

concerns the consequences for the equilibrium problem of nonconvexity of the potential energy functional. The chapter is based on recent joint work of R. Temam and the author.

A list of some 49 references is included. This little monograph conveys nicely some of the features of finite elasticity which make it an active flourishing field today. I found it enjoyable reading.

The Dynamics of Arches. By Josef Henrych. Elsevier, Amsterdam and New York. 1981. Pages 00-463. Price \$85.00.

REVIEWED BY G. J. SIMITSES⁵

This book primarily deals with the subject of linear small oscillations (free and forced) of mainly planar arches and frames. The geometry of the configurations is very general and the analysis includes the effects of nonuniformity in the cross section, rotatory inertia, tangential inertia, transverse shear, and extensionality (compressibility) of the neutral axis. Solution procedures are presented with great detail and sophistication for specialized geometries, such as the circular arch and straight bars. In all of these solutions, the various effects previously mentioned for both free and forced

⁵Professor of Engineering Science and Mechanics, George Institute of Technology, Atlanta Georgia, 30332.

vibrations can be fully assessed from the derived formulas. In the case of forced vibrations, both the method of resolution according to normal modes of vibration and the method of decomposition into forced motion and free vibration are presented. The question of accuracy of the two methods is continuously addressed, and a comparison between the two methods is given. Moreover, these two methods are applied in the analysis of frames with straight and curved bars, which are excited either by (dynamic) forces or kinematically. In addition, the vibration analysis of some space frames is presented. The space frame may also be excited kinematically. Finally, some numerical (computer-obtained) results are presented for a few special configurations (simple geometries). These results were contributed by Dr. J. Pavlik and Mr. F. Cermak.

This book is recommended to the practicing engineer who is concerned with vibration analysis of arches, beams, and frames. The derived formulas and equations can be programmed, and extensive parametric studies can be performed to assess the effect of various parameters on the vibration response characteristics of the analyzed systems. It is also recommended as a reference text to the student of structural dynamics. Unfortunately because of the course structure in American technical universities and because of the highly specialized topics covered in the book, it cannot possibly be adopted as a text for a course in structural dynamics (small oscillations, theory of vibrations, etc.) regardless of the field of study (aerospace, civil, mechanical, or mechanics).