The book is well illustrated and indexed. The references are generally up to date although the writers did not attempt to emphasize the very latest findings in their fields; instead, they have presented a well-balanced and comprehensive survey of five important branches of acoustics.

Statistical Strength Theory. By S. D. Volkov. Vol. 11 of Russian Monographs and Texts on Advanced Mathematics and Physics. Transl. from Russian by Royer and Roger. 267 pp. Gordon & Breach, New York, 1962. $11.50. *Reviewed by George H. Weiss, University of Maryland.*

A SUCCESSFUL theory of the weakening and failure of metals would have too many applications to bear detailed listing. The present monograph presents a theory of material strength which may indeed be applicable to many situations; however, the theory is ad hoc, and one cannot be completely convinced that Volkov's approach is a valid one on the evidence of this book alone. No attempt is made in it to indicate the possible limitations of the theory although their existence is certain.

The problem to which the author addresses himself is the elucidation of the properties of metals with microscopic inhomogeneities. The assumption made is that the inhomogeneities can be described statistically. If one then writes down the stress-strain equations, relations between moments may be obtained in a straightforward manner. The author then goes on to study media which have normally distributed stresses and elastic deformations. With this approximation, various averages can be taken and different physical properties calculated. It is at this point that the reader would require a more detailed idea of the limitations of Volkov's methods. But such information is not to be found. Some of the topics which are treated in detail are limiting surfaces of plasticity, fracture, and fatigue under cyclic load. There are many sample calculations, and there are references to detailed comparison with experimental data. Although I could not check this literature, I would presume that the theory is successful in many specific situations. A convincing exposition of a new theory does require a careful discussion of its boundaries. It is tempting to compare the statistical theory of elasticity with the statistical theory of turbulence. But the evidence for the validity of the former theory is not as well delineated as that for the latter, so that a final verdict will have to wait upon further work.

Basic Concepts of Physics. By Arthur Beiser. 341 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1961. $7.75. *Reviewed by Horace M. Trent, US Naval Research Laboratory.*

WE have here not a philosophical discussion of the foundations of physics but rather a simple and readable textbook for a one-semester college survey course intended for students not majoring in a natural