Preface J. E. Marsden	vii
Dynamical Problems for Geometrically Exact Theories of Nonlinearly Viscoelastic Rods S.S. Antman	1
The Limits of Hamiltonian Structures in Three-Dimensional Elasticity, Shells, and Rods Z. Ge, H.P. Kruse, and J.E. Marsden	19
The Membrane Shell Model in Nonlinear Elasticity: A Variational Asymptotic Derivation H. Le Dret and A. Raoult	59
Gravity Waves on the Surface of the Sphere <i>R. de la Llave and P. Panayotaros</i>	85
A Nonlinear Extensible 4-Node Shell Element Based on Continuum Theory and Assumed Strain Interpolations P. Betsch and E. Stein	107
Multilayer Beams: A Geometrically Exact Formulation L. Vu-Quoc, H. Deng, and I.K. Ebcioğlu	139
Obstructions to Quantization <i>M. J. Gotay</i>	171

An Impetus-Striction Simulation of the Dynamics of an Elastica D.J. Dichmann and J.H. Maddocks	217
A Symplectic Integrator for Riemannian Manifolds B. Leimkuhler and G.W. Patrick	239
Time Integration and Discrete Hamiltonian Systems O. Gonzalez	257
Problems and Progress in Microswimming J. Koiller, K. Ehlers, and R. Montgomery	277
Symmetry Methods in Collisionless Many-Body Problems I. Stewart	313
Mathematical Analysis of Sideband Instabilities with Application to Rayleigh-Bénard Convection A. Mielke	335
KAM Theory Near Multiplicity One Resonant Surfaces in Perturbations of A-Priori Stable Hamiltonian Systems <i>M. Rudnev and S. Wiggins</i>	379
Constrained Euler Buckling G. Domokos, P. Holmes, and B. Royce	413
Continuity Properties and Global Attractors of Generalized Semiflows and the Navier-Stokes Equations <i>J.M. Ball</i>	447
Stacked Lagrange Tops D. Lewis	475
On the Bifurcation and Stability of Rigidly Rotating Inviscid Liquid Bridges HP. Kruse and J. Scheurle	515