(wrong but not phony), astrology (phony but flourishing), homeopathic medicine (prescribed, we are told, by one-fourth of French doctors), polywater, Aryan science (an unerasable blot on humanity), cold fusion (ineptitude gone from bad to worse), psionics, N rays, the heritability of IQ (scientifically clear but politically incorrect) and the like. (The parenthetical comments above are mine, not the author's.) Quite a list, with enough information in each case to inform a reader about the basic facts yet not enough to satiate a sophisticate. As with a smorgasbord, you can ingest as many courses as you like. And there are some subjects, like electromagnetic fields, that are simply missing.

This may be unavoidable; the subject is a tough one to put together, and the line between outright fraud and honest error has lots of fuzz on it. Some cases drift incrementally from error to fraud without any defining moment of transition; in others there is such a moment. Those who cross the line deserve no mercy, but I found the book too kind to some of the transgressors. For example, it never quite drops the other shoe on homeopathic medicine and is ambivalent on extrasensory perception.

I have no sympathy whatever for those who peddle phony cures to the sick—they are killers—and the book does clearly label such exploitation of ignorance despicable. Huzzah for that one! But counterparts of the medical quacks, those who make their livings by scaring the healthy out of their health—antifluoridation professionals or antivaccination buffs, for example—get no such comeuppance.

Friedlander's book is a useful reference with a wealth of good examples, all responsibly treated, but I suspect that it will convert no pagans. A particularly pernicious practice in the schools these days is to build student self-esteem (at the expense of humility) by teaching that anyone's view on a subject is as "valid" as anyone else's, regardless of the view-holder's relative knowledge. In such an atmosphere, which is not the fault of scientists, it is particularly hard to make the point that some things are just plain wrong. Yet that point needs to be made straight out, unambiguously and often. We cannot and should not give everybody the presumption of credibility, earned or not.

During a break from writing this review I opened my electric bill, which had an insert advising me to keep my electric clock far from the head of my bed. Sixty-five million dollars is being spent on this nonsense in California alone, money that could help salvage Los Angeles County's public health system, which treats real people with real ailments who die real deaths; the national bill is well over a billion dollars.

You should read *At the Fringes of Science*. It will remind you how hard it is in general, though easy in particular, to distinguish science from nonscience. We are too polite about these matters. It is the signal-to-noise ratio that matters, and Gresham's law is as applicable in the world of ideas as it is in monetary policy. This book is part of the signal.

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Solid State Electrochemistry

Edited by Peter G. Bruce
Cambridge U. P., New York, 1995. 344 pp. $84.95 hc ISBN 0-521-400074

There has been a significant increase in research activity over the past decade on the electrochemical properties of solids—frequently known as solid-state ionics. This has come about because of the interest in solid-state chemical sensors and in cleaner energy sources such as batteries, fuel cells and solar cells. There has been little available in the way of textbooks on the subject, however, at either the elementary level or for the researcher. But in the last year two books have appeared: Peter Bruce's *Solid State Electrochemistry* is one; the other is *Electrochimie des Solides* by Charles Deportes and colleagues at the University of Grenoble (Grenoble, 1994), an excellent and cohesive textbook for beginning graduate students but restricted to an audience fluent in French.

Bruce writes in the preface to *Solid State Electrochemistry*: "This book describes, for the first time in a modern text, the fundamental principles on which solid-state electrochemistry is based. In this sense it is in contrast to other books in the field, which concentrate on a description of materials. The text provides an essential foundation of understanding for postgraduates or others entering the field for the first time and may also be of value in advanced undergraduate courses. Topics include solid (ceramic) electrolytes, glasses, polymer electrolytes, intercalation electrodes, interfaces and applications."

The goal of this book, as Bruce describes it, is a lofty and worthy one: There is an urgent need for a coherent and thorough text for students and researchers studying the electrochemistry of solids. The book's 11 contributors are all international authorities on materials for advanced batteries, which it emphasizes. The book is very much oriented to materials as opposed to electrochemistry. Thus the first two full chapters after the introduction deal with crystalline solid electrolytes, general considerations and the major materials, followed by material design. The next three chapters cover glassy and polymer electrolytes. The majority of the second half of the book covers electrode materials (insertion electrodes, electrode performance and polymer electrodes). The final two chapters cover interfacial electrochemistry and applications, respectively.

The graduate student who is beginning research on materials that show high ionic conductivity, for use in lithium batteries or as solid oxygen electrolytes for fuel cells, will find this book an excellent companion and introduction to where the battery field stands. Professionals who are just entering the field will also want a copy on their desks. But if you are an instructor, a graduate student or a researcher in the field who wants a text on the electrochemistry of solids, including measurement techniques, take a look at the Grenoble paperback. Then ask the publisher to consider an English translation. It is the first text that really covers the electrochemistry of solids in a systematic, understandable manner, it is eminently usable as a course text and moreover, at Fr 160 the price is right.

The two texts complement one another very well, and I have no hesitation in recommending both—preferably in tandem—to anyone with interests in the electrochemistry of solids.

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Atoms, Radiation and Radiation Protection

J. E. Turner
Wiley, New York, 1995. 2nd edition. 555 pp. $69.95 hc ISBN 0-471-59581-0

What can I say? The second edition of *Atoms, Radiation and Radiation Protection* is much better than the first edition, and the first edition was great. Do not be misled by the title: This book is *not* a cookbook on radiation protection. It is instead one of the finest graduate-level texts on radiation protection. For someone teaching or taking a graduate course on radiation protection, this is a "must have" book. The steps in—and the reasons behind—calculating the shielding for x-ray rooms are thoroughly covered, as