Michael J. Ruiz, "An Attractive Optics Text for The General Student," *Seeing the Light: Optics in Nature, Photography, Color, Vision, and Holography* (Falk, Brill, and Stork, Harper & Row, NY, 1986*), The Physics Teacher* **26**, 252 (1988). Book review of the popular text used in the author's originally designed general-education *PHYS 101 Light and Visual Phenomena* at UNC Asheville.

progress in physics would have been affected had certain theories, seemingly legitimate, been accepted. The authors make such superb use of the margins for telling associated stories, that at times I found myself looking forward to turning a page, hoping to find something on a margin; and once finding it, reading its contents before continuing with the main story.

The Particle Hunters will probably not be used as a dedicated text for a physics course (even though I am tempted to try it). It is, however, an invaluable reference for any of the "so called" modern physics courses. Clearly written, concise and accurate, the authors help show that physics is a dynamic subject. The text has great value as a historical supplement as well as for giving a "behind the scenes" look at the developments that are characteristic of today's scientific discoveries.

In short, I liked the book, and think that you will also.□

James H. Stith, *Department of Physics, U.S. Military Academy, West Point, NY 10996*

An Attractive Optics Text for The General Student

***Seeing the Light*: Optics in Nature, Photography, Color Vision and Holography.** David S. Falk, Dieter R. Brill, and David G. Stork, Harper and Row, NY 1986. 446 pp. $44.95.

This optics text is conceptual and written for the general student. It has been successfully employed twice as the text for a three-hour, liberal-arts optics course at the University of North Carolina at Asheville. Comparing this experience with the use of other texts in previous years, *Seeing the Light* was found to be the best text on the market for a liberal-arts optics course that stresses the interdisciplinary applications of light. It is ideally suited due to superior illustrations, a rich panorama of interdisciplinary applications, many interesting literary and historical comments, and most important, its readability.

The electromagnetic spectrum and geometrical optics with ray tracing are taken up in the opening chapters. The reader is taken through a variety of applications such as eclipses, the pinhole camera, corner reflectors, kaleidoscopes, half-silvered mirrors, and the use of mirrors in magic. After a qualitative treatment of Snell's Law, the text discusses fiber optics, mirages, atmospheric distortions, rainbows, halos, and dispersion in gems.

Considerable space is given to photography, where topics include camera focusing, camera lenses, angle of view, stops, exposure, and film characteristics. The human eye is then investigated by analogy to the camera. Similarities and differences are highlighted. This interdisciplinary material heightens the interest of life-science majors. After a chapter dedicated to optical instruments, discussion returns to the human eye and vision, but now with an emphasis on processing and perception. The student sees how light connects the fields of physics, biology, and psychology.

The sections on perception include lateral inhibition, binocular disparity, and depth perception. If the dwelling on perception is a bit much for the physics teacher, these sections can be easily skipped without harm. However, the related discussions on optical illusions have quite an appeal to the general student.

The text then turns to color and art, of much interest to the art major. Psychology majors are happy to find inclusion of the chromaticity diagram and learn how this perceptual color map relates to art and physics. Color vision and photography is treated at this point. The remaining chapters deal with wave optics, much on holography, and light in modern physics.

The text is somewhat difficult to cover in its entirety in one semester. A flow chart is given in the preface that indicates which sections can be omitted to tailor the text for a particular course. The text describes many demonstrations and contains numerous exercises, with attention drawn to the more difficult ones and those requiring elementary mathematics. An instructor's manual is available, which contains solutions to the exercises.

Seeing the Light also can be used as a source of material for teachers preparing units in light for the general student. Students respond very favorably to the applications covered and the topics are very enjoyable to teach for those with broad interests. *Seeing the Light* is a must for anyone committed to teaching conceptual physics at any level.□

Michael J. Ruiz, *Department of Physics, University of North Carolina at Asheville, Asheville, NC 28804*

Fine Fundamentals Yet Finally Flawed

Principles of Physics. Frank J. Blatt, Allyn and Bacon, Newton, MA, 1986. 802 pp.

Principles of Physics follows a very traditional sequence of topics beginning with kinematics and dynamics followed by energy, momentum, 2-D motion, statics, hydrostatics and dynamics, gas laws, SHM, waves, sound, E and M, optics, relativity, modern physics, and nuclear physics. A comprehensive and rigorous non-calculus treatment of physics, it would be an appropriate book for anyone wishing to teach toward the AP-B-level exam. Only two mathematical topics not found in introductory algebra are needed: a knowledge of trigonometry and an understanding of the exponential function.

This text is most similar to one of the classic introductory physics texts: *College Physics* by Sears, Zemansky, and Young. It differs in one major respect. There are multiple-choice questions at the end of each chapter with answers to the odd-numbered ones at the end of the text. However, these questions replace the usually found exercises that call for conceptual knowledge and generalization of principles rather than problem solving. The problems at the ends of the chapters are arranged in increasing levels of difficulty with each level noted as well as the pertinent section of the chapter to which they apply.

There seem to be very few errors in the text. For example, the statement that "warm air rises and is *replaced* by cold air" is strictly in error, but certainly not of momentous proportions. To me the flaws in this text are not mechanical but rather philosophical. Consider the validity of the following type of statement. "It is simple to determine the average value of i^2 when i is given by $P = i^2R$. The trigonometric identity $\sin^2\theta = (1/2)(1 - \cos^2\theta)$ is useful here." For