textbooks of the same level. Examples are Chapter IX on measurements with interferometers and Chapter IV on wave trains of finite length. Appropriate figures and five plates accompany and elucidate the text.

The next four chapters treat the classical electromagnetic theory, including the theory of absorption, dispersion, and anisotropic media. A chapter on "Interaction of radiation and matter" makes the student familiar with quantum effects and leads naturally to the last chapter on "Quantum theory of radiation." The space allotted to the treatment of these two chapters is definitely too limited, and therefore the presentation contrasts unfavorably with that of the earlier chapters. However, it must be admitted that this shortcoming is partly due to the topic itself. The student must have made considerable progress in mathematics during the advance of this course in order to be able to grasp the content of this last part. But even when the student is not able to absorb all the details presented, he will definitely profit from reading the sections of more general content, which give a clear picture of the trend of the modern theory.

It can hardly be avoided that such a comprehensive treatment as this is not free from occasional defects. One misses the names of Franck and Hertz in section 17.11 on critical potentials. One of the weakest parts is section 17.5, which deals with the regularities in line spectra of atoms. This brief section needs considerable extension and clarification. Ritz's combination principle is of such fundamental importance that its mention in one obscure sentence is not sufficient. Furthermore, it may be mentioned that Fig. 19.2 does not represent the rosette orbit of a simple harmonic oscillator in a magnetic field (as claimed in the text) but that of a precessing Kepler-ellipse. It should be replaced by another one. However, these minor defects cannot affect the otherwise excellent impression of the book, which in general is characterized by clarity, detailed treatment, and a high degree of completeness.

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Nature and Structure of Collagen. Papers presented for a discussion convened by the Colloid and Biophysics Committee of the Faraday Society at King's College, London, 26–27 Mar. 1953. J. T. Randall, Ed. Academic Press, New York; Butterworths, London, 1953. 269 pp. Illus. $6.50.

The problem of the structure of collagen is as yet unsolved. At the suggestion of J. T. Randall, an informal discussion of the properties of collagen in relation to its structure was held recently. Many of the principal workers in the field contributed papers, dealing with the histology and nature of connective tissue, the metabolism of collagen, the properties of collagen solution, the chromatography of amino acids in collagen, the precursors of skin collagen, the x-ray diffraction pattern of collagen fibers, the structure of collagenous tissue and collagen preparations as shown by electron micrographs, and a number of other subjects. The book containing these papers and the discussion that was given them by participants in the meeting can be recommended to everyone interested in collagen and connective tissue.

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The Physical Chemistry of the Silicates. Wilhelm Eitel. Univ. of Chicago Press, Chicago, 1954. xvii + 1592 pp. Illus. $30.

The author, director of the Institute of Silicate Research, University of Toledo, presents a most complete encyclopedia of the silicates. This book is an extended, up-to-date English version of the well-known German standard work on silicates, which Eitel wrote while he still was director of the Kaiser Wilhelm Institut für Silikatforschung in Berlin. The work is far more comprehensive than the title indicates. On account of the excellent general review of reactions in the solid state and the detailed description of the mechanism and kinetics of sintering, it not only is of interest to ceramists and silicate chemists but is also fascinating for metallurgists and solid state physicists.

The book consists of five parts. Part I, which is the most comprehensive, with more than 500 pages, describes the crystalline state in general, the special structures in silicates, such as isolated, chain, layer, and framework structures. It further contains a complete analysis of the fused and glassy states, the constitution and physicochemical properties of melts and glasses. The colloids also are described in this part, and attention is especially called to the systematic discussion of the clay-water system as colloidal phenomena in silicate systems and to the intimate relationship of changes in fired clays with reactions in the solid state.

Part II is concerned with the fusion and polymorphic equilibria in dry silicate systems. A description of the various methods for the determination of fusion points introduces this part, which contains interesting details on the correlation between undercooling and crystallization and on polymorphic inversions. A brief discussion on the effects of pressure on inversion equilibria, with references to the work by Bridgman, Tammann, and Sosman, is of great actuality with respect to some recently described effects of pressure in metallurgical diffusion work. More than 200 pages, containing 150 phase diagrams, are devoted to special silicate systems such as alkali-, aluminum-, heavy metal-, and the presently much-discussed borosilicate systems.

Part III covers the silicate systems with volatile components and silicate hydrates. The gas absorption phenomena in fused silicates are described in detail. Many readers will be especially interested in the discussion of hydrothermal mineral synthesis. This remarkable synthesis of clay minerals, and others, by hydrothermal reactions of different minerals of the