CONFERENCE TIME TABLE
All meeting rooms are in the Campus Center, University of Massachusetts, Amherst.

SUNDAY, MAY 22
Registration and Reception—6:00-8:00 p.m.

MONDAY, MAY 23
Registration 8:00 a.m., Room 165-169
Opening Session 9:00 a.m., Room 101
Morning Break 10:00-10:30 a.m.
Sessions 1, 2 10:30 a.m., Rooms 165-169, 101
Luncheon 12:00-1:30 p.m.
Sessions 3, 4 1:30 p.m., Rooms 165-169, 101
Afternoon Break 3:00-3:30 p.m.
Sessions 5, 6 3:30 p.m., Rooms 165-169, 101
Reception 6:00-7:00 p.m.
Dinner 7:30-9:00 p.m.

TUESDAY, MAY 24
Registration 8:00 a.m., Room 165-169
Sessions 7, 8 9:30 a.m., Rooms 165-169, 101
Morning Break 10:00-10:30 a.m.
Sessions 9, 10 10:30 a.m., Rooms 165-169, 101
Luncheon 12:00-1:30 p.m.
Sessions 11, 12 1:30 p.m., Rooms 165-169, 101
Afternoon Break 3:00-3:30 p.m.
Sessions 13, 14 3:30 p.m., Rooms 165-169, 101
Evening Free

WEDNESDAY, MAY 25
Registration 8:00 a.m., Room 165-169
Sessions 13, 16 9:00 a.m., Rooms 165-169, 101
Morning Break 10:00-10:30 a.m.
Session 17 10:30 a.m., Room 101
Program concludes 12:00 Noon

PROCEEDINGS
Each full-paid registrant attending the Conference will receive a 300-page hard-cover bound copy of the PROCEEDINGS (8½” x 11 inches). Additional copies may be purchased at the time of registration for $20.00. After May 25, 1977, the PROCEEDINGS will be available from the Society of Manufacturing Engineers, 20601 Ford Road, Dearborn, Michigan 48128.
REGISTRATION TIME AND LOCATION
SUNDAY, MAY 23, 1977 - 6:00-8:00 p.m.
Campus Center Lobby
University of Massachusetts
Amherst, Massachusetts 01003
MONDAY, MAY 24, 1977 - 8:00 a.m.
Campus Center Room 168-169
TUESDAY/WEDNESDAY, MAY 24, 25, 1977 - 8:00 a.m.
Campus Center Room 105-169

PRE-REGISTRATION
Pre-registration by mail is required before May 6 to assure accommodations. A block of rooms is reserved at the Campus Center Hotel. Please give your complete mailing address on the pre-registration card. The registration fee is $150.00. A check for this amount, payable to "NAMRC-V CONFERENCE," should accompany the pre-registration card.

CONFERENCE LOCATION
All sessions will be held in the Campus Center, University of Massachusetts, Amherst. Parking is available in the Campus Center Parking Garage.

TRANSPORTATION
By Air
The nearest airport is Bradley International (Hartford-Springfield) served by all major airlines. A hourly bus service, from the Airport, brings the passengers to the University Campus Center (allow 1½ hours for the journey).

By Road
From the South: Exit from Interstate 91 at the Route 9 Hatley/Amherst exit. Follow signs to Amherst, then look for signs to the University of Massachusetts.

From the North: Exit from Interstate 91 at the sign to Amherst. Follow Route 116 to Amherst, then follow signs to the University of Massachusetts.

From the West: Take Interstate 90 (Massachusetts Turnpike) to Interstate 91 Northbound. Fallow directions for approaching the South.

From the East. Take the Massachusetts Turnpike to the Palmer Exit (Exit 8). Follow signs to Amherst via Belchertown (Route 181 and 9), then look for signs to the University of Massachusetts. Alternatively, take Route 2 West, then Route 202 South to Perham. Turn right to Amherst and look for signs to the University of Massachusetts.

PARKING FACILITIES
Parking is available at reasonable rates at the Campus Center Parking Garage. Park on Level 2 and walk through to the Campus Center.

FOR FURTHER INFORMATION, PLEASE CONTACT
Dr. G. Bostrom, Department of Mechanical Engineering, University of Massachusetts, Amherst, Massachusetts 01003.
Telephone (413) 545-2483

REGISTRATION FEES

<table>
<thead>
<tr>
<th></th>
<th>Ladies</th>
<th>Program</th>
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<tbody>
<tr>
<td>Full Conference</td>
<td>$100</td>
<td>$50</td>
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<tr>
<td>Monday or Tuesday only</td>
<td>$100</td>
<td>$25</td>
</tr>
<tr>
<td>Wednesday only</td>
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<td>$80</td>
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The fees include participation at the sessions, breakfast on Monday, Tuesday, and Wednesday, luncheon breaks, lunches on Monday and Tuesday. Conference dinner on Monday, and one copy of the NAMRC-V PROCEEDINGS. Additional copies of the NAMRC-V PROCEEDINGS will be available at the Conference for $20.00 per copy. The fees do not include accommodations, which on Wednesday or dinner on Tuesday.

Your pre-registration must be received no later than May 6 and should be confirmed prior to attending the program. This is necessary because the accommodation space in the Campus Center Hotel is strictly limited. Space may be reserved by individuals who are required to obtain employer authorization. Companies may place reservations and send names of attendees at a later date.

TAX DEDUCTION OF EXPENSES: An income tax deduction is allowed for expenses of education (including registration fees, travel, meals, lodging) undertaken to maintain and improve professional skills (see Tress. Reg. 1 160-5).

LADIES PROGRAM
An interesting ladies program is being planned for those not participating in the technical sessions. The program will include a full day visit to Sturbridge Village, a completely restored New England Village where inhabitants work and live as they did many years ago, a visit to the famous Clarke School for the Deaf to see classes being taught, and, hopefully, a visit to the Emily Dickinson House. Since bus and other facilities must be booked in advance of the meeting, we will greatly appreciate early registration so that we may properly plan these events. If you will be accompanied by someone interested in this program, please check the appropriate box on the registration form.

CONFERENCE SPONSORS

Department of Mechanical Engineering, University of Massachusetts, Amherst, Massachusetts in conjunction with

- American Society of Mechanical Engineers
- Canadian Society of Mechanical Engineers
- National Science Foundation, RANN Program
- Society of Manufacturing Engineers
- Association of American CIRP Industrial Sponsors

CONFERENCE PROSPECTUS

The Fifth North American Metalworking Research Conference (NAMRC-V) has, as its purpose and scope, the presentation and discussion of the results of basic and applied metalworking research. The format of the Conference is similar to NAMRC-I held at McMaster University in 1973, NAMRC-II held at the University of Wisconsin in 1974, NAMRC-III held at Carnegie-Mellon University in 1975, and NAMRC-IV held at Battelle Columbus Laboratories and Ohio State University in 1976.

The papers presented at this Conference will describe work in the fields of metal forming, metal removal, and machine tools and manufacturing systems.

All papers, presented at the Conference, are contained in the Conference PROCEEDINGS which will form part of a special issue of the SME Manufacturing Engineering Transactions and represent the work conducted in many well-known metalworking research centers in North America, Europe, and Japan.

CONFERENCE ORGANIZATION

The North American Metalworking Conferences have been created by a group in North America dedicated to furthering knowledge, its dissemination and application in the field of materials processing.

The papers presented at this Conference were selected by the Scientific Committee of NAMRC from a large number of submissions. All Conference arrangements were made by the NAMRC-V Organizing Committee.

SCIENTIFIC COMMITTEE

J. Bolinger
University of Wisconsin
L. Clevenger
University of Michigan
N. Cockerell
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D. France
Washington University
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University of Massachusetts
W. D. Wilton
University of Massachusetts
FIFTH NORTH AMERICAN METALWORKING RESEARCH CONFERENCE

KINDAY, MAY 22, 1977
8:00-5:00 p.m. Registration, Campus Center Lobby
MONDAY, MAY 23, 1977
8:00 a.m. Registration, Campus Center Room 106

OPENING SESSION 8:00 a.m., Campus Center Room 106
CHAIRMAN
William B. Rise, Chairman, Structural Dynamics, SAFETYCO and Head, Machine Tool Engineering Department, Queen's University, Kingston, Ontario, Canada

SPEAKERS
Burlin B. Bellinger, Russell Jenk, Head of the School of Engineering, University of Massachusetts, Amherst, Massachusetts
William E. Rice, University of Wisconsin-Madison, Wisconsin

COFFEE BREAK 8:30-9:00 a.m.

SESSION 1 10:00 a.m., Campus Center Room 105-106
CHAIRMAN
W.B. Rice, Queen's University, Kingston, Ontario

SPEAKERS
Minister for Industry and Energy, Government of California, California

AUTHORS
"A Real Solution for Drilling with a High-Speed Drill," B.W. Rice, University of California, Berkeley, California

"Some Aspects of Role of Sawing in Metal Cutting," W.B. Rice, University of California, Berkeley, California

"The Influence of Interlaminar Shear Strength on the Delamination of an Anisotropic Two Component System," R. Legleis, University of California, Berkeley, California

"Interlaminar Shear Stresses in a Polymer Composite," L. Gao, University of California, Berkeley, California


SESSION 2 1:00 p.m., Campus Center Room 101
CHAIRMAN
B. Bischoff, Ford Motor Company, Detroit, Michigan

SPEAKERS
G. R. Bigelow, General Motors Corporation, Detroit, Michigan

AUTHORS
"The Development of a Scanning Electron Microscope," C.J. Elmore, University of California, Berkeley, California

"The Role of Interlaminar Shear Strength on the Delamination of an Anisotropic Two Component System," R. Legleis, University of California, Berkeley, California

"Interlaminar Shear Stresses in a Polymer Composite," L. Gao, University of California, Berkeley, California


CONFERENCE DINNER

TUESDAY, MAY 24, 1977
SESSION 3 7:00 p.m., Campus Center Room 103
CHAIRMAN
D.W. Newk, General Motors Corporation, Detroit, Michigan

SPEAKERS
G. W. Newk, General Motors Corporation, Detroit, Michigan

AUTHORS
"A Real Solution for Drilling with a High-Speed Drill," B.W. Rice, University of California, Berkeley, California

"Some Aspects of Role of Sawing in Metal Cutting," W.B. Rice, University of California, Berkeley, California

"The Influence of Interlaminar Shear Strength on the Delamination of an Anisotropic Two Component System," R. Legleis, University of California, Berkeley, California

"Interlaminar Shear Stresses in a Polymer Composite," L. Gao, University of California, Berkeley, California


SESSION 4 8:00 a.m., Campus Center Room 101
CHAIRMAN
D.W. Newk, General Motors Corporation, Detroit, Michigan

SPEAKERS
G. R. Bigelow, General Motors Corporation, Detroit, Michigan

AUTHORS
"A Real Solution for Drilling with a High-Speed Drill," B.W. Rice, University of California, Berkeley, California

"Some Aspects of Role of Sawing in Metal Cutting," W.B. Rice, University of California, Berkeley, California

"The Influence of Interlaminar Shear Strength on the Delamination of an Anisotropic Two Component System," R. Legleis, University of California, Berkeley, California

"Interlaminar Shear Stresses in a Polymer Composite," L. Gao, University of California, Berkeley, California
