The last two decades have seen two major developments in radiation counters: the scintillation method (which was initiated ca. 1948-49) and the successful development of semiconductor detectors (which has occurred within the past four or five years). The excellent resolution of semiconductor counters, their fast pulse characteristics, compactness, and simplicity of operation have resulted in a widespread adoption of these counters for the detection and spectroscopy of heavy particles. Current efforts directed toward the improvement of semiconductor counters for use in gamma and beta spectroscopy are most encouraging. The rather enormous amount of work which has been concentrated in the development and perfection of these counters in just a few years has created an information gap, in that only a few reviews of the state of the art have been available thus far. The book by Dearnaley and Northrop thus meets a distinct need at the present time, and does so with commendable thoroughness and clarity.

The introductory section of the book reviews the essential points regarding energy loss of charged particles in matter, and conventional radiation-detection methods (ionization chamber, proportional counter, scintillators, etc.). Solid-state detection devices are then introduced through a discussion of the pertinent properties of solids, with emphasis on transport processes, the role of traps, and the kinetics of carrier motion. Energy resolution is considered in a chapter on the sources of noise in a conduction-counting device. The theory of operation of rectifying junction counters (e.g., a surface-barrier counter) is treated in some detail, and in a separate chapter the practical aspects of preparing and testing junction counters are enumerated. A discussion of electronic instrumentation for semiconductor counters focuses largely on pulse amplifiers and preamplifiers, with attention to electronic noise considerations. A chapter on applications of semiconductor detectors to problems in nuclear instrumentation covers a wide variety of topics, including the spectroscopy of nuclear reaction products and alpha particles, particle-discrimination techniques, studies in fission, high-energy physics, and the spectroscopy of betas, gammas, and neutrons. The final chapter on radiation damage and its effect on counter performance will be of particular interest to those engaged in measurements involving high fluxes of neutrons or fission fragments.

A particularly valuable feature of this book is that it provides an excellent entree to the existing literature. In addition to text references at the end of each chapter, a classified bibliography at the end of the book compiles references under various subject headings, as "Semiconductors - Surface Properties", "Ionization in Semiconductors", "Germanium Counters", etc. Happily this book has not suffered from an excessive time lag between writing and publication. References to the 1962 literature are frequent.

In summary, this book is directed to the designer and user of nuclear detection devices, and will surely be of value to those engaged in nuclear spectroscopy and closely allied fields. It is well-organized and clearly written. It might profitably be read by those contemplating experiments involving particle detection, and by students interested in general techniques of nuclear experimentation.

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About the Reviewer: Dr. R. B. Murray has been a member of the Oak Ridge National Laboratory staff since 1955 with the exception of one year spent as Visiting Associate Professor in the Physics Department of the University of Delaware. His research interests have been in nuclear instrumentation and physics of solids. The use of semiconductor counters for fast-neutron spectroscopy was first described by Murray and T. A. Love, who developed the Li_6F sandwich spectrometer.

Strange Particles. By Robert Kemp Adair and Earle Cabell Fowler. Interscience Publications. 151 pp. $4.75.

Recently a number of paperbacks and monographs have been published on the subject of the physics of elementary particles. This is a most welcome development in a field in which, as a result of new particle accelerators and advances in instrumentation, information has been accumulating at a very rapid rate with concomitant advances in the theoretical description and understanding of the phenomena. Among these new volumes is the well-written monograph *Strange Particles* by Robert Kemp Adair and Earle Cabell Fowler. The basic aim of this small volume is to provide a summary of the important properties of the strange particles. A brief description of the contents will give some idea of the scope of the subject matter.

Chapter one provides an introduction which traces the history of the first observations of strange particles and briefly discusses symmetry properties and conservation laws. In the second chapter there is a discussion of the quantum numbers of the strange particles and also a description of some of the interesting phenomena associated with the properties of the neutral K mesons. Chapter three is devoted to strong interactions. Here we find short, qualitative descriptions of dispersion relations; the production of strange particles by pions, nucleons, and photons; and the interactions of K mesons with nucleons. This chapter, which is the longest and perhaps most interesting in the book, concludes with sections on strange-particle resonances and hypernuclei. The weak interactions and their relation to the decays of the strange particles are discussed in a succinct and lucid manner in chapter four. Chapter five can be looked upon as an appendix in which the authors describe some results from the theoretical formalism that are helpful in interpreting some of the experiments previously discussed. This is a particularly useful section for the experimentalist who has some familiarity with the formalism since the essential aspects are clearly and concisely stated in a way that is not often encountered.

Throughout the monograph emphasis is placed on the analysis and the interpretation of important experimental results. The authors make a great effort, with the use of models and analogies, to provide insight into the physical foundation of a number of the results. In this attempt they are to a large degree successful. This volume also furnishes an excellent set of references for those readers interested in delving more deeply into the field.

There is some warning, however, to be directed toward the general reader. The authors clearly state in their preface, "Such a monograph is necessarily limited in subject matter and in time. Therefore we ask of the reader some familiarity with the physics of pions and nucleons, and a recognition that very quickly some of the discussion will concern only history — things as they were and not as they are". The reader who comes to this monograph with an adequate background will find it a very rewarding experience; however, without the appropriate background, he will probably find a number of the discussions in the book highly perplexing.

This monograph, despite its brevity, is interesting and highly informative. The reviewer hopes that, as the field of elementary particles continues to advance, new developments will be equally well described in future monographs.

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About the Reviewer: Jerome Friedman received all of his college and university training at the University of Chicago and was awarded a Ph.D. degree in physics in 1956 at which time he became a research associate at the Enrico Fermi Institute for Nuclear Studies. From 1957 to 1960 Dr. Friedman had an appointment at the High Energy Physics Laboratory at Stanford University, carrying out experiments with the Mark III linear accelerator in electron scattering and photoproduction. In 1960 he came to M.I.T. as an assistant professor, where he has continued his work in the field of elementary particles and high-energy physics and at present is conducting experiments at the Cambridge Electron Accelerator.