quired a too-narrow idea of how to teach this subject. One of the most important concepts for the understanding and practical application of quantum mechanics is angular momentum. The treatment of this concept could have been more extended. There is, for example, no reference in the book to the fact that the angular momentum operators are the operators of infinitesimal rotations. The addition of angular momenta as applied to many-particle problems is mentioned, but has not received a very thorough discussion. This textbook, as well as most of the others, refer the reader to the book by Condon and Shortley, whose treatment, however, is much too exhaustive—the reviewer has found that it frightens away most of the students who want to study it. It is hoped that some textbook will provide an elegant and simple treatment of this field. The spin of the electron does not get the attention it deserves. The fact that the electron wave function has two components is derived in too formal a manner. A discussion of the transformation properties of these components, if the coordinate system is rotated, is necessary for the understanding of the spin.

Schiff's book has many values for teachers and students, not the least of which is its collection of first-rate problems. Too few textbooks on quantum mechanics can be used for a graduate course. There are many ways of teaching the subject and there is a great need for textbooks with different approaches. Although the present book in many respects follows the conventional lines, it does bring in new ideas and approaches and will contribute to a better understanding and better teaching of quantum mechanics.

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Physical aspects of colour: an introduction to the scientific study of colour stimuli and colour sensations. P. J. Bouma. New York: Elsevier (U. S. distributors for Philips Technical Library, Eindhoven, The Netherlands), 1948. Pp. 312. (Illustrated.) $5.50.

It is a pleasure to review this remarkable summary of the principles and techniques of modern measurement of color. Dr. Bouma spent the last two years of his life to produce what he knew would be his last work, and he has achieved a brilliant climax to a distinguished career in illuminating engineering.

Starting from a novel yet perfectly sound approach, Dr. Bouma presents the concepts and laws on which the measurement of brightness is based—the Maxwell color triangle and the standard ICI colorimetric coordinate system and its relation to dominant wavelength and purity, to color temperature, to boundary, ideal, optimal, and full colors, and its use in the reduction of spectrophotometric data. He then passes to visual colorimetry, defective color vision, discrimination of color differences, the Munsell color system, and hue and saturation of object colors in connection with chromatic adaptation of the eye.

Dr. Bouma does not skip over the hard parts, but goes in simple language to the knot of each problem, often with a mathematical proof. The book is further remarkable for its completeness. All important colorimetric techniques are not merely described; they are appraised with consummate skill and judgment.

In spite of the direct style and excellent translation into English, the book is not easy reading. It has to be studied, not merely read. The facts and concepts of modern colorimetry cannot be adequately grasped by the layman, however intelligent he may be, in a few hours. Here is a clear account of these facts and concepts by a world master whose comprehension of the recent extensive American literature will probably not be matched by an American author for some years to come. Dr. Bouma's book meets a unique and long-felt need, and should be available to every serious student of color.

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Practical spectroscopy. George R. Harrison, Richard C. Lord, and John R. Loofbourow. New York: Prentice-Hall, 1948. Pp. xiv + 605. (Illustrated.) $6.65.

The authors of this extremely useful and interesting reference book have operated in recent years the spectroscopic laboratory of the Massachusetts Institute of Technology and have felt (quoting from the preface) "the need of a text and reference book that would help the worker in any branch of science to evaluate the aid which the techniques of spectroscopy might lend to the solution of his problems. In our attempt to fill this need, we, as a physicist, a chemist, and a biophysicist, respectively, have tried to synthesize our three viewpoints in a way that would be useful to all who use, or might use, the techniques of experimental spectroscopy."

They have produced a book that will be valuable and interesting to all of us who have made constant use of the spectrograph, and will fulfill the requirements of the beginner as well. For example, in the chapter on the photography of the spectrum (page 154) I find a suggested routine to follow in transferring a plate from the box to the plateholder in a perfectly dark room, in order to be spared the embarrassment of finding, on turning up the lights, an open box of plates awaiting disposal.

The beginner will find in the first chapter a very brief history of the development of the spectroscope, its construction and operation, and its use in physics, chemistry, biology, medicine, metallurgy, food research, and criminology. Chapters 2 to 5 are devoted to the selection of spectroscopic instruments and the use of prisms and diffraction gratings, together with the fullest details on their adjustment and methods of illumination.

Chapter 7 covers the photography of the spectrum, dealing with practically everything connected with the selection and development of plates and with common defects in spectrum photographs and how to avoid them. Chapter 8 offers a very full description of the various types of light sources for spectroscopy, low temperature thermal emission, metallic arcs, high and low pressure mercury arcs, spark discharges, and vacuum tubes.