

University of Missouri-Rolla  
Engineering Continuing Education  
111 Engineering Research  
Rolla, Missouri 65401

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**At-A-Glance Schedule**  
All meeting rooms are in the University of Missouri-Rolla, University Center.

**Sunday, May 18**

6:00-8:00 p.m. Registration, Thomas Jefferson Residence, Lobby

**Monday, May 19**

7:00 a.m. Breakfast, Thomas Jefferson Residence  
8:00 a.m. Registration, University Center, Miner Lounge  
9:15 a.m. Opening Session--Centennial Hall  
10:00 a.m. Coffee Break--Miner Lounge  
10:30 a.m. Session 1--Centennial Hall  
12:00 Luncheon--University Center Cafeteria  
1:30 p.m. Session 3--Centennial Hall  
3:00 p.m. Coffee Break--Miner Lounge  
3:30 p.m. Session 5--Centennial Hall  
6:00 p.m. Social Hour, Rolla Lion's Club Park  
7:00 p.m. Ozark Barbecue, Rolla Lion's Club Park

**Tuesday, May 20**

7:00 a.m. Breakfast, Thomas Jefferson Residence  
8:00 a.m. Registration, University Center, Miner Lounge  
8:30 a.m. Session 7--Centennial Hall  
10:00 a.m. Session 8--Mark Twain Room  
10:30 a.m. Coffee Break--Miner Lounge  
12:00 Luncheon--University Center Cafeteria  
1:30 p.m. Session 11--Centennial Hall  
3:00 p.m. Session 12--Mark Twain Room  
3:30 p.m. Coffee Break--Miner Lounge  
Evening Free

**Wednesday, May 21**

7:00 a.m. Breakfast, Thomas Jefferson Residence  
8:30 a.m. Session 15--Centennial Hall  
10:00 a.m. Session 16--Mark Twain Room  
10:30 a.m. Coffee Break--Miner Lounge  
12:00 Session 17--Centennial Hall  
Adjournment

**CONFERENCE SPONSORS**

University of Missouri-Rolla School of Engineering and School of Mines and Metallurgy in conjunction with:  
American Society of Mechanical Engineers  
Canadian Society of Mechanical Engineers  
Society of Manufacturing Engineers  
American Association of CIRP Industrial Sponsors  
American Institute of Industrial Engineers  
American Society for Metals  
American Institute of Mining, Metallurgical and Petroleum Engineers



## GENERAL AND REGISTRATION INFORMATION

### LOCATION

Program sessions will be held at the University Center of the University of Missouri-Rolla, Rolla, Missouri, U.S.A.

### REGISTRATION

To enable adequate planning, registrations should be received no later than Monday, May 5, 1980. Please complete and return the accompanying form along with payment to: Engineering Continuing Education, 111 Engineering Research Lab, University of Missouri-Rolla, Rolla, Missouri 65401, U.S.A.

Name badges, proceedings and meal tickets should be claimed at the Registration Desk, which will be open from 6 - 8 p.m., Sunday, May 18 in the lobby of the Thomas Jefferson Residence Hall, and from 8 a.m. - 2 p.m. on Monday and Tuesday, May 19, 20 in the Miner Lounge of the University Center.

### FEES

The registration fees for the conference are \$195 per person for the full conference and \$100 per person for either single day registration or full registration for professors emeritus, approved graduate students, and representatives of the technical press. The fee includes a hardbound copy of the NAMRC-VIII Proceedings, breakfast on May 19, 20, 21; luncheon on May 19, 20; and an Ozark style barbecue May 19. One day registrants should indicate the day of attendance on the attached registration form.

Fees for the conference are due in advance, and **must be paid in U.S. funds** by either postal money order or a bank check drawn on a U.S. bank, payable to the University of Missouri-Rolla.

### CANCELLATIONS/REFUNDS

To qualify for a refund of fees, notification of cancellation of registration must be received no later than Wednesday, May 14, 1980.

### MEALS

Included in the registration fee are cafeteria style breakfasts at the Thomas Jefferson Residence on May 19, 20, 21, luncheons at the University Center on May 19, 20 and an Ozark-style barbecue at the Rolla Lion's Club Park on May 19 (transportation to be provided). One-day registrants will receive those meals offered during the day of registration. Additional tickets for the Ozark barbecue will be available at a cost of \$15.00 each. All other meals will be on your own. A listing of restaurants will be provided at registration.

### LODGING

Conference lodging is available in the University's Thomas Jefferson Residence Hall. Located just three short blocks from campus, this seven story structure was privately built in 1968 as a plush residence for college students. Acquired by UMR in April of 1976, the building currently houses 529 students. In addition to the normal dormitory facilities, the building offers large lounge areas, a dining hall, conference rooms, game and weight lifting rooms, an attached outdoor pool and deck area, a large patio, air conditioning, elevators, intercom and ample parking. Lavatories are shared with male and female facilities on adjacent corridors. Daily rates for NAMRC VIII will be \$6.65 single occupancy and \$5.35 per person for double occupancy. Towels, washcloths and linens will be provided.

Should alternate accommodations be preferred, there are 14 motels within a two mile radius of campus. A listing of names, rates, and other information will be provided if you so designate on the registration form.

### SHUTTLE BUS SERVICE

A University shuttle bus will provide transportation between the Thomas Jefferson Residence and the University Center each morning and at the conclusion of the afternoon sessions each day. Transportation will also be provided for the Ozark barbecue on Monday evening.

### PARKING

Free parking is available in lots adjacent to the Thomas Jefferson Residence. In addition, limited visitor parking is available in a lot south of the University Center. No special permits are needed. Should problems arise or a summons be issued, please inform the attendant at the Registration Desk.

### REACHING ROLLA

Rolla, Missouri is a small university town located 105 miles southwest of St. Louis and 120 miles northwest of Springfield, Missouri. Lying in the northern foothills of the Ozark Mountains, Rolla is in a beautifully scenic area, yet is easily accessible through Interstate 44 which runs from St. Louis to the Southwest (old U.S. Route 66). U. S. Highway 63 passes through Rolla in a north-south direction, and Missouri Highway 72 terminates in Rolla from the southeast.

The easiest way to reach Rolla from distant points is through Lambert-St. Louis Airport. Bus service (Greyhound) from the Airport to Rolla is direct, but buses depart only at 7:05 a.m., 11:50 a.m., 8:20 p.m. and 11:20 p.m. To supplement this schedule, a University bus will depart from the lower level of the airport (by the baggage claim area) at 5:00 p.m. Sunday afternoon. Please note your interest in this bus on the registration form.

Those wishing to drive from the airport to Rolla will find the 110 miles to be all Interstate Highway. Upon leaving the airport, take I-70 west approximately 5 miles to the Junction of I-270. Take I-270 South, approximately 15 miles to the Junction of I-44 (exit labeled Tulsa). Exit onto I-44 west and proceed to Rolla. Take the first Rolla exit (U.S. Highway 63) and proceed south (into town) about 1/4 mile. The Thomas Jefferson Residence will be on your right.

### PROCEEDINGS

Participants paying full or one-day conference registration fees will receive one copy of the NAMRC-VIII Proceedings. Those who wish additional copies, at \$30.00 each, may order them in advance or at the conference. After May 21, 1980, copies will be available by mail order through: Society of Manufacturing Engineers, 1 SME Drive, P.O. Box 930, Dearborn, Michigan 48128, U.S.A. (at a somewhat higher rate to be set by SME). Proceedings ordered in advance on the accompanying registration form should be picked up at the Conference Registration Desk.

### LADIES' PROGRAM

A tour of Maramec Spring Park and St. James area has been scheduled for Monday, May 19. This tour will include the Maramec Iron Works (1826-1876) grounds, park museum, trout rearing facilities, and the James Memorial Library, which contains a thorough history of the Missouri Ozarks.

On Tuesday, May 20, there will be a special tour of Historic Hermann, Missouri. Herman, located 60 miles from Rolla, was founded in the 1830's by the German Settlement Society of Philadelphia. Many original homes and businesses have been preserved, including the Stone Hill Winery established in 1847. Some time will be allowed to browse through local establishments and antique shops. The tour will be led by A.C. Steinbach, UMR Associate Professor of German. You won't want to miss this delightful tour!

A fee of \$35 includes transportation both days, admission fees, and luncheons on May 19 and 20.

To facilitate planning and scheduling of transportation and meal arrangements, registration for the Ladies' Program activities must be made in advance. Please check the appropriate spot on the registration form and indicate the name(s) of those participating.

### TAX DEDUCTION OF EXPENSES

An income tax deduction is allowed for expenses of education (including registration fees, travel, meals, and lodging) undertaken to maintain and improve professional skills (see Treas. Reg. 1.162-5)

### FOR FURTHER INFORMATION

Regarding papers, proceedings, sessions, etc.

Dr. Ronald A. Kohser  
Department of Metallurgical Engr.  
University of Missouri-Rolla  
Rolla, Missouri 65401  
(314) 341-4734

Regarding registration, housing, etc.

Walter L. Ries  
Engineering Continuing Education  
111 Engineering Research  
University of Missouri-Rolla  
Rolla, Missouri 65401  
(314) 341-4132

### CONFERENCE ORGANIZATION

The North American Manufacturing Research Conferences were created by a group of researchers dedicated to furthering knowledge, its dissemination and application in the field of materials processing.

The papers presented at this Conference have been selected by the Scientific Committee of NAMRC from a large number of submitted abstracts. Conference arrangements are the responsibility of NAMRC-VIII Organizaing Committee and the University of Missouri-Rolla Engineering Continuing Education Division.

### CONFERENCE PROSPECTUS

The Eighth North American Manufacturing Research Conference (NAMRC-VIII) is designed to provide a forum for the presentation and informed critical discussion of results of basic and applied research in metalworking and related manufacturing. The format of the Conference will be similar to that of NAMRC-I (McMaster University, 1973); NAMRC-II (University of Wisconsin, 1974); NAMRC-III (Carnegie-Mellon University, 1975); NAMRC-IV (Battelle Columbus Laboratories and Ohio State University, 1976); NAMRC-V (University of Massachusetts, 1977); NAMRC-VI (University of Florida, 1978); and NAMRC-VII (University of Michigan, 1979).

The papers presented at this Conference will describe work in the fields of metal forming, metal cutting, machine tools, and manufacturing systems and controls. All papers presented at the Conference are contained in the hardbound Conference Proceedings (which will form part of the special issue of the SME Manufacturing Engineering Transactions) and represent work conducted in many renowned metalworking research centers throughout the world.



# EIGHTH NORTH AMERICAN MANUFACTURING RESEARCH CONFERENCE

MAY 18-21, 1980 • THE UNIVERSITY OF MISSOURI-ROLLA • ROLLA, MISSOURI

## SUNDAY, MAY 18

6:00-8:00 p.m. Registration, Thomas Jefferson Residence Hall, Main Lobby

## MONDAY, MAY 19

7:00 a.m. Breakfast, Thomas Jefferson Residence Hall Cafeteria

8:00 a.m. Registration, University Center, Miner Lounge

**OPENING SESSION, 9:15 a.m.,** University Center, Centennial Hall

### Chairman

William B. Rice, Chairman Scientific Committee, NAMRC-VIII; Mechanical Engineering Department, Queen's University, Kingston, Ontario

### Speakers

Wards of Welcome: Robert L. Davis, Dean, School of Engineering University of Missouri-Rolla and co-chairman of NAMRC-VIII Organizing Committee

**Introductory Remarks:** William B. Rice

**Announcements:** Ronald A. Kohser, Department of Metallurgical Engineering University of Missouri-Rolla and co-chairman of NAMRC-VIII Organizing Committee

**COFFEE BREAK, 10:00-10:30,** University Center, Miner Lounge

**SESSION 1, 10:30 a.m.,** University Center, Centennial Hall

### Co-Chairmen

M. Field, Metcut Research, Cincinnati, Ohio

S. Ramalingam, Georgia Institute of Technology, Atlanta, Georgia

### Authors

"Development of a Standard Machining Data Machine", P.H. Cohen and J.T. Black, The Ohio State University, Columbus, Ohio

"Computerized Process Planning for Metal Cutting", J.I. El Gomayel, Purdue University, West Lafayette, Indiana and R.H. Phillips, University of Illinois at Chicago Circle, Chicago, Illinois

"Guidelines for the Application of Probabilistic Models in Tool Replacement Policies", L.A. Kendall, Washington State University, Pullman, Washington and A.K. Sheikh, University of Petroleum and Minerals, Dhahran, Saudi Arabia

**SESSION 2, 10:30 a.m.,** University Center, Mark Twain Room

### Co-Chairmen

A.T. Male, Westinghouse Research and Development Center, Pittsburgh, Pennsylvania

S. Kalpakjian, Illinois Institute of Technology, Chicago, Illinois

### Authors

"A New Test Method for the Study of Ductile Fractures at Large Strains", E.G. Thomsen, University of California, Berkeley, California, A.H. Shabaik, University of California, Los Angeles, California, F.D. Negroni, Catholic University of Chile, Santiago, Chile

"Aspects of Yield in Dynamic Compression", A.J. Holzer, Carnegie-Mellon University, Pittsburgh, Pennsylvania

"The Role of the Punch in Sheet Metal Forming", M.C. Shaw, Arizona State University, Tempe, Arizona

**LUNCHEON, 12:00-1:30,** University Center Cafeteria

Progress Report on the Machine Tool Task Force, G.P. Sutton, Lawrence Livermore Laboratory, Livermore, California

**SESSION 3, 1:30 p.m.,** University Center, Centennial Hall

### Co-Chairmen

C.J. Oxford, Lear Siegler, Inc., Rochester, Minnesota

I. Ham, Pennsylvania State University, State College, Pennsylvania

### Authors

"Tool Wear Process"

## TUESDAY, MAY 20

7:00 a.m. Breakfast, Thomas Jefferson Residence Hall Cafeteria

8:00 a.m. Registration, University Center, Miner Lounge

**SESSION 7, 8:30 a.m.,** University Center, Centennial Hall

### Co-Chairmen

T. Wimber, Deere & Company, Moline, Illinois

L. Francis, University of Missouri-Rolla, Rolla, Missouri

### Authors

"Creep Feed-An Effective Method to Reduce Work Surface Temperatures in High-Efficiency Grinding Processes", P.G. Werner and R. Schlingensiepen, Massachusetts Institute of Technology, Cambridge, Massachusetts and M.A. Younis, Kuwait University, Kuwait

"Related Pattern of Dressing Particles and Grinding Wheel Life", S.J. Pande, H.B. Technological Institute, Kanpur, U.P. India and G.K. Lal, Indian Institute of Technology, Kanpur, U.P. India

"New Proposals for Profiling and Dressing Diamond and Boron Nitride Wheels", H.K. Tonshoff, Technische Universität Hannover, West Germany

**SESSION 8, 8:30 a.m.,** University Center, Mark Twain Room

### Co-Chairmen

F. Boulger, Battelle's Columbus Laboratories, Columbus, Ohio

P. Dawson, Cornell University, Ithaca, New York

### Authors

"On the Contribution of Waxes to the Simulation of Metal Forming Processes", J. Oudin, University of Valenciennes, Nord, France, and Y. Ravalard and S. Rommens, ICAM Lille, Nord, France

"Effects of Hydrostatic Pressure on the Behavior of Wax Used to Model Hydrostatic Extrusion of 'Brittle' Materials", W.J. Dick, Ontario Hydro, Ontario, Canada, and W.B. Rice, Queen's University, Kingston, Ontario, Canada

"Cold Rolling Force-Torque-Slip Model", Y.W. Hsu, Kaiser Aluminum and Chemical Corporation, Pleasanton, California

**COFFEE BREAK, 10:00-10:30 a.m.,** University Center, Miner Lounge

**SESSION 9, 10:30 a.m.,** University Center, Centennial Hall

### Co-Chairmen

J.R. Mansperger, Warner & Swasey Company, Solon, Ohio

J.T. Black, Ohio State University, Columbus, Ohio

### Authors

"Controlled Continuous (D.C.) EDM Process", S.K. Bhattacharyya and M.F. El-menshawy, University of Birmingham, England

"An Adaptive Control System for E.D.M. Process", S.K. Bhattacharyya, M.F. El-menshawy, R.L. Hall, and C. Wallis, University of Birmingham, England

"A System for the Computer-Aided Manufacture of EDM Electrodes for Dies and Moulds", Y.K. Chan and W.A. Knight, University of Birmingham, England

"A Classification System for Manufacture by EDM", Z. Katz, University of Natal, Durban, South Africa, and C. Poli, University of Massachusetts, Amherst, Massachusetts

**SESSION 10, 10:30 a.m.,** University Center, Mark Twain Room

### Co-Chairmen

M. Devenpeck, United States Steel Corporation, Monroeville, Pennsylvania

E.G. Thomsen, University of California, Berkeley, California

### Authors

"On the Rolling of Thin Anisotropic Sheets", R.F. Scrutton and J.G. Lenard, University of New Brunswick, Fredericton, New Brunswick, Canada

## WEDNESDAY, MAY 21

7:00 a.m. Breakfast, Thomas Jefferson Residence Hall Cafeteria

**SESSION 15, 8:30 a.m.,** University Center, Centennial Hall

### Co-Chairmen

C.S. Cook, Westinghouse Electric Corp., Pittsburgh, Pennsylvania

J. Bollinger, University of Wisconsin-Madison, Madison, Wisconsin

### Authors

"The Automated Measurement of Twist Drill Point Shapes", M.A. Fugelso, The Pennsylvania State University, University Park, Pennsylvania and S.M. Wu, The University of Wisconsin-Madison, Madison, Wisconsin

"A comparative Study of Classical Techniques and the Dynamic Data System (DDS) Approach for Machine Tool Structure Identification", K.F. Eman and S.M. Wu, University of Wisconsin-Madison, Madison, Wisconsin

"Selection of Assembly Systems", M. Ruddy and A. Murry, Smith College, Northampton, Massachusetts, K. Swift, Salford University Industrial Centre, Salford, England, and G. Boothroyd, University of Massachusetts, Amherst, Massachusetts

"DNC Plant at Csepel Machine Tool Factory - Design and Industrial Implementation", P.G. Ranky, and A. Tari, Csepel Machine Tool Factory, Budapest, Hungary

**SESSION 16, 8:30 a.m.,** University Center, Mark Twain Room

### Co-Chairmen

H.L. Gegel, Air Force Materials Laboratory, Dayton, Ohio

J.F. Thomas, Wright State University, Dayton, Ohio

### Authors

"Forming Limit Diagrams and Limiting Dome Height Diagrams for Rimmed Steel at 100 - 700 K", H. Conrad and K. Wongwiwat, University of Kentucky, Lexington, Kentucky

"The Effects of Surface Topography and Surface Chemistry on Metal Build-up on the Tools During the Forming of Aluminum Sheet", J.M. Story, and K.J. Weinmann, Michigan Technological University, Houghton, Michigan

"Adaptive Brakeforming", D.C. Gossard and B.T. Allison, Massachusetts Institute of Technology, Cambridge, Massachusetts

**COFFEE BREAK, 10:00-10:30 a.m.,** University Center, Miner Lounge

**SESSION 17, 10:30 a.m.,** University Center, Centennial Hall

### Co-Chairmen

R.A. Thompson, General Electric Company, Schenectady, New York

W.R. DeVries, University of Michigan, Ann Arbor, Michigan

### Authors

"Noise Reduction in Aluminum Extrusion Cutoff Sawing", J. Bollinger, K. Yap, G. Desanghere, and M. DeVries, University of Wisconsin-Madison, Madison, Wisconsin and V. Pavlovski, University of Skopje, Yugoslavia

"Mini-Computer Application on Adaptive Control System for Turning Process", C.H. Lee, Korea Advanced Institute of Science, Seoul, Korea

"Modeling the Wear and Economic Properties of a Brush Peening Process", C.S. Cook, Westinghouse R & D Center, Pittsburgh, Pennsylvania

**ADJOURNMENT 12:00 noon**



"Tool Wear Prediction of a High Speed Milling Process", A. Bagchi, Carnegie-Mellon University, Pittsburgh, Pa.  
"Wear-Resistant Coatings - The Group IVB and VB Carbides", B.M. Kramer, and N.H. Cook, Massachusetts Institute of Technology, Cambridge, Massachusetts  
"An Evaluation of Zirconia-Base Ceramics for Machining Applications", R. VanWyk and S. Ramalingam, Georgia Institute of Technology, Atlanta, Georgia

**SESSION 4, 1:30 p.m.**, University Center, Mark Twain Room

**Co-Chairmen**

R.P. McDermott, Michigan Screw Products, Center Line, Michigan  
K.L. Weinmann, Michigan Technological University, Houghton, Michigan

**Authors**

"Finite-Element Predictions of the Influence of Strain-rate and Temperature Variations on the Properties of Forged Products", P. Hartley, C.E.N. Sturgess, and G.W. Rowe, University of Birmingham, Birmingham, England  
"Determination and Presentation of Flow Stress Data for Use in Isothermal Forming Analyses", R.L. Hewitt, J-P.A. Immarigeon, and P.H. Floyd, National Aeronautical Establishment, National Research Council Canada, Ottawa, Ontario, Canada  
"Experiments in Dynamic Closed-Die Forging of Axisymmetric Shaft, Rib, and Shaft and Rib-type Components and a Tentative Analysis", N.R. Chitkara, University of Manchester Institute of Science and Technology, Manchester, England and E. Tezgoren, Tumuson Turkish Motor Corporation, Ankara, Turkey

**COFFEE BREAK, 3:00-3:30 p.m.**, University Center, Miner Lounge

**SESSION 5, 3:30 p.m.**, University Center, Centennial Hall

**Co-Chairmen**

R. Joseph, Republic Steel Corp., Independence, Ohio  
L.A. Kendall, Washington State University, Pullman, Washington

**Authors**

"Effects of Crystal Orientation on the Mechanism in Cutting Aluminum Single Crystal", M. Sato and Y. Kato, Shinshu University at Wakasato, Nagano, Japan  
"A Mechanistic Model for the Force System in End Milling with Application to Machining Airframe Structures", R.E. Devor, and W.A. Kline, University of Illinois at Urbana-Champaign, Urbana, Illinois and W.J. Zdeblick, Metcut Research Associates, Cincinnati, Ohio  
"Hole Generation: Aircraft Assembly", R.K. Podder, Northrop Corporation, Hawthorne, California

**SESSION 6, 3:30 p.m.**, University Center, Mark Twain Room

**Co-Chairmen**

R. Fanning, Aluminum Company of America, Alcoa Center, Pennsylvania  
R.L. Davis, University of Missouri-Rolla, Missouri

**Authors**

"Note on a Modification of the Stream Function Method and its Application on the Analysis of Metal Forming Processes", Y. Tomita, Y. Seguchi, A. Shindo, and K. Tanaka, Kobe University, Kobe, Japan  
"Computer Simulation and Some Experimental Studies of Dynamic Heading of Cylindrical Rods Between Flat and Shaped Dies", N.R. Chitkara, and C.M. Leech, University of Manchester Institute of Science and Technology, England and K.D. Al-Faddagh, Imperial College of Science, University of London, England  
"Computer Aided Simulation and Optimization of Tandem Cup Ironing Process", T.L. Subramanian, G.D. Lahoti, N. Akgerman, and T. Altan, Battelle's Columbus Laboratories, Columbus, Ohio

**OZARK BARBECUE, 6:00 p.m. - ?**

Rolla Lions' Club Park

"Development and Evaluation of an Interactive Graphics Program for Plate Rolling", L.X. My, G.D. Lahoti, T. Altan, Battelle's Columbus Laboratories, Columbus, Ohio, and J.T. Black, Ohio State University, Columbus, Ohio

**LUNCHEON, 12:00-1:30 p.m.**, University Center Cafeteria

Sponsored by the Society of Manufacturing Engineers

**SESSION 11, 1:30 p.m.**, University Center, Centennial Hall

**Co-Chairmen**

D.T. Koenig, General Electric Company, Schenectady, New York  
J. Tlusty, McMaster University, Hamilton, Ontario

**Authors**

"Evaluation of Surface Describing Parameters", J. Peters, P. Vanherck and M. Sastradinoto, Catholic University Leuven, Belgium  
"Wavelength Decomposition of Surface Roughness in Turning", S.M. Pandit, and S. Revach, Michigan Technological University, Houghton, Michigan  
"Semiautomated Inspection of Superfinished Spherical Surfaces", P.E. Klingsporn, The Bendix Corporation, Kansas City, Missouri

**SESSION 12, 1:30 p.m.**, University Center, Mark Twain Room

**Co-Chairmen**

S. Jain, Wyman-Gordon Company, N. Grafton, Massachusetts  
R.E. Fisher, Caterpillar Tractor Company, E. Peoria, Illinois

**Authors**

"New Possibilities for the Calculation of Prestressed Extrusion Dies", Th. Neitzert and K. Lange, Institut fur Umformtechnik, Universitat Stuttgart, W. Germany  
"Acoustic Emission and Metalworking-Survey of Potential and Examples of Applications", D. Dornfield, University of California, Berkeley, California  
"Evaluation Procedures and Processing Effects in Diffusion Bonding 304 Stainless Steel", C.S. Cook and A.T. Male, Westinghouse R & D Center, Pittsburgh, Pennsylvania

**COFFEE BREAK, 3:00-3:30 p.m.**, University Center, Miner Lounge

**SESSION 13, 3:30 p.m.**, University Center, Centennial Hall

**Co-Chairmen**

P.E. Klingsporn, Bendix Corporation, Kansas City, Missouri  
G. Boothroyd, University of Massachusetts, Amherst, Massachusetts

**Authors**

"Improving Tests of Damping in the Cutting Process", J. Tlusty and O. Heczko, McMaster University, Hamilton, Ontario, Canada  
"A General Theory for Regenerative Stability", R.A. Thompson, General Electric Company, Schenectady, New York  
"Dynamics of a Workpiece Clamped on a Lathe", F. Ismail and J. Tlusty, McMaster University, Hamilton, Ontario, Canada  
"Dynamic Behavior of Machine Tools Depending on Various Operating and Mounting Conditions", M. Weck, W. Melder, and A. Keraten, Lehrstuhl fur Werkzeugmaschinen der Technischen Hochschule, Aachen, West Germany

**SESSION 14, 3:30 p.m.**, University Center, Mark Twain Room

**Co-Chairmen**

A.E. Hoffmann, Battelle's Columbus Laboratories, Columbus, Ohio  
W.B. Rice, Queen's University, Kingston, Ontario

**Authors**

"Elevated Temperature Formability of Some Aluminum Aerospace Alloy Sheet Materials", J.F. Thomas, Wright State University, Dayton, Ohio, B.S. Shabel, Alcoa Laboratories, Alcoa Center, Pennsylvania, V. Nagpal, Battelle's Columbus Laboratories, Columbus, Ohio, and H.L. Gegel, Air Force Materials Laboratory, Wright-Patterson AFB, Ohio  
"An Investigation of Defects in Extruded Cups", S.K. Suh and B.I. Bachrach, Ford Motor Company, Detroit, Michigan  
"Axisymmetric Punch Stretching of Strain-Rate Sensitive Sheet Metals", Nuno Rebelo and Shiro Kobayashi, University of California, Berkeley, California

University of Missouri-Rolla  
EIGHTH NORTH AMERICAN MANUFACTURING  
RESEARCH CONFERENCE  
May 18-21, 1980

Name \_\_\_\_\_  
Business Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Affiliation \_\_\_\_\_  
I plan to stay at the Thomas Jefferson Residence (pay on arrival) \_\_\_\_\_  
\_\_\_\_\_ Double with \_\_\_\_\_  
\_\_\_\_\_ Single \_\_\_\_\_  
Please send information regarding alternate lodging \_\_\_\_\_  
Enclosed is \$ \_\_\_\_\_ for items designated.  
\_\_\_\_\_ check or money order in U.S. funds, payable to University of Missouri-Rolla \_\_\_\_\_  
\_\_\_\_\_ Master Charge \_\_\_\_\_ Visa \_\_\_\_\_  
\_\_\_\_\_ Card No. \_\_\_\_\_  
\_\_\_\_\_ Expiration Date \_\_\_\_\_

\_\_\_\_\_ Full registration @ U.S. \$195 per person (includes NAMRC-VIII Proceedings; breakfast May 19, 20, 21; lunch May 19, 20; and barbecue May 19)  
\_\_\_\_\_ One-day or special registration @ U.S. \$100 per person (includes NAMRC-VIII Proceedings, breakfast and luncheon day attending, and barbecue if attending May 19)  
Day attending: \_\_\_\_\_ May 19  
\_\_\_\_\_ May 20  
Ladies' Program @ U.S. \$35 per person  
Name \_\_\_\_\_  
\_\_\_\_\_ Additional copies of NAMRC-VIII Proceedings @ U.S. \$30 per copy  
\_\_\_\_\_ I desire University-provided transportation from St. Louis Airport to Rolla, (5:00 p.m., Sunday, May 18, @ \$7 per person)

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