

use in the exercises.

This book provides in one place laboratory exercises on a wide variety of levels and would be useful for an advanced laboratory course. However, for laboratories accompanying a regular astronomy course, books of exercises such as *Astronomy: Activities and Experiments* by Darrel Hoff, Linda Kelsey and John Neff (Kendall-Hunt, Dubuque, Iowa, 1983);

Laboratory Exercises for Astronomy by Paul Johnson and Ronald Canterna (Saunders, Philadelphia, 1987); *An Introduction to Experimental Astronomy* by Roger Culver (Freeman, New York, 1984); or *Experiments in Astronomy* by Leo Blitz (Burgess, Minneapolis, Minn., 1983) are more suitable. Each of these provides a set of exercises on a more uniform level and also could be suitable for an

elementary astronomy laboratory course.

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Radon and Its Decay Products in Indoor Air

Edited by William Nazaroff and Anthony Nero

Wiley, New York, 1988. 518 pp.
\$75.00 hc ISBN 0-471-62810-7

Indoor Radon and Its Hazards

Edited by David Bodansky, Maurice A. Robkin and David R. Stadler

U. of Washington P., Seattle, 1987. 147 pp.
\$20.00 hc ISBN 0-295-96516-9;
\$9.95 pb ISBN 0-295-96517-7

Environmental Radon

Edited by C. Richard Cothorn and James E. Smith
Plenum, New York, 1987.

363 pp. \$55.00 hc
ISBN 0-306-42707-9

Radon is practically unheard of in undergraduate physics and chemistry courses, where it is briefly introduced as the heaviest of the noble gases and as a member of the uranium decay series. Nevertheless, public awareness of the presence in indoor air of radon and its progeny in hazardous quantities has made radon a household word. Radon gas is generated during the decay sequence of the ubiquitous, randomly distributed and naturally occurring uranium in the Earth's crust. It finds its way into indoor air through a dynamic interaction between the foundations of buildings and the soil. Once indoors, radon decays into other radionuclides. The decay of radon progeny deposited on the lining of the lungs is, on the average, the largest source of exposure to radiation the general public experiences—a surprising fact to many.

The science that has grown around the radon issue includes a variety of disciplines in physics. Among these disciplines are studies on the relationship between soil characteristics and radon availability, on the mechanisms of radon's entry into indoor environments, on the effectiveness of different radon mitigation efforts, and on epidemiology and the degree to which radon decay products in the air that we breathe actually pose a health risk. To date, however, this relatively young field can only measure indoor radon, not predict its



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presence; cannot relate a short-term measurement of radon to an annual average exposure; and has not completed any epidemiological study that would relate human lung cancer incidence to indoor radon exposures. In addition, in the few documented studies, radon mitigation systems only succeed in bringing indoor radon levels below the recommended limit of 148 becquerels/m³ (4 picocuries/L) about 50% of the time. Given the magnitude of our exposure to radon and its progeny, continued research is necessary both to make the problem more tractable and to enable intelligent policy decisions.

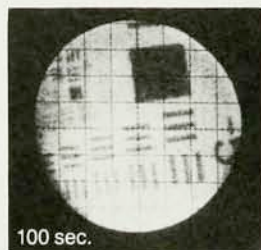
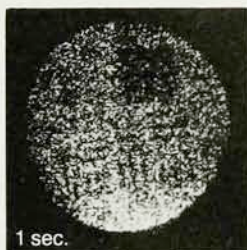
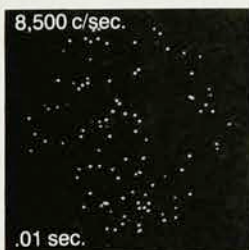
Radon and Its Decay Products in Indoor Air, edited by William W. Nazaroff and Anthony V. Nero, is a well-organized compilation of technical articles covering all the major topics associated with the indoor radon problem. Both editors are pioneer researchers in this field. The chapters are divided into four major foci of current research: sources and transport processes, characteristics and behavior of radon decay products, the basis for health concerns, and controlling indoor exposures. The authors of the individual chapters are active researchers in the fields they discuss. The topics are covered in enough rigorous scientific detail, with thorough references, to get the reader started on the topic. The only shortcoming of the book is that research on the radon problem is advancing so rapidly that some progress has been made on each topic discussed since the time the chapters were written. However, the quality of the scientific content will secure the book's position as an essential starting point for anyone interested in the radon problem for some years to come. In a field where scientific rigor is sometimes lacking, this book is a welcome change.

Indoor Radon and Its Hazards, edited by David Bodansky, Maurice A. Robkin and David R. Stadler, gives a very general overview of the radon problem. It assumes the reader has much less scientific background than does the first book; for example, it begins by defining radiation and radioactivity. It uses a descriptive rather than an analytical approach to cover the same general topics as the first book, but in less detail and with less scientific rigor; thus it is not particularly useful as a scientific text. Proportionally more room in the book is devoted to dosimetry models and determining lung cancer risk due to radon exposure than to other topics. Although a section is devoted to sources of indoor radon, the text has only one sentence on the major

source: flow into the indoor air of radon-containing soil gas, driven by pressure differences between the soil gas and the indoors. The final chapter compares indoor radon with other radiation hazards, nicely pointing out the magnitude of the problem. However, this chapter could be interpreted as misleadingly endorsing nuclear power plants as safe.

Environmental Radon, edited by C.

Richard Cothorn and James E. Smith Jr., falls somewhere between the two previously discussed books in content. Although the book starts, like *Indoor Radon*, with a basic introduction to radioactive decay, it covers the subject in more scientific detail. The main topics in *Environmental Radon* are similar to those in the other two books, although as the title suggests, the discussion does not focus in particular



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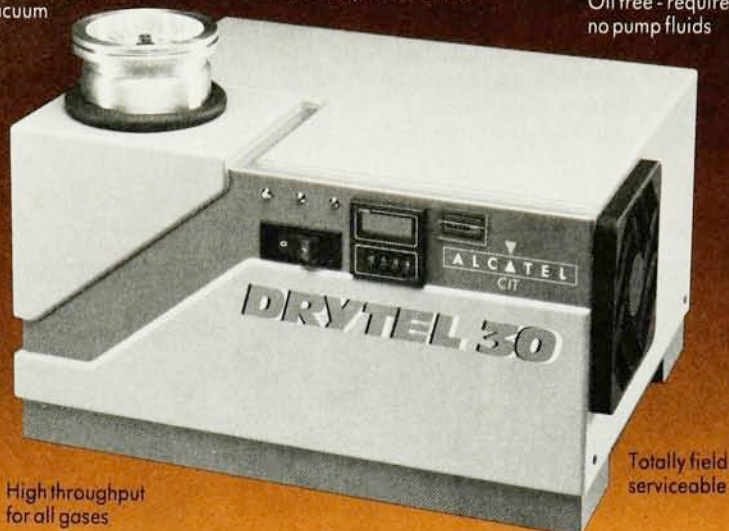
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on radon and indoor air. Instead the book discusses a variety of topics related to radon in the environment, such as radon generated from mining and milling activities and from fossil fuel combustion, which are unrelated to the problem of radon and indoor air. Thus, although these are interesting matters, this book will be less useful than the other two books to anyone interested in the many scientific problems associated with indoor radon. It is this specific topic that is of considerable current research interest, because of its public health aspects. In the section on sources of radon in indoor air, this book, like *Indoor Radon*, does not include a significant discussion of the dominant source, pressure-driven flow from soil gas.

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An Introduction to Liquid Helium

John Wilks and
David S. Betts

Oxford U. P., New York, 1987.

Second edition. 187 pp.

\$53.50 hc ISBN 0-19-851471-9

About 20 years ago, two major publications appeared that summarized to a large extent the then-current understanding of liquid helium. These works—*Helium-3 and Helium-4* by William Keller (Plenum, New York, 1969) and *The Properties of Liquid and Solid Helium* by John Wilks (Oxford U. P., New York, 1967)—provided the physics community with benchmark resources and, when taken together, covered the field with remarkable depth and clarity. The second edition of *An Introduction to Liquid Helium* by Wilks and David Betts represents a significant update of the 1970s abridged version of Wilks's major work. The book surveys many of the properties of He^3 , He^4 and mixtures, and presents a number of the key theoretical concepts. As such, it provides a topical guide to many of the major subject areas in liquid helium physics. Students who wish to learn on their own might use the book as a guide to a number of the major works in the field, but it may be too concise and in places too sketchy to serve as a stand-alone text. It will be valuable as a companion volume for graduate students; it might also serve as recommended reading for a graduate course. Students interested in a more complete presentation might consider *Superfluidity and Superconductivity*