covered in detail, with a wealth of practical advice on procedure, accuracy, and so forth. A logical development leads gradually into topics of interest to the advanced relaxationist. Chapters on three-dimensional relaxation and nonelliptic boundary-value problems are significant contributions, since they have previously been available only in the periodical literature. Incidentally, the two chapters devoted to eigenvalue problems provide one of the best treatments of the topic known to me. Systematic organization and careful marking of subdivisions contribute to the clarity of the entire work.

The inclusion of problem exercises at the end of each chapter is an advantage. However, the provision of answers to the earlier problems that are not readily checked by substitution in the governing equations would probably have been helpful to the beginning student, who is not yet entirely confident of his powers.

It may be inferred that I am enthusiastic about this book. Such an inference would be entirely correct. I strongly recommend it to general reader, beginner, and advanced student alike.

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Applied Electronics. Truman S. Gray. Technology Press, Cambridge; Wiley, New York, and Chapman & Hall, London, ed. 2, 1954. xxviii + 881 pp. Illus. $9.

This is a large book, intended to provide a detailed first course in electronics. It leads the student through a great many details of electron ballistics, electron physics, vacuum tube characteristics, and basic circuits, and concludes with a chapter on modulation. A final chapter is added, almost as an appendix, to cover these same subjects insofar as they are related to the transistor. Thus the book ends at just about the point where it begins to cover the subject matter that might have been expected from its title.

A glance at the chapter headings would seem to indicate that the book is limited in scope. Actually, this is not true. The titles of the numerous "articles" into which each chapter is divided show that considerable material is included. Furthermore, on reading the text, one finds even more breadth, for many subsubjects are discussed briefly. The over-all final impression is that the book is really somewhere between a textbook and a handbook. The author seems to have had difficulty in reconciling our enormous knowledge of electronics fundamentals with his desire to discuss all their aspects.

The philosophy of the book is best described by a sentence in the preface:

> Attempt is made to point out all links in the chain of reasoning in order to avoid those gaps that are so easily spanned intuitively by experienced engineers, but are so disturbing to the careful but inexperienced student.

Some of my associates and I do not agree with this philosophy. Although it is some time since I was a student taking a first course in electronics, I remember that my interest was stimulated by just those gaps that I could not span intuitively.

The foregoing criticism does not mean that Gray has not written a very valuable book. It is certainly one that every professional man working in electronics or a related field should have on hand and should find extremely useful as a reference book. It should be particularly useful for clearing up those finer points of theory that arise in practical discussions, points that are often omitted from less complete textbooks.

The price is quite reasonable, considering its size and the number of diagrams included. On the other hand, it is a fairly substantial sum for a student to pay for a textbook. The printing, diagrams, and binding are up to Wiley's usual high standards.

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The Proteins. vol. II, pt. A. Hans Neurath and Kenneth Bailey, Eds. Academic Press, New York, 1954. ix + 661 pp. Illus. $14.

Unlike volumes IA and IB of *The Proteins,* which were concerned with the integration of general properties and methods, volume IIA deals with specific proteins grouped by natural occurrence, function, or chemical similarity. The aim remains "to present a comprehensive, integrated account of the chemical, physical, and biological properties of the proteins." This book contains nine chapters by 14 authors, most of whom are familiar because of their important contributions to research. Careful editing is shown by the restriction in subjects, the absence of duplication, and by cross reference to the preceding volume; but individuality in focus and treatment is not suppressed.

The first three chapters are at once among the best, of greatest general interest, and the lengthiest; they comprise half the book ("Nucleoproteins and viruses," by R. Markham and J. D. Smith, "Oxidizing enzymes," by T. P. Singer and E. B. Kearney, and "Respiratory proteins," by Felix Haurowitz and R. L. Hardin). These subjects afford latitude for development of the theme of the relationship among structure, function, and biological activity, which ineluctably is denied to authors on some group proteins. Recent advances in the study of nucleic acid structure are excellently described, and viruses are discussed critically from the physicochemical point of view. Oxidizing, but not iron-containing enzymes, are covered in a veritable monograph, with emphasis on the isolated enzymes rather than on metabolic pathways. The interrelationship between the physicochemical and physiological properties of respiratory proteins is thoroughly discussed with a notable appreciation of comparative biochemistry.

The fascinating subject of toxic proteins is considered by W. E. van Heyningen, whose greatest handi-

cap is the scarcity of material in this field. Milk and egg proteins are ably summarized in well-documented chapters by T. L. McMeekin and R. C. Warner, respectively. The success of physical and chemical methods in the study of the soluble proteins is to be contrasted with the failure when applied to the poorly soluble, heterogeneous, and dissociable seed proteins, as described by S. Brohult and E. Sandegren. The chapter on proteins and protein metabolism in plants is a somewhat unavailing but commendable attempt to apply modern knowledge of nitrogen metabolism to the less understood features of the metabolism of non-seed proteins.

The volume concludes with a lucid and timely evaluation of the changing viewpoint on protein hormones by C. H. Li. The subject and author index will appear in the second part of the volume, but the text contains almost 3000 complete references, some as recent as late 1953.

The prime virtue of this invaluable series, which will appeal to the expert and the beginner in proteins alike, is that it presents a unified, critical, authoritative, and up-to-date treatment of the whole subject in historical perspective with all desirable detail.

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Principles of Biochemistry. A biological approach. M. V. Tracey. Pitman, New York–London, 1954. ix + 194 pp. Illus. $4.

This book introduces the reader to cellular biochemistry with a discussion of the large polymers that occur in all cells. It discusses thoroughly the biological approach to cellular reactions such as energy storage, presents the fundamental concepts of many biochemical reactions in cells of both plants and animals, and describes many known analogous cellular reactions in bacteriology. The reader is introduced to such subjects as growth, differentiation, and reproduction, but the material does not emphasize the biochemical aspects.

A thorough discussion of food supply to the organism is given in a chapter on "Specialization in relation to environment." A unique discussion of the different biochemical pigments is presented in Chapter 7. The biological aspects of transport and waste products of cellular reactions are discussed in two chapters. The last three chapters are concerned with energy metabolism. The biological approach is divided into phototrophes, chemotrophes, nectrotrophes, and biotrophes.

The subject matter in this small book is so broad that certain topics are only briefly mentioned. The book lacks references for the reader who is interested in learning more about particular items. It is to be recommended for students in advanced biochemistry. The author is to be complimented for his diligent choice of topics.

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Miscellaneous Publications

Hearings on S. 3323 and H.R. 8862, to Amend the Atomic Energy Act of 1946, pt. 1, held 10–19 May 1954, 560 pp.; pt. 2, held 2–18 June 1954, 597 pp. Joint Committee on Atomic Energy, Washington 25, 1954.

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Fossil Pit-Vipers (Reptilia: Crotalidae) of North America. Transactions, vol. 12, No. 3. Bayard H. Brattstrom. San Diego Soc. of Natural History, San Diego, Calif., 1954. 15 pp. Illus.

Taxonomy, Phases, and Distribution of **Chortoicetes *and* Austroicetes.** K. H. L. Key. Div. of Entomology, Commonwealth Scientific and Industrial Research Organization, Canberra, Australia, 1954. 237 pp. Illus.

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Ottica Industriale. Domenico Argentieri. Ulrico Hoepli, Milan, Italy, ed. 2, 1954. 466 pp. Illus. L. 3000.

Preservation of Wood by Simple Methods. Bull. 581. Henry W. Hicock and A. Richard Olson. Connecticut Agr. Expt. Sta., New Haven, 1954. 66 pp.

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Bibliography of Interlingual Scientific and Technical Dictionaries (In English, French, and Spanish). UNESCO, Paris (Order from Columbia Univ. Press, New York 27). 178 pp. $1.75.

Renascence or Decline of Central Europe. The Sudeten German-Czech problem. Wilhelm K. Turnwald. Wolf & Sohn, Univ. Press, Munich, 1954. 89 pp. Illus.