

Contents

Part 1

FOREWORD	ix
ELLIPTIC MOTION J. M. A. Danby	1
MATRIX METHODS J. M. A. Danby	32
THE LAGRANGE-HAMILTON-JACOBI MECHANICS Boris Garfinkel	40
STABILITY AND SMALL OSCILLATIONS ABOUT EQUILIBRIUM AND PERIODIC MOTIONS P. J. Message	77
LECTURES ON REGULARIZATION Paul B. Richards	100
THE SPHEROIDAL METHOD IN SATELLITE ASTRONOMY John P. Vinti	119
PRECESSION AND NUTATION Alan Fletcher	130
ON AN IRREVERSIBLE DYNAMICAL SYSTEM WITH TWO DEGREES OF FREEDOM: THE RESTRICTED PROBLEM OF THREE BODIES Victor Szebehely	150
PROBLEMS OF STELLAR DYNAMICS George Contopoulos	169
QUALITATIVE METHODS IN THE n -BODY PROBLEM Harry Pollard	259
INDEX	293

Part 2

MOTION IN THE VICINITY OF THE TRIANGULAR LIBRATION CENTERS André Deprit	1
MOTION OF A PARTICLE IN THE VICINITY OF A TRIANGULAR LIBRATION POINT IN THE EARTH-MOON SYSTEM J. Pieter deVries	31
THE DOMINANT FEATURES OF THE LONG-PERIOD LIBRATIONS OF THE TROJAN MINOR PLANETS P. J. Message	70
OUTLINE OF A THEORY OF NONPERIODIC MOTIONS IN THE NEIGHBORHOOD OF THE LONG-PERIOD LIBRATIONS ABOUT THE EQUILATERAL POINTS OF THE RESTRICTED PROBLEM OF THREE BODIES Eugene Rabe	79
ELEMENTS OF A THEORY OF LIBRATIONAL MOTIONS IN THE ELLIPTICAL RESTRICTED PROBLEM Eugene Rabe	102
THE EQUILIBRIUM SHAPE OF THE EARTH IN THE LIGHT OF RECENT DISCOVERIES IN SPACE SCIENCE John A. O'Keefe	119
THE STABILITY OF A ROTATING LIQUID MASS John A. O'Keefe	155
GEODETTIC PROBLEMS AND SATELLITE ORBITS W. H. Guier	170
ELEMENTS OF CALCULUS OF VARIATIONS AND OPTIMUM CONTROL THEORY Magnus R. Hestenes	212
INDEX	255

Part 3

BASIC FLUID DYNAMICS S. F. Shen	1
SHOCK WAVES IN RAREFIED GASES S. F. Shen	54
MODELS OF GAS FLOWS WITH CHEMICAL AND RADIATIVE EFFECTS F. K. Moore	94
DECAY OF ORBITS P. J. Message	153
THE EFFECT OF RADIATION PRESSURE ON THE MOTION OF AN ARTIFICIAL SATELLITE Gen-ichiro Hori	167
SPECIAL COMPUTATION PROCEDURES FOR DIFFERENTIAL EQUATIONS S. V. Parter	179
THE TWO VARIABLE EXPANSION PROCEDURE FOR THE APPROXIMATE SOLUTION OF CERTAIN NONLINEAR DIFFERENTIAL EQUATIONS J. Kevorkian	206
RENDEZVOUS PROBLEMS J. C. Houbolt	276
INDEX	301
AUTHOR INDEX FOR THE THREE VOLUMES	305