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The Search for Charm, Beauty, and Truth at High Energies

Editors G. Bellini and S. C. C. Ting

Publisher Plenum Press (1984)

Pages 585

Price $85.00

Reviewer Hugh F. Henry

These are the proceedings of a Europhysics Study Conference on High Energy Physics held November 15–22, 1981, in Erice, Sicily, Italy, with the purpose of having both a conference and a workshop for the several groups and individuals searching for "flavored" particles. The 73 individuals attending from 11 nations provided 43 separate presentations in the following general areas:

1. e^+e^-, photo- and hadroproduction
2. lifetime measurements, branching ratios, and cross sections
3. the use of bubble chambers and visual detectors
4. high-resolution vertex detectors
5. special triggers.

Included under these various topics are discussions of experimental methods, results, and equipment. In addition, some of the bases for theoretical investigations and predictions thereby made are noted. The papers are rather informally presented, in many cases appearing to be transcripts of a participant's talk; however, others are typical of an author's summary of his discussion, but none has the formality of a paper designed for journal publication. Unfortunately, none of the group discussion that would necessarily have followed each presentation at such a conference is provided.

Although this is most definitely a book for the specialist actively working in the field, someone in related efforts might find the information of interest and possibly of use. However, the novice could even have difficulty with the specialized lingo necessarily used. The tentative nature of much of the data available is clearly indicated in many of the articles; someday, such information may be "nailed down," but that is in the future. Probably the book's greatest weakness is its lack of a state-of-the-art summary for each of the major topics treated; a chairman's introductory statement does provide this type of information in a couple of cases. Although there is no index, and this might not be feasible, each presentation is accompanied by appropriate references. Overall, this appears to be one of those books so important to a field of investigation as it summarizes results and information to a given date, and its editors, along with those arranging the conference, are to be congratulated on a job well done. It should certainly find a place in a university library and in the personal collections of those interested in the developing field of high energy and its associated "particles."

Hugh F. Henry is emeritus professor of physics at DePauw University where he served as chairman of the department from 1961 until his retirement in 1981. From 1949 until 1961, he supervised the health physics and criticality control staff functions along with other safety-type activities for the Oak Ridge Gaseous Diffusion Plant. He has published a large number of articles in these fields and is the author of Fundamentals of Radiation Protection *published by John Wiley & Sons in 1969. Most recently, he has been a member of the Public Information Committee of the Health Physics Society and has been active in its Hoosier chapter.*

Before It's Too Late

Author B. L. Cohen

Publisher Plenum Press (1983)

Pages 292

Price $16.95

Reviewer Hugh F. Henry

This is one of three "must read" books for anyone who is interested in accurate information on actual radiation problems and why members of the general public seem unable to understand them. In his concern for the effect of this situation on nuclear plant construction and our overall energy picture, the author's stated purpose is " . . . for once, to get the viewpoint of the main-line scientific community across to the public" on this topic. Technically, he succeeds admirably, but his overall success will depend on the attention his efforts receive among the nation's opinion molders. His book's special value is in providing specific data of help in refuting the usually undocumented, generally false, and frequently wildly exaggerated "information" emanating from the various antinuke camps. He correctly identifies the strongly biased opinions and consequent activities of members of the news media, especially the "big media" (television networks, leading news magazines, and dominant newspapers of the New York–Washington axis), as being a major factor in this "disinformation" process. As is the case with most of us, he is puzzled by the reason for such media hostility, although he does observe it seems to reflect a politically liberal viewpoint which, as a self-identified liberal, he finds particularly difficult to understand. He does not note, however, that the antinuke position appears to be part of a more general anti-science syndrome, particularly "hard science," and that it frequently seems to manifest a Luddite mentality.

The author treats those specific items about which he has been most often asked in his frequent public appearances.

These include reactor meltdown, waste disposal, plutonium, weapons proliferation, and power costs. He also discusses general radiation effects, has an excellent chapter on understanding and evaluating risks, and considers the facts involved in the "solar dream." His first chapter notes problems in public understanding and his last identifies the causes thereof. Although the index is skimpy, an excellent bibliography and a large number of specific references are provided.

In some cases, the author compares rather commonly accepted "facts" with actuality. For example, accepted plutonium toxicity is compared to a Nader statement and to even wilder statements by other antinukes. Each person's continuous bombardment by some 15 000 particles and rays per second is juxtaposed to a popular book's statement of the extreme "hazard" from a single such ray or particle impingement. Two tables developed by statistical analyses from appropriate sources permit useful comparisons. One gives calculated loss of life expectancy (LLE) from various activities or conditions, such as smoking or being born a male; it is apparent the radiation "hazard" is trivial. The other indicates the cost we incur per fatality averted in many societal activities, such as traffic safety or food for overseas relief; it is apparent the vast sums spent to avert trivial radiation "hazards" could be better spent otherwise. The fact that many of these comparisons involve his own work reflects not only his own expertise in the field but also a necessity engendered by the sad lack of interest therein among others in the nuclear field, especially health physicists. Many of his illustrations are anecdotes from his own experience; these differ only in specifics from those of anyone who has engaged in similar discussions.

In his "injury" analyses, the author uses the reports and conventions of appropriate national and international groups and necessarily adheres closely to the "conventional wisdom" of their methods and conclusions. Thus, low-level radiation effects are obtained by extrapolation from high-level data in accord with the linear hypothesis and its assumption that *all* radiation is harmful. However, this reviewer believes he should have emphasized that such predictions are considered an upper level of injury probabilities and that actualities are even safer than are the incredibly safe values calculated thereby. Unfortunately, the author skips over the growing body of information concerning the hormetic effects of low-level radiation in producing nondeleterious effects, and he ignores the desirable effects of radiation therapy. Similarly, the overall "hazard" of radiation is considered cancer causation and is thus expressed as "additional cancer deaths" without pointing out that such "additional cancer deaths" mean fewer deaths from other causes; no one lives forever!

This is indeed a book that should be in every public and school (especially high school) library, and it should be required reading by every legislator and those who are responsible for our TV, radio, and print news! (One can dream, can't one?) Unfortunately, it is somewhat heavy reading, a minor flaw in an otherwise excellent presentation of one of today's most vital and important topics.

Oh yes, this reviewer considers the other "must" books for putting radiation effects into proper perspective to be Petr Beckman's *The Health Hazards of Not Going Nuclear*, which, among a variety of topics picturesquely presented, includes some covered here, and T. D. Luckey's *Hormesis with Ionizing Radiation*, which summarizes the large body of information on the nondeleterious effects of radiation, an essential to understanding the entire radiation effects picture.

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