Somewhat the same note, in a much lower key, is struck by C. Rogers McCullough in his article dealing with the possibility of phasing-out restrictions on nuclear site selection in favor of engineered safeguards.

Another type of safeguards, those of the IAEA, is dealt with by Paul C. Szasz, a member of the IAEA Secretariat. Mr. Szasz provides a thorough, well-written examination of the international safeguards field, emphasizing the novel solutions attempted in this important area. It is remarkable how much progress has been made in intergovernmental controls on the administrative level in light of the relationship of the problem to the highly charged nuclear proliferation issue.

In summary, Volume 4 of this Law and Administration series continues the important efforts of Pergamon Press to collect the best writing in the nuclear field. The book reflects particular credit on its editor, Jerry L. Weinstein, who also introduces the volume with a fine summary of developments since 1962. Mr. Weinstein died in 1966 at the age of 39. His loss is a very real one to the international atomic energy community.

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January 18, 1967

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Semiconductor Counters for Nuclear Radiations. By G. Dearnaley and D. C. Northrop. 2nd ed. John Wiley and Sons, Publisher (1966). 400 pp. $12.75.

It is roughly 20 years since the introduction of the photomultiplier-plus-phosphor scintillation counter into experimental nuclear physics, and in a few years this combination supplanted gaseous radiation detectors for many applications, while ushering in the era of gamma spectroscopy.

In its turn the preeminence of the scintillation counter is now challenged by a newer device, namely the semiconductor radiation detector. These detectors are basically similar to the old gaseous devices in that they operate by collection of the charge liberated by incident ionizing radiation. For this reason they can perhaps justifiably be regarded as descendants of the gas ionization chamber, and there is some poetic justice in their taking their turn supplanting the scintillation counter.

This history, together with an account of other detection methods, is covered in the first few chapters of the second edition of Dearnaley and Northrop's book, *Semiconductor Counters for Nuclear Radiations*. Later chapters briefly introduce the basic ideas of solid-state physics as they apply to semiconductor counters, while subsequent chapters cover the *p-n* junction counter and its fabrication, associated instrumentation, application to nuclear physics, and radiation damage effects in the detectors themselves.

These topics are much the same as were covered in the first edition of the book, although there have been some rearrangements and additions. Notable among the additions is information on the important topic of lithium-drift germanium detectors, which are revolutionizing the field of gamma spectroscopy by virtue of their high resolution. As was the case with the transition from gaseous to scintillation counters, there exist qualitatively new features of the semiconductor devices which make possible new applications, e.g., position-sensitive detectors giving information on both the energy and position of an incident particle. These and other applications are also briefly discussed.

Unfortunately, however, numbers of obscurities and errors have occurred in the new edition of this useful book. To pick some examples at random, on page 156 it is implied that contouring works purely because of the geometrical increase in the length of the leakage path—this is a misleading explanation; on page 162 it is stated that web silicon is well suited for dE/dX detectors—this is not the case because its thickness uniformity is too poor and it is not available in nonchanneling orientations; on page 75 in discussing the subject of fission-fragment pulse-height defect, the role of channeling is not mentioned; on page 138 in discussing charge collection it is stated that the assumptions and methods used in References 9, 10, and 11 are the same, while not only is this not the case but, indeed, Reference 9 is incorrect. Numerous other examples of this kind were found on only one rapid reading of the book.

In addition to such errors one is left with the impression that while the second edition was in preparation it could have been made more modern in many areas. For instance, much of the electronic instrumentation discussed is now considerably out of date. As an example, on page 215 a schematic diagram of the very first published charge-sensitive preamplifier for semiconductor detectors is given—this piece of vacuum-tube instrumentation must be regarded today as Stone Age electronics and really has no place in a revised up-to-date version of a book on this important subject.

These shortcomings do not negate the value of the book, but rather indicate ways in which it could have been improved. It remains a useful reference work and one of the very few available on this increasingly important subject. In addition, it provides a very comprehensive bibliography which should prove invaluable to anyone wishing to delve more deeply into the subject.

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