Mechanics. Vol. 1 of Course of Theoretical Physics. By L. D. Landau and E. M. Lifshitz. Transl. from Russian by J. B. Sykes and J. S. Bell. 165 pp. Pergamon Press Ltd., Oxford, 1960. Distributed in the US by Addison-Wesley Publishing Co., Inc., Reading, Mass. $6.50. *Reviewed by R. C. Alverson, Stanford Research Institute.*

THE authors have developed classical Newtonian mechanics based upon Hamilton's principle of least action and Galileo's relativity principle. From this viewpoint the development of the subject is elegant, concise, and clear.

In an inertial reference frame, both space and time are homogeneous, and space is isotropic. The three basic conservation laws for a closed system are developed by considering those integrals of the motion which follow from the properties of an inertial reference frame. Conservation of energy follows from homogeneity of time, conservation of momentum from homogeneity of space, and conservation of angular momentum from isotropy of space. These integrals are additive with respect to particles of a system and every closed system has only three such integrals, the scalar energy and the vectors of momentum and angular momentum. Using this approach the authors have developed the basic elements of classical mechanics in two brief chapters.

The remainder of the book devotes four chapters to the application of the basic conservation laws in the solution of specific problems in mechanics and a final chapter to a treatment of the canonical equations. Among the problems considered are motion in a central force field, elastic and inelastic collisions between particles, scattering theory, small oscillation, and rigid-body motion. Motion in a noninertial reference frame is considered in the chapter on rigid-body motion. The final chapter on canonical equations develops Hamilton's equation, the Routhian, and canonical transformations, and includes a discussion of adiabatic invariants.

The book is extremely well written. Just enough detail is included with each argument to make it precise and clear. Vector notation is employed whenever applicable, and many sections are illustrated. In general this volume is a worthy companion to the others in this series.

Partial Differential Equations and Continuum Mechanics. Conf. Proc. (U. of Wisc., June 1960). 397 pp. The Univ. of Wisconsin Press, Madison, Wisc., 1961. $5.00. *Reviewed by J. Gillis, Weizmann Institute of Science.*

AS mathematical periodicals grow thicker and more numerous from year to year, the difficulty of knowing what is really going on in any part of the science grows correspondingly. The old joy of browsing through recent mathematics periodicals wilts nowadays on contemplation of how much there is. And, in addition, the academics with leisure ot indulge such pleasures consitute an ever decreasing proportion of the total of research workers.

In these circumstances, we must be grateful for a book like the one under review, and to the organizers of the conference which it reports. It begins with full length reports of the invited lectures, followed by abstracts of the contributed papers. Both parts are on a very high level and reflect the central role which continuum mechanics still fills in applied mathematics.

The first lecture, by Müller, deals with general aspects of the connection between differential-equation theory and mathematical physics. This connection is more practically shown in the list of subsequent lectures which are divided fairly evenly between general theory of differential equations and specific problems of applied mathematics. There are papers on the distribution of eigenvalues as well as on how actually to calculate them. Several papers deal with elastic wave propagation, while notable among those on hydrodynamics are two on the thorny problems of transsonic flow. Existence theory is also well represented. Indeed, one has to bear in mind that the advent of automatic computing machinery has really promoted existence problems to the level of the urgently practical. We now handle equations which we cannot solve and which our teachers would have probably abandoned. We "put them on the machine", i.e., compute a finite number of points. Do these points belong to a general solution; do they in fact signify anything at all? We cannot hope to answer these eminently practical questions without basic existence theorems.

Considerations of space forbid enumeration of all the contents of the conference, and selection among so many is even more difficult. But if this reviewer had to single out the lectures which caused him particular delight the list would certainly include Stoneley's lecture on elastic waves in anisotropic media and Tricomi's beautiful discussion of the application of the Tricomi equation to transsonic problems.

Advances in Applied Mechanics, Vol. 6. Edited by H. L. Dryden, Th. von Kármán, G. Kuerti, F. H. van den Dungen, L. Howarth, J. Pérès. 294 pp. Academic Press Inc., New York, 1960. $9.00. *Reviewed by R. E. Street, University of Washington.*

WHEREAS previous volumes of this series have contained review articles in various fields of applied mechanics, this latest one is unusual in that each of the five articles is devoted to a topic in the field of fluid mechanics. Each survey serves to bring the reader up to date in the topic covered and is therefore accompanied by a complete bibliography. The latter is essential since some of the surveys are much too short to be considered as introductions to their subject. They all assume considerable familiarity on the part of the reader with the essentials of the topic covered.

A very brief treatment by R. Wille of Kármán vortex streets summarizes the recent theoretical and experimental advances of the last few years in this