - SAE Recommended Practice. September 1966.
- J885a HUMAN TOLERANCE TO IMPACT CONDITIONS AS RELATED TO MOTOR VEHICLE DESIGN - SAE Information Report. October 1966.

- J902a PASSENGER CAR WINDSHIELD DEFROSTING SYSTEMS - SAE Recommended Practice. March 1967.
- J903a PASSENGER CAR WINDSHIELD WIPER SYSTEMS - SAE Recommended Practice. May 1966.
- J910 VEHICULAR HAZARD WARNING SIGNAL OPERATING UNIT - SAE Recommended Practice. January 1965.
- J914 SIDE TURN SIGNAL LAMPS - SAE Recommended Practice. February 1965.
- J916 METRIC EQUIVALENTS OF U.S. CONVENTIONAL UNITS OF MEASURE - SAE Recommended Practice. January 1967.
- J918b PASSENGER CAR TIRE PERFORMANCE REQUIREMENTS AND TEST PROCEDURES - SAE Recommended Practice. December 1966.
- J919 MEASUREMENT OF SOUND LEVEL AT OPERATOR STATION - SAE Recommended Practice. May 1966.
- J934 VEHICLE PASSENGER DOOR HINGE SYSTEMS - SAE Recommended Practice. July 1965.
- J937 SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS—PASSENGER CARS - SAE Recommended Practice. June 1966.
- J938 DROP TEST FOR EVALUATING LAMINATED SAFETY GLASS FOR USE IN AUTOMOTIVE WINDSHIELDS - SAE Recommended Practice. October 1965.
- J941a PASSENGER CAR DRIVER'S EYE RANGE - SAE Recommended Practice. August 1967.
- J942 PASSENGER CAR WINDSHIELD WASHER SYSTEMS - SAE Recommended Practice. November 1965.
- J944 STEERING WHEEL ASSEMBLY LABORATORY TEST PROCEDURE - SAE Recommended Practice. December 1965.
- J945 VEHICULAR HAZARD WARNING SIGNAL FLASHER - SAE Recommended Practice. February 1966.
- J946 GUIDE TO THE APPLICATION AND USE OF RADIAL LIP TYPE OIL SEALS - SAE Recommended Practice. February 1966.
- J953 PASSENGER CAR BACKLIGH DEFOGGING SYSTEM - SAE Recommended Practice. May 1966.

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- J964 TEST PROCEDURE FOR DETERMINING REFLECTIVITY OF REAR VIEW MIRRORS - SAE Recommended Practice. June 1966.
- J971 BRAKE RATING TEST CODE - COMMERCIAL VEHICLE INERTIA DYNAMOMETER - SAE Recommended Practice. September 1966.
- J972 MOVING BARRIER COLLISION TESTS - SAE Recommended Practice. November 1966.
- J977 INSTRUMENTATION FOR LABORATORY IMPACT TESTS - SAE Recommended Practice. November 1966.

- J978 BUMPER JACKING TEST PROCEDURE - SAE Recommended Practice. January 1967.
- J979 VEHICLE BUMPER JACK REQUIREMENTS - SAE Recommended Practice. January 1967.
- J982 TRUCK, TRUCK-TRACTOR, AND TRAILER AIR SERVICE BRAKE SYSTEM PNEUMATIC PRESSURE AND TIME LEVELS - SAE Recommended Practice. February 1967.
- J984 BODY FORMS FOR LABORATORY IMPACT TESTING - SAE Recommended Practice. March 1967.

- J985 VISION FACTORS CONSIDERATIONS IN REAR VIEW MIRROR DESIGN - SAE Information Report. April 1967.
- J986 SOUND LEVEL FOR PASSENGER CARS AND LIGHT TRUCKS - SAE Standard. July 1967.
- J992 SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS—TRUCK AND BUS - SAE Recommended Practice. July 1967.
- J1702 MOTOR VEHICLE BRAKE FLUID—ARTIC - SAE Standard. September 1967.
- J1703 MOTOR VEHICLE BRAKE FLUID - SAE Standard. September 1967.

USA STANDARDS REPORTS

United States of America Standards Institute reports for which SAE is administrative sponsor are printed and distributed by the Society. Currently available are:

- B29.7 MALLEABLE IRON DETACHABLE LINK CHAIN AND ATTACHMENTS - Specifies dimensions and tolerances of cast malleable iron chain links, which permits interchangeability without restricting design flexibility. Also given are those standard link chains. (1962)
1.50 Mem. 3.00 List

- B29.8 LEAF CHAINS - Covers lacing, pin diameter, diameter of link plate holes, link plate contour and thickness, chain widths, and the minimum ultimate tensile strengths. Also, clevis and sheave design. (1958)
1.50 Mem. 3.00 List

- B29.9 SMALL PITCH SILENT CHAINS AND SPROCKET TOOTH FORM - Covers sprocket tooth form under 3/8 in., formulae for calculating sprocket diameters, standard sprocket diameters, general chain proportions and designations, sprocket face dimensions, and horsepower rating per in. of width (1958)
1.00 Mem. 2.00 List

- B29.10 HEAVY-DUTY OFFSET SIDEBAR POWER TRANSMISSION ROLLER CHAINS AND SPROCKET TEETH - Specifies dimensions and tolerances of links and sprockets on a type of chain designed to withstand infrequent-

ly applied overload. Covers general proportions, assembly dimensions to assure interchangeability, and recommendations on chain selection and lubrication. (1962)
1.00 Mem. 2.00 List

- B70.1 REFRIGERATION FLARE TYPE FITTINGS - Covers dimensional standards on connectors, adapters, reducers, nuts, elbows, tees, crosses, and caps and bonnets. (1962)
1.00 Mem. 2.00 List

- B29.1 TRANSMISSION ROLLER CHAINS AND SPROCKETS - Consolidation and revision of previous roller chain and sprocket standards containing a completely new section on horsepower ratings. (1963)
1.50 Mem. 3.00 List

- B29.2 INVERTED TOOTH (SILENT CHAINS AND SPROCKET TEETH - Standardization of silent chains based primarily on standardized sprocket tooth design... allows interchangeability of chains on sprockets of any number of teeth... data tabulated for ease of reference. (1957)
1.00 Mem. 2.00 List

- B29.3 DOUBLE-PITCH POWER TRANSMISSION ROLLER CHAINS AND SPROCKETS - Dimensions for roller chains similar to the ASA B29.1 base chain series except for pitch. The doubled pitch makes the B29.3 chains especially useful for drives having slow to moderate speeds, moderate loads, and long centers. (1954)
1.00 Mem. 2.00 List

- B29.4 DOUBLE-PITCH CONVEYOR ROLLER CHAINS, ATTACHMENTS AND SPROCKETS - Dimensions for chain and sprockets for slow-speed conveyor applications. Pitch is double that of corresponding ASA B29.1-1 transmission roller chains. (1954)
1.00 Mem. 2.00 List

- B29.5 ATTACHMENTS FOR TRANSMISSION ROLLER CHAINS - Covers diameter and location of holes in attachment link plates, height above pitch line of the top of the bent attachment link plates, and diameter and length of extension of the extended pins. (1954)
1.00 Mem. 2.00 List

- B29.6 STEEL DETACHABLE LINK CHAIN AND ATTACHMENTS - Establishes only those tolerances that will provide chain interchangeability, without restricting design flexibility. (Reaffirmed 1962)
1.00 Mem. 2.00 List

CRC REPORTS

Are booklets containing the results of research on the best possible combination of fuels, lubricants, and the equipment in which they are used. They are distributed through SAE as they become available from the Coordinating Research Council.

- CRC368 Analysis of the 1961 Road Rating Exchange Data: Octane Number Fuel Rating Tests
2.25 Mem. 4.50 List
- CRC370 Study of CRC Calculated Temperature - V/L Technique (1963)
2.25 Mem. 4.50 List
- CRC380 Aviation Fuel Safety
3.00 Mem. 4.50 List

- CRC384 Analysis of 1963 Road Rating Data Regular Grade Fuels and Cars
3.00 Mem. 4.50 List
- CRC386 1964 Vapor Lock Tests
3.50 Mem. 5.00 List

- CRC387 Analysis of 1964 Road Rating Data Premium Grade Fuels and Cars (1966)
4.00 Mem. 7.00 List
- CRC388 Investigation of High-Temperature Thermal Stability of Aviation Turbine Fuels (1966)
4.00 Mem. 7.00 List
- CRC390 Octane Number Requirement Survey - 1965
4.00 Mem. 7.00 List

CRC397 Development of Research Technique for the Determination of Performance Characteristics of Lubricating Grease in Antifriction Bearings at Elevated Temperatures (450 F) and Under Thrust Loads Up to 320 Pounds
2.00 Mem. 4.00 List

CRC398 Individual Hydrocarbon Reactivity Measurements: State-of-the-Art (1966)
2.00 Mem. 4.00 List

CRC399 Study of Techniques for Converting Nitric Oxide in Automotive Engine Exhaust for Determination as Nitrogen Dioxide (1966)
1.00 Mem. 2.00 List

CRC400 1966 CRC Motor Vehicle Evaporation Loss Technique Evaluation
6.00 Mem. 10.00 List

CRC401 Diesel Exhaust Composition and Odor: Progress Report for 1965
2.00 Mem. 4.00 List

CRC402 Analysis of 1965 Road Rating Data Regular Grade Fuels and Cars
3.50 Mem. 6.00 List

CRC403 Evaluation of Expressions for Fuel Volatility (1967)
3.50 Mem. 5.00 List

CRC405 Determination of Low-Temperature Cranking Characteristics of Engine Oils at -20 F, Using CRC L-49-663 Research Test Technique (1967)
2.50 Mem. 5.00 List

CRC406 Development of Military Fuel/Lubricant/Engine Compatibility Test (1967)
2.00 Mem. 3.00 List

CRC407 Octane Number Requirement Survey - 1966
5.00 Mem. 8.00 List

CRC408 1966 CRC Interlaboratory Comparison of Exhaust Gas Emission Measurements on Four Similar Cars
4.00 Mem. 7.00 List

CRC410 Oxygen Effect in Flame Ionization Response to Hydrocarbons in Automotive Engine Exhaust (1967)
1.50 Mem. 3.00 List

CRC411 1965 CRC Motor Vehicle Hot Start and Run Tests
2.00 Mem. 4.00 List

CONFERENCE PROCEEDINGS

These are soft-cover books containing all the technical papers presented at special meetings of the Society on very specific subjects. This is the only printed form for such material.

P24 1968 INTERNATIONAL AIR CARGO - Seeks to identify problems which may inhibit the growth of air cargo, proposes solutions to these problems, and determines how to put these solutions into practice. Specifically covered are urban cargo transport planning and facilities planning.
7.00 Mem. 9.00 List

P23 1968 SPACE TECHNOLOGY - Covers future launch vehicle requirements, (post-Apollo), in-space propulsion systems, Earth orbital systems, lunar and planetary exploration. A review of prior accomplishments, and examination of current goals, and an extrapolation of the National Space Program are provided by experts from industry and government.
8.00 Mem. 12.00 List

P22 ANALYSIS AND CONTROL OF TRAFFIC FLOW - The role of technology in developing future transportation systems is emphasized in this collection of technical papers. Among the topics covered are the planning of Ohio's Transportation Research Center, application of computer simulation to the study of traffic signal systems, accidents, wave theories of traffic flow, and automatic control of freeway ramp traffic.
5.00 Mem. 7.00 List

P21 AUTOMOTIVE SAFETY DYNAMIC MODEL SYMPOSIUM - The rapidly developing tool of mathematical model simulation coupled with the electronic computer is reviewed and assessed for the future. Computer simulation of driver behavior, impact trauma, prediction of car crash response, and dynamic model validation are covered along with an actual operational model.
4.00 Mem. 6.00 List

P20 ELEVENTH STAPP CAR CRASH - Reflects a unique exchange of scientific information between engineering and medical experts from the U.S., Germany, England, Japan, and Sweden. Some 23 technical papers presented at the 1967 Conference cover car occupant protection from injuries to the spine, head, chest, and knee. Computer simulated accidents, safety performance of laminated glass, energy-absorbing steering columns, rear seat environment, experimental impact protection, and statistical analysis of 28,000 accident cases are among the subjects covered.
10.00 Mem. and List

P19 1967 INTERSOCIETY ENERGY CONVERSION ENGINEERING - Covers Brayton cycle, Rankine cycle, thermionics, thermoelectrics, photovoltaics, electrochemical devices, hydrogen-oxygen fuel cell, magnetohydrodynamics and electrogasdynamics, chemical engines and turbines, nuclear energy sources, 0-10 KW manned space power, space nuclear power (10 kw - 50 kw), manned space power, underwater power, unconventional terrestrial power, and electric automobile power. Coordinated by ASME, SAE, AIAA, IEEE, AICE, and ANS.
14.00 Mem. 20.00 List

P18 1967 AEROSPACE RELIABILITY AND MAINTAINABILITY - "All Systems Go?" is the theme of some 75 technical papers on mechanical and structural reliability, testing, human factors, system requirements for long duration space missions, data systems, mathematics developments and applications, design, system/cost effec-

tiveness, specifications and standards, safety aspects of personnel training and certification, risk appraisal for program management, and ground support equipment. Co-sponsored by SAE/ASME/AIAA.
11.00 Mem. 29.00 List

P17 1967 AEROSPACE SYSTEMS - Fluid power systems, flight control systems, weapon delivery systems, high flotation landing gear systems, deep submergence vehicle systems, ground support systems, escape systems, and many other areas are covered in over 50 papers. Sponsored by SAE.
9.00 Mem. 16.00 List

P16 1967 SPACE TECHNOLOGY - Experts relate their knowledge and experience through technical papers on low-cost orbital transportation. Future development of economical launch vehicles, space vehicle system concepts, European reusable launch vehicle studies, operations and economics, partially recoverable systems, and pacing technology implications.
8.00 Mem. 12.00 List

P15 THIRD INTERNATIONAL SIMULATION AND TRAINING CONFERENCE - Devoted to human factors in establishing training requirements, training and simulation equipment design, and development and accomplishment of the training program. These areas are covered in eighteen separate papers ranging from the use of computers for handling human factors task data to conjunctive War Gaming. Sponsored by SAE with participation of the Human Factors Society, Institute of Electrical and Electronic Engineers, and Simulation Councils, Inc.
7.00 Mem. 10.00 List

*New

- P14 1967 ELECTRONIC PACKAGING -** Appraises microelectronics, advanced techniques and applications, and engineering support. Laser welding, modular packaging for fuel in line integrated circuits, recent developments in parallel-gap joining, precision bonding, packaging for electromagnetic compatibility, embedment and other metallurgical and mechanical characteristics of cross-wire resistance welds, and thermal stress analysis of epoxy encapsulants are among the subjects covered. Sponsored by SAE.
6.00 Mem. 10.00 List
- P12 TENTH STAPP CAR CRASH CONFERENCE -** Provides an exchange of scientific information on crash protection problems. Among the topics covered are energy, absorbing steering columns, impact dynamics, computer simulation of crash victim, safety seating, ejection, and biodynamics of collision injury. Conducted by SAE. Sponsored by Univ. of Calif. Extension (Los Angeles), Univ. of Minnesota and Wayne State Univ.
8.00 Mem. and List
- P11 1966 ANNALS OF RELIABILITY AND MAINTAINABILITY—**Emphasis is on achieving system effectiveness. Topics include current research trends in reliability and maintainability, reliability education, testing, safety, system evaluation, design, human factors, and materials properties. Sponsored by AIAA, SAE, and ASME.
8.00 Mem. 16.00 List
- P9 1966 CLEAR AIR TURBULENCE -** Advance detection of clear air turbulence and warning techniques are stressed. CAT incidents are reviewed along with avoidance procedures now in use. Discussed are definitions and degrees of turbulence, meteorological theories, the SST in CAT, electromagnetic methods for CAT detection, and operational solutions. Sponsored by SAE and Institute of Navigation with participation of American Meteorological Society, FAA, Flight Safety Foundation, U.S.A.F., U.S. Army Materiel Command, U.S. Navy, and U.S. Weather Bureau.
8.00 Mem. 12.00 List
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