the field as one of the leading architects of its theoretical framework and has an unrivalled knowledge and interest in the experimental information as well.

Just as the first edition of this book has been one of the chief sources to which we have all turned for almost 20 years when seeking orientation into an unfamiliar corner of the field of collision physics, I expect the new edition will provide the same vital service for many years to come.

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## An Introduction to Mössbauer Spectroscopy

**Leopold May, ed.**
201 pp. Plenum, New York, 1971. $15.00

The development of Mössbauer spectroscopy has proceeded rapidly since the discovery in 1957 of recoil-free gamma radiation. The history of the technique is not unlike that of other discoveries in physics, particularly that of nuclear magnetic resonance. The initial discovery was in nuclear physics, and it rested quietly for a time. There followed a swift, even hysterical surge of interest in and exploitation of the phenomenon until, by 1962, it had been utilized in many different areas of physics, and the groundwork for the elaboration of the technique had been laid. The history of this period along with the early experimental and theoretical developments was well summarized by Hans Frauenfelder in his lecture-note and preprint volume published at that time. Since then the development of the technique has proceeded at a calmer, but still vigorous, pace. One still finds an occasional conference given over in its entirety to Mössbauer spectroscopy and indeed there continue to be developments that warrant such conferences. On the whole, however, the results of experiments using the technique are more likely to be discussed at conferences on the subject under investigation than in special technique-centered sessions.

Mössbauer spectroscopy is thus, at fourteen years of age, a mature research tool, and the range of its utility is wide indeed. It has found application in many branches of solid-state physics: magnetism, metallurgy, lattice dynamics, phase transitions and critical phenomena and relaxation effects, to give an off-hand list. It is still of use in nuclear physics, and the applications to chemical problems continue to increase. There has also been application to biochemical systems and indeed, some of the most exciting possible uses of variants of the technique lie in this area.

The purpose of this book, edited by Leopold May, is to provide an introduction, for graduate students and research workers, to a number of the current applications of Mössbauer spectroscopy. The nine chapters of the book consist of lectures delivered at Mössbauer Spectroscopy Institutes held at the Catholic University of America from 1967 to 1969, and the authors are all active workers in the fields they discuss. Unfortunately, as with many collections of lectures, the book suffers from a lack of uniformity of quality and viewpoint in the different chapters, of repetition of some subjects and inadequate discussion of others. Thus, the nuclear-quadrupole-interaction formulae are derived in three of the nine chapters, and there are almost no cross references from one chapter to another. The latter would not be a fault in a research monograph but it does reduce the utility of an introductory work.

The book covers a fairly wide range of topics, including the mandatory introduction to the Mössbauer effect and a good elementary discussion of the instrumentation used in the simplest transmission experiments. There is a heavy emphasis on chemical applications, with five of the nine chapters concerned with some aspects of chemistry. Even the section on solid-state physics has, to the reviewer, a chemical flavor. These sections are valuable in that they present numerous "case histories" of research applications, so that the reader can see by example the way in which experiments are performed.

It is difficult to find, outside of the Institute that spawned the book, an audience for which it would be useful in its entirety. I would find individual chapters useful in specific circumstances, but I do not feel that a course of university lectures based on the book would make sense. This is not due to specific shortcomings in the individual chapters, but they do not hang together to make a book. The frequency with which the book will be used is further reduced by the existence elsewhere in many cases, of review articles by the authors of the chapters in this book. The other articles are generally more complete and not necessarily more complex.

One point about the introductory article by Peter Debrunner and Frauenfelder should be mentioned. They give a pictorial description of the Mössbauer effect in terms of a cannon on a raft which, they feel, "may even amuse some physicists." They are correct.

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## Noise Abatement

**C. Duerden**
280 pp. Philosophical Library
New York. 1971. $25.00

This is a narrow, pedestrian book. Its fund of practical advice on noise sources and noise control will please city officials and inspectors suddenly burdened with responsibility for noise abatement. But experienced scientists and engineers will shudder at its scientific ineptness.

The author draws on his long experience as a British public-health inspector concerned with noise from home appliances, laundries, industrial equipment, and so on, and presents literally hundreds of small essays on topics such as interviewing the complaining housewife, measuring the offending noise, deciding whether it is excessive, advising on how to reduce it. Diagrams,

charts, tables and worked problems abound. Technicians will find this material well worth the $25.00 price.

Scientists and engineers will be aghast at the scientific incompetence and narrowness of scope. The initial explanation of what a wave train is is not only clumsy but wrong; the diagrams, indicating laboriously that the leading edge of the train advances steadily, imply that the pressure at any given location remains fixed—frozen! Fundamental frequency is "the pure tone in a complex sound which has the same period as the periodic quantity which is that sound." A diaphragm vibrating to and fro makes its backward motion "... because of its mass ..." and because it is "... pulled backwards in order to fill the vacuum ..." Sound waves spread outward in all directions "... like bubbles which grow and grow until they become so thin they burst". A supersonic transport plane's sonic boom "... results from the polarization of the shock waves produced into two waves ..." and the sonic boom, "... precedes ..." the plane.

The book makes little mention of physical principles or basic causes, and mathematics and electronics are avoided almost entirely. The enormous problem of airport noise is given very little space, little more than is allotted to "go-kart racing."

Several tables have no titles, and some of the tables appear *before* being mentioned in the text. The seven-page index is good, but one looks in vain for these headings: annoyance, attenuation, deafness, injury, intensity, reflection. British regulations are quoted at length, but US regulations (and US apparatus and US books) are scarcely mentioned. The three-page bibliography contains virtually no entries more recent than 1968. Presumably the book was in press before the masterful books by American