# Journal of the

## ENGINEERING MECHANICS DIVISION

## Proceedings of the American Society of Civil Engineers

#### ENGINEERING MECHANICS DIVISION EXECUTIVE COMMITTEE

John W. Clark, Chairman; Ray W. Clough, Vice-Chairman; Robert M. Haythornthwaite; Edward Wenk, Jr.; Donald L. Dean, Secretary; Ralph B. Peck, Board Contact Member

#### COMMITTEE ON PUBLICATIONS Donald L. Dean, Chairman; Melvin L. Baron; Jack G. Bouwkamp; Charles E. Cutts; Anthony M. DiGioia; John E. Goldberg; Lawrence H. N. Lee; Joseph Penzien; Edward Silberman.

#### CONTENTS

April, 1964

#### Papers

Elastica Supported at Midpoint by a Spring by George E. Sliter and Arthur P. Boresi	1
Von Mises Transformation for Boundary Layer Theory by Chieh-Shyang Song	17
Development of Boundary Layers in Buckled Plates by Ernest F. Masur and C. H. Chang	33
Numerical Method for Structural Shock Response by G. J. O'Hara and Patrick F. Cunniff	51
Analysis of Laterally Loaded Gridworks by Thein Wah	83
Lamella Beams and Grids by Donald L. Dean	107

Copyright 1964 by the American Society of Civil Engineers.

Note. --Part 2 of this Journal is the 1964-18 Newsletter of the Engineering Mechanics Division.

The three preceding issues of this Journal are dated October, 1963, December, 1963, and February, 1964.

### Page

Periodic Response of a General Yielding Structure by Paul C. Jennings	131
Stresses at Tunnel Intersections by William F. Riley	167
Axisymmetric Deflections of Shallow Conical Shells by G. A. Wempner	181
Model for Wave Motions in Axisymmetric continua by Alfredo HS. Ang and Johann H. Rainer	195

### DISCUSSION

\_

-

Distribution of Structural Response to Earthquakes, by Emilio Rosenblueth and Jorge Bustamante. (June, 1962. Prior discussion: December, 1962, April, 1963. Discussion closed.) by Emilio Rosenblueth and Jorge Bustamante (closure)	227
Analysis of Triangular Bracket-Type Plates, by Charles G. Salmon. (December, 1962. Prior Discussion: June, October, 1963. Discussion closed.) by Charles G. Salmon (closure)	229
<ul> <li>Stability of Equilateral Triangular Plates,</li> <li>by William A. Bradley. (February, 1963.</li> <li>Prior discussion: June, August, 1963.</li> <li>Discussion closed.)</li> <li>by William A. Bradley (closure)</li> </ul>	231
Model Prediction of Fracture due to Explosions, by Charles W. Martin and Glenn Murphy. (April, 1963. Prior discussion: October, 1963. Discus- sion closed.) by Charles W. Martin and Glenn Murphy (closure)	233
Matrix Division, by George Kostro. (June, 1963. Prior discussion: October, December, 1963. Discussion closed.) by George Kostro (closure)	235
Seepage from Trapezoidal Channels, by Ahmed El Nimr. (August, 1963. Prior discussion: None. Discussion closed.) by Herman Bouwer	241
Network Analogy for Linear Structures, by W. R. Spillers. (August, 1963. Prior discussion: December, 1963, February, 1964. Discussion closed.) by David H. Cheng	243

	Page
<ul> <li>Natural Periods of Vibration of Buildings,</li> <li>by George W. Housner and A. G. Brady.</li> <li>(August, 1963. Prior discussion: December,</li> <li>1963. Discussion closed.)</li> <li>by Raul Husid</li></ul>	245 252
Bending and Buckling of Thin-Walled Open-Channel Rings, by James A. Cheney. (October, 1963. Prior discussion: None. Discussion closed.) by Daniel Frederick	252
Finite Beam-Columns on Elastic Foundations, by K. T. Sundara Raja Iyengar and S. Anantharama. (December, 1963. Prior discussion: None. Discussion closes May 1, 1964.) by Donald L. Dean	257
Elastic Buckling of Rigidly Jointed Braced Frames, by S. J. Britvec and A. H. Chilver. (December, 1963. Prior discussion: None. Discussion closes May 1, 1964.)	201
by Niels C. Lind	261