

performance levels, this is not the purpose for which they are intended. They are written for the lay person or contractor who has little or no background in solar energy utilization but has an interest in understanding something about the topic and, just maybe, building a simple system.

The *Solar Retrofit Book* by D. K. Reif is the weakest of the three books reviewed, but only because the scope has been limited to four specific system designs. This is due in part because the book is the result of the 1979, New England Project: Solar Utilization, Economic Development, and Employment. The topic of retrofits is an important one, and I anticipated reading the book because of this. The book comes up short, however, because it describes only a direct gain system, one thermosiphon air system, one attached greenhouse, and one active collector (air) system. In fact, the detailed designs of these systems and the houses on which they are located is nicely presented, but the extensions of these systems to other homes is an exercise which is left to the uninformed reader. The book contains only 13 pages in what appears to be an afterthought final chapter devoted to fundamentals. In fact, an understanding of solar energy fundamentals is not necessary (even though it is highly desirable) to building one of these four systems. The single largest shortcoming of this book is that it is limited to only the four systems and their application in New England. Furthermore, of these four systems, three are passive and only one is active. It is a serious omission to discuss only one active solar heating system and not even mention domestic hot water heating in a book whose title is *Solar Retrofit*.

The second of these books, *Passive Solar Energy*, by B. Anderson and M. Wells, contains good graphics and reasonable explanations of basic engineering processes for the lay person. The authors avoid the usual confrontation with active systems (much appreciated), and even though their own points of view are apparent, they have made a strong effort to avoid philosophizing. The book presents the basic systems in use for passive solar heating and cooling. The presentations are carried by the graphics and sometimes silly references but are essentially correct and useful for informing the uninitiated. The only shortcoming of the book is that the solar cooling section is not complete in that it contains no reference to radiative cooling or some of the more exotic systems.

The last of these books, *The Solar Decision Book of Homes*, by R. H. Montgomery, is by far the best. Unlike the first two books, this one contains a good discussion of solar and heat load fundamentals, details on how to make simple calculations, and plans for several solar houses. The author's aim is to blend active and passive design with energy conservation to achieve an economic alternative to our present standard housing approach. The book is written for contractors and includes a large number of construction details and discussions of interior layout and siting from a solar point of view. Contrary to the title, there is not much on remodeling in the book, but it does provide an excellent background for understanding solar engineering calculations and economics.

Solar engineers often disregard the part of the solar energy literature covered by these books, because their presentation of information is oversimplified and incomplete. What we must keep in mind is that this information fills an important need: the education of the public. Admittedly, misinterpretation and misinformation are sometimes the results, but even a marginally informed public is better than an uninformed one.

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Reviews of Renewable Energy Resources, Volume I, edited by M.S. Sodha, S. S. Mathur, and M. A. S. Malik, Halsted Press, a Division of John Wiley & Sons, New York, 1983, 368 pages, \$34.95

This book represents the first installment in a proposed series which will include reviews of various topics associated with renewable energy resources. The editors' intent is to present information in more detail and with more rigor than can be found in most textbooks, but not necessarily at the level at which the original papers were written. The intended audiences are graduates of programs in engineering or physics, and the intended uses are for graduate level texts and for "applications" engineering.

This first book covers five topics associated primarily with the applications of solar thermal energy: plastic solar collectors; solar collector-cum-storage; thermal modeling of solar hot water systems; solar absorption refrigeration and space conditioning; thermal modeling of aqua-ammonia cycle; and solar distillation. The book has eight authors (including two of the editors).

There is certainly useful information contained in the book and much of it has probably been brought together for the first time. However, in each of the five "reviews" it is clear that the author(s) is drawing heavily upon his own recent reports or thesis. The literature citations are largely from "international" publications and from those of the eastern hemisphere.

In some of the "reviews" the authors were not able to refrain from presenting an excessive amount of "textbook" material. For example, in the thermal modeling review, the sections on solar radiation, heat transfer coefficients, and the analysis of flat plates (about 23 pages) were not necessary. In some cases, the authors present their own work to excess. For example, again in the thermal modeling review, 44 of a total of 80 pages are used to summarize the authors' recent studies in New Delhi.

The review of plastic solar collectors was the most informative of the sections without including excess detail. The other four "reviews" stressed analysis and analytical results over experimental results. Even when experimental results were presented, little if any comment was offered about experimental procedures or on any comparison of these results with the analysis. About 60 percent of the review of absorption refrigeration is spent discussing the basic thermodynamic cycle, emphasizing the thermal characteristics in the solar operating range (generator temperature about 80–150°C). Perhaps it is more a statement on the level of development of the topic rather than a comment on the review, but there were no experimental results reported on absorption refrigeration. However, the results of various numerical simulations were reported. The review of solar distillation was very brief, considering its history, and presented the results of only one experiment (by one of the authors).

The book suffers a little from the usual problems of a collected work. The nomenclature is not always consistent: "t" is time and temperature in °C and K; "Q" is energy per unit area, energy per unit time, and energy per unit area and time; and energy per unit area and time is symbolized as "Q," "Q̇," "q," and "q̇" in various chapters of the book.

The references for the first review are listed in order of citation and in alphabetical order for the other four. The editors have added an author and a subject index for the whole book, which is useful. However, it is interesting to note that Duffie (9), Beckman (16) and Loeff [sic] (6) are cited a total of 31 times while the primary editor is cited 36 times. The individual authors are cited at least 45 times.

In conclusion, the book could be useful to some, but more concise and complete reviews would certainly be possible.