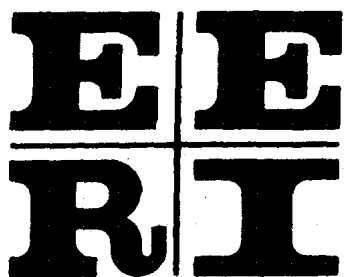




**Proceedings of the  
2nd U.S. National Conference  
on Earthquake Engineering**



**Earthquake Engineering  
Research Institute**

**August 22-24, 1979  
Stanford University  
Stanford, California**

Sponsored by the  
Earthquake Engineering Research Institute

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2nd U.S. NATIONAL CONFERENCE ON EARTHQUAKE ENGINEERING

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James M. Gere, Stanford University

Session 2      GENERAL REPORTS (Wednesday, 10:45 am to 12:00 noon)

Henry J. Degenkolb, H. J. Degenkolb and Associates,  
San Francisco, California

Session 3A      RISK ANALYSIS (Wednesday, 1:30 pm to 3:00 pm)

Anne S. Kiremidjian, Stanford University

Session 3B      INDUSTRIAL FACILITIES (Wednesday, 1:30 pm to 3:00 pm)

C. Martin Duke, University of California, Los Angeles, California

Session 4A      SEISMOLOGY AND GEOLOGY (Wednesday, 3:30 pm to 5:00 pm)

Lloyd S. Cluff, Woodward-Clyde Consultants, San Francisco, California

Session 4B      STRUCTURAL ENGINEERING -- EXPERIMENTAL STUDIES  
(Wednesday, 3:30 pm to 5:00 pm)

R. B. Matthiesen, U.S. Geological Survey, Menlo Park, California

Special Session      EARTHQUAKE ENGINEERING IN RUSSIA  
(Wednesday, 5:00 pm to 6:00 pm)

Charles C. Thiel, Office of Science and Technology Policy,  
Executive Office of the President, Washington, D.C.

Session 5A      THE MIYAGI-KEN-OKI EARTHQUAKE OF JUNE 12, 1978  
(Thursday, 9:00 am to 10:15 am)

Peter I. Yanev, URS/John A. Blume and Associates,  
San Francisco, California

Session 5B      STRUCTURAL ENGINEERING (Thursday, 9:00 am to 10:15 am)

Thomas D. Wosser, H. J. Degenkolb and Associates,  
San Francisco, California

Session 6A      PUBLIC POLICY AND ECONOMIC STUDIES  
(Thursday, 10:45 am to 12:00 noon)

Karl V. Steinbrugge, Insurance Services Office,  
San Francisco, California

Session 6B      STRUCTURAL ENGINEERING -- DYNAMICS  
(Thursday, 10:45 am to 12:00 noon)

Erik H. Van Marcke, Massachusetts Institute of Technology,  
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Session 7A      GEOTECHNICAL ENGINEERING -- ANALYTICAL PROCEDURES  
(Thursday, 1:30 pm to 3:00 pm)

T. Leslie Youd, U.S. Geological Survey, Menlo Park, California

Session 7B      LIFELINE ENGINEERING (Thursday, 1:30 pm to 3:00 pm)

Otto W. Steinhardt, Pacific Gas and Electric Company,  
San Francisco, California

Session 8A      RISK ANALYSIS (Thursday, 3:30 pm to 5:00 pm)

Joseph Penzien, University of California, Berkeley, California

Session 8B      EARTHQUAKE ENGINEERING REPORTS FROM SEVERAL COUNTRIES  
(Thursday, 3:30 pm to 5:00 pm)

John B. Scalzi, National Science Foundation, Washington, D.C.

Special Session      EARTHQUAKE ENGINEERING IN CHINA  
(Thursday, 5:00 pm to 6:00 pm)

S. C. Liu, National Science Foundation, Washington, D.C.

Session 9        GENERAL REPORTS (Friday, 9:00 am to 10:15 am)

Robert D. Hanson, University of Michigan, Ann Arbor, Michigan

Session 10      GENERAL REPORTS (Friday, 10:45 am to 12:00 noon)

Roland L. Sharpe, Engineering Decision Analysis Company,  
Palo Alto, California

Session 11A      STRUCTURAL DESIGN (Friday, 1:30 pm to 3:00 pm)

John W. Reed, Jack R. Benjamin and Assoc., Palo Alto, California

Session 11B      GEOTECHNICAL ENGINEERING -- STABILITY CONSIDERATIONS  
(Friday, 1:30 pm to 3:00 pm)

H. Bolton Seed, University of California, Berkeley, California

Session 12A      STRUCTURAL DESIGN (Friday, 3:30 pm to 5:00 pm)

Richard V. Bettinger, Pacific Gas and Electric Company,  
San Francisco, California

Session 12B      SEISMOLOGY AND GEOLOGY (Friday, 3:30 pm to 5:00 pm)

S. T. Algermissen, U.S. Geological Survey, Denver, Colorado

## SPEAKERS AT THE OPENING SESSION

Welcome to Stanford University

Greetings from EERI

John A. Blume, President, Earthquake Engineering Research Institute

Earthquake Engineering Research and Engineering Practice

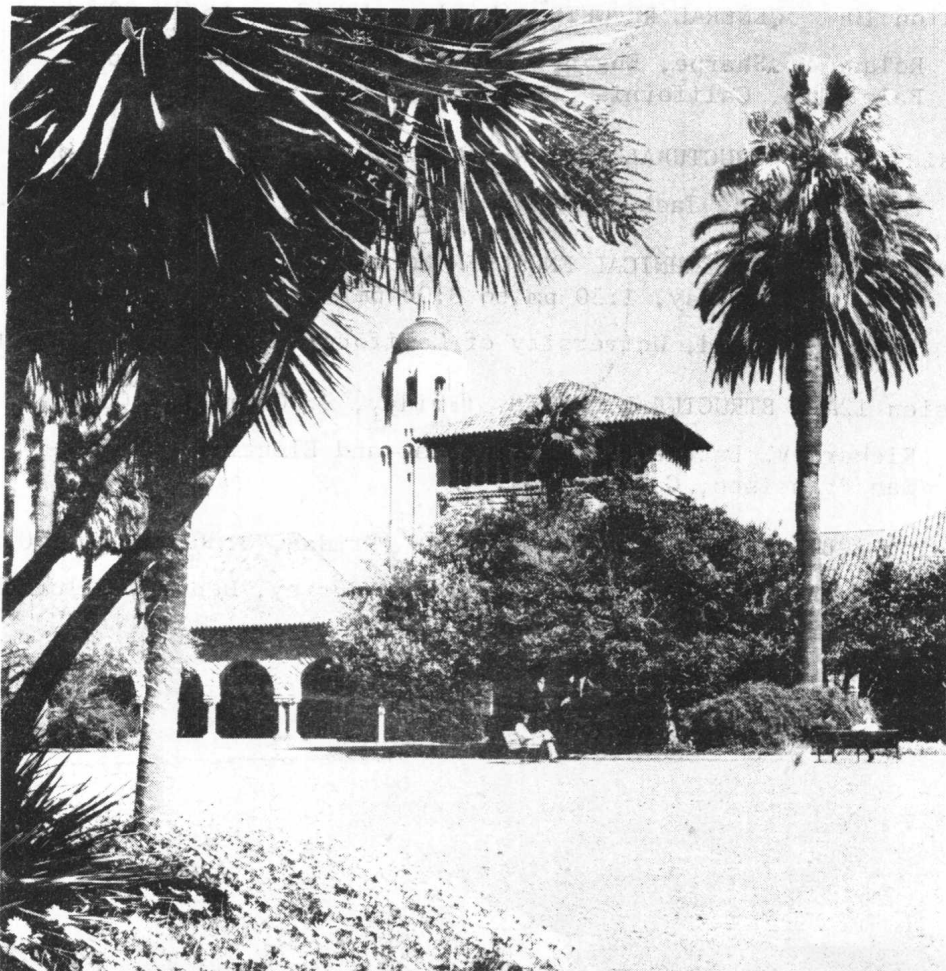
Jai Krishna, President, International Association for Earthquake Engineering, and Professor Emeritus, University of Roorkee, India

Earthquake Hazards Reduction -- A National Perspective on a Local Problem

Charles C. Thiel, Office of Science and Technology Policy, Executive Office of the President, Washington, D.C.

Right Thinking in Earthquake Engineering

George W. Housner, California Institute of Technology, Pasadena, California



## INTRODUCTION

Earthquake engineering has become an increasingly important branch of engineering and so it is not surprising that this 2nd U.S. National Conference has attracted much attention. In response to the Call for Papers, over 350 abstracts of papers were submitted to the Program Committee for review. From these abstracts the final program for the Conference was selected. Most of the papers were presented orally at the Conference, but some could not be fitted conveniently into the daily schedule. These papers nevertheless appear in the Proceedings because of their importance to the engineering profession.

These Proceedings were published prior to the Conference in the hope that copies would be available to registrants during the time of the Conference itself. Thus, it is possible that a few differences may exist between the program as it appears in these Proceedings and as it actually occurred.

We would like to thank the many people who assisted in the plans and preparations for the Conference. Our thanks go to the Steering Committee members for their advice in the early stages of planning, to the Program Committee for many hours spent in reviewing both abstracts and final manuscripts, to the Session Chairpersons for agreeing to serve in this important role at the Conference, to our colleagues at Stanford who assisted with many of the arrangements, and to our students who also helped in numerous ways. Special thanks are due Dr. John A. Blume, President of EERI, who did a great deal of organizing for the Conference and kept us from making too many mistakes. We would also like to acknowledge the invaluable work done by Susan Newman, Administrative Director for EERI, and Laura Selby and Nancy Goodman, our secretaries at Stanford. Finally, we would like to recognize the most important people of all, the 224 authors and coauthors whose papers appear in these Proceedings.

Haresh C. Shah  
James M. Gere  
Department of Civil Engineering  
Stanford University

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