Foundations of Electromagnetic Theory, 3rd Edition. John Reitz, F. J. Milford, and Robert Christy. 534 pp. Addison-Wesley, Reading, MA, 1979. Price: $19.95. (Reviewed by Albert C. Claus.)

For 20 years Reitz and Mildord's *Foundations of Electromagnetic Theory* has been a popular choice as a text for intermediate courses in electricity and magnetism. Now there is a new edition and a third author. However, the text is little changed. Nevertheless, its organization is superior to the previous edition and it better reflects contemporary scientific interests.

For those who are not familar with previous editions of this text, it introduces the laws of electromagnetism one by one as experimental facts and finally synthesizes them into Maxwell's equations whose consequences, primarily in the area of electromagnetic radiation, are then explored at some length. The text concludes with several chapters dealing with moving charges from the points of view of special relativity and Lienard–Wiechert potentials. In addition, there is a short but thorough discussion of circuit theory, a topic rarely found in intermediate texts nowadays, a chapter on the physics of plasmas and one on superconductivity. The book is characterized by its fine development of boundary value problems throughout the text and its overall well balanced presentation of electromagnetic theory.

For those who have used the previous editions, the changes made in this new edition will be of interest. There has been a significant alteration in the order in which various topics are presented. In all but one case these shifts have improved the flow of thought. For example, the chapter on electromagnetic induction now appears after the discussion of magnetic fields rather than interrupting it, and the chapter on superconductivity which appeared in the old edition almost as an afterthought nearly at the end of the book now appears earlier in a more logical place. However, the rearrangement of the material inside the chapter dealing with the special theory of relativity, which the reviewer had considered to be perhaps the best introduction available, has not been an improvement. As originally written some mathematical preliminaries, namely, orthogonal transformations and the covariant formulation were discussed before being applied to the physics, now they are moved either to the end of the chapter or to an appendix at the end of the book.

Another major change involves the expansion of the two former chapters on electromagnetic radiation into five chapters. This expansion establishes a much more thorough and convincing connection between Marwell's relations and optics than was present in the second edition. The only other changes of significance are the additions of a summary and more problems to the existing problem set at the end of each chapter.

The former editions of this text have been used extensively in intermediate undergraduate courses in electricity and magnetism. This new edition should enjoy the same wide use. It is an outstanding text.

Professor Claus received his Ph.D. from the California Institute of Technology, and now teachers at Loyola University of Chicago. His research interests lie in the area of the structural aspects of the metallic state.

Perception, Theory, and Commitment: The New Philosophy of Science. Harold I. Brown. 203 pp. The University of Chicago, Chicago and London, 1977. Phoenix Edition, 1979. Price: $4.95 (paper). (Reviewed by James L. Park.)

Students of physics can acquire valuable insights as to the nature of their studies through readings in the philosophy of science, but journeys into that discipline can be both tortuous and torturous for outsiders. It is therefore gratifying to find a philosophy book such as Brown's *Perception, Theory, and Commitment* which can be recommended to physics majors with reasonable confidence that they will judge it to be readily comprehensible and intellectually stimulating, and perhaps even become sufficiently excited to consider further reading in the area.

The work is a masterpiece of brevity, surveying in only about 150 pages of text most of the famed isms of philosophy which relate to the analysis of scientific methodology. The first half is devoted principally to a philosophic investigation and critique of the variations of logical empiricism which dominated scientific philosophy during much of the 20th century. In the second half, Brown describes what he terms the "new philosophy of science," a currently evolving framework for scrutinizing the nature of science which deemphasizes symbolic logic and instead stresses a variety of other aspects of science—historical, psychological, sociological, and even metaphysical. Interestingly and appropriately, Kantian epistemology appears in the "new" part whereas Humean ideas open the first half of the book. Thus both old and "new" philosophies of science actually have old and venerable roots.

The substantive contrast between these two parts is easily displayed by comparing key words appearing in chapter titles: the first half deals with concepts such as confirmation, definition, explanation, and falsification; the second half treats issues regarding perception, presuppositions, revolutions, and discovery.

Contemporary physicists and their students are likely to empathize particularly with the latter half of the book, partly because key points are illustrated with familiar episodes from the history of physics, but mainly because the conclusions of the "new philosophy" regarding the epistemological structure and evolution of science seem somehow more accurate and indeed more fertile than the comparatively dry logical concerns of the positivists and empiricists.

Since Brown developed the book in connection with a philosophy course, its many pages of notes and bibliography naturally lead the reader primarily toward the works of other professional philosophers. As an alternative for the further pursuit of philosophy of science I would suggest to physics students that, after reading Brown's introduction to the subject, they turn next to philosophical works written by physicists such as Planck, Born, Einstein, Schrödinger, Bridgman, and Margenau. Then, armed with a richer scientific perspective, they may more profitably follow Brown's excellent guide to the inner sanctum of pure philosophical literature.

James L. Park is a professor of physics at Washington State University. His research interests are the foundations of quantum theory and thermodynamics.

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