In the light of the contents, fine typography, and illustrations, the price of this scholarly book is moderate, enabling taxonomists to own copies. Botanists in need of taxonomic information will find it an invaluable guide and source.

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Phase Transformations in Solids. Symposium held at Cornell University, August 23–26, 1948. Sponsored by the Committee on Solids, Division of Physical Sciences, the National Research Council. R. Smoluchowski, J. E. Mayer, and W. A. Weyl, Eds. New York: Wiley; London: Chapman & Hall, 1951. 660 pp. $9.50.

This handsome, well-printed volume resulted from a symposium at Cornell University on the subject indicated in the title. The symposium was organized by the National Research Council for the purpose of bringing together physicists, mineralogists, and metallurgists, to discuss a topic of common interest. The topic is one that appears easy on casual approach, but becomes harder as the bewildering variety of facts is passed in review. It is not surprising, in view of this, that the three groups of scientists have developed a slightly different slant on the same problem. Among these points of view, the crystallographer's appears the most mature. The physicist proposes and tears down his theories somewhat too quickly to be taken seriously, and the material accumulated by the metallurgist is lacking in scientific precision. Indeed, one mineralogist remarked somewhat sarcastically during the conference that the only crystal planes the metallurgists seem to have heard of are the 100, the 110, and the 111 planes.

The first few articles deal with the more profound aspects of equilibrium theory, and a middle section deals with phase diagrams, but the greater part of the book deals with rate-determining mechanisms such as diffusion or nucleation. In the experimental work concerned with these questions it is hard to come to clear formulations; hence, the material accumulated tends to become bulky.

In spite of the number of contributing experts, it seems to this reviewer that the book does not quite correspond to the effort that went into it. In the first place, the book appeared late: almost three years elapsed between the symposium and its appearance. It is true that several papers were partially or completely rewritten to take care of recent developments. But this can only partly remedy an unhappy situation. A conference report is most useful in the period immediately following the conference, when the scientists working in the field are trying to orient their thinking. With a delay of three years, research workers in the field must have turned to other sources of inspiration.

When the book is considered as a reference work rather than as a conference report the delay is obviously much less important. However, it suffers then from other defects. A record in book form of even a successful conference does not make a first-rate handbook. Some speakers have justifiably taken a personal approach, others have written a survey article of recent work, giving all viewpoints. A person consulting such a volume in a library would probably be best served by a handbook-type article—that is, a survey limited to the work judged good by the author, but with a tolerant viewpoint and without discrimination between the old and the new. Such books would need centralized editorship, with an index at the end and clear division between the sections. The need for them becomes more urgent every year. The great German physics handbooks are now 20 to 30 years old and need replacement badly. If the National Research Council could sponsor such books it would earn the gratitude of every scientist.

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Finite Deformation of an Elastic Solid. Francis D. Murnaghan. New York: Wiley; London: Chapman & Hall, 1951. 140 pp. $4.00.

This book is apparently intended to serve as a text, rather than as a treatise for research workers. The author regards the treatment as elementary. Matrix methods are used throughout, and the pages are dense with calculations.

After some classical results on the general theory of elasticity the author expands the strain energy in a power series, which he truncates after the cubic terms; the remainder of the book (with one exception presently to be noted) is devoted to this second approximation theory. The special forms assumed by the cubic terms for the various types of crystals are determined. There follow treatments of simple shear both for isotropic and for a certain aeolotropic material, simple tension, compression of a spherical shell and cylindrical tube, and torsion of a circular cylinder. The exception to the method of power series expansion is the treatment of hydrostatic pressure, where the author obtains what he calls an integrated linear theory by assuming that the ordinary linear elastic coefficients are linear functions of pressure.

Although the author's various approximate formulas may be useful in certain applications concerning moderate strains, it is unfortunate that his book makes no mention of the more fundamental recent researches in finite elasticity theory by Rivlin and others, where the form of the strain energy is left arbitrary and results, directly and successfully comparable with experiments on very large strain of rubber, are calculated in full generality.

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