

BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



The Unity of the Fundamental Interactions

Editor Antonino Zichichi
Publisher Plenum Press, New York (1983)
Pages 827
Price \$110.00
Reviewer Paul F. Zweifel

This book represents the proceedings of the 19th course of the International School of Subnuclear Physics held July 31–August 11, 1981, in Erice, Sicily. Included are six lengthy theoretical lectures and seven seminars on specialized topics, plus a conference summary (by Edward Teller). However, by far the most interesting contents for readers of this journal are three contributions on “The Glorious Days of Physics.” These personal historical essays were presented by P. A. M. Dirac, Teller, and E. P. Wigner, and the reminiscences they contain alone make the volume worth acquiring. In fact, as I write this review I have just finished reading Dirac’s obituary in the *Washington Post*, which makes his story “My Life as a Physicist” all the more poignant.

Dirac’s portrait appropriately occupies the frontispiece of the book because the major technical contribution to the volume is Sidney Coleman’s 100-page discussion, “The Monopole Fifty Years Later.” This of course refers to the magnetic monopole whose existence was predicted by Dirac in a 1931 paper in the *Proceedings of the Royal Society*. Coleman’s presentation is, as is usual for him, brilliant and eminently readable. I would doubt that many nuclear engineers could read and/or enjoy it, but for those who, like myself, started life as physicists, it represents a good opportunity to bring themselves up to date on this exciting frontier of physics research. Other contributions of particular interest to the nonexpert include F. Wilczek’s 59 pages on cosmology and V. L. Fitch’s short 18-page contribution on CP violation.

Other contributions include theoretical lectures by M. J. Creutz, G. G. Ross, S. Dimopoulos, F. Wilczek, and E. Witten, and seminars by D. Jovanovic, M. Basile and 14 others, K. Berkelman, R. Cashmore, P. Duinker, and M. Basile and 19 others.

Paul Zweifel, university distinguished professor of physics and of nuclear engineering at Virginia Polytechnic Institute, is also director of the Center for Transport Theory and

Mathematical Physics. He has just returned from Florence, Italy, where he served as visiting professor of mathematics during the academic year 1983–84. Among his professional distinctions include the E. O. Lawrence Award in 1972 and a Guggenheim Fellowship in 1974–75.

Models and Parameters for Environmental Radiological Assessment (Report DOE/TIC-11468, 1984)

Editor Charles Miller
Publisher The Technical Information Center,
U.S. Department of Energy,
Oak Ridge, Tennessee 37831
Pages 150
Price \$12.00
Reviewer Anton Bayer

This booklet describes the basic knowledge for environmental radiological assessment. It is divided into 14 chapters written by various authors. After a general essay on exposure pathways, 9 chapters deal more specifically with the main pathways and the basic equation for the measurement of exposure:

1. dispersion and deposition in the atmosphere and hydrosphere
2. terrestrial and aquatic food-chain transport
3. food intake and air breathing rate
4. dose factors for external and internal exposure
5. special methods for the radiological assessment of ^3H and ^{14}C .

Further chapters contain a collection of sample calculations and an essay on uncertainties associated with predictions derived from models and parameters. These chapters are completed by concise lists of references containing detailed investigations.

The booklet, although written by various authors, is very well written and excellently informative, which can probably be credited to the editor. The chapters cover the main features of the special problems and the inserted tables give