

ical computation of their maximum possible shelf-life (No 39) should also be mentioned.

With every year, the number of techniques used in investigating cell processes increases. In particular, interesting results can be obtained by using the microcalorimetric method (Nos 35 and 40, discussion of 33). Of general importance also is the method for computer modelling of a system containing a large number of cells connected in parallel (No 46).

It should be noted that as a rule the discussions on the papers complement essentially their texts. In some cases the discussion is of independent interest. Thus, for example, the discussion of paper No 26 involves the problem of relative advantages of fuel cells with acid and alkaline electrolytes and the reasons for different approaches to this problem in the USA and in Europe.

On the whole, the volume under review gives a good idea of the main problems tackled at present by investigators of chemical power sources. It is of interest both for specialists engaged in developing power sources and for the users of these sources. The book is carefully edited and well printed.

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The Sun: Our Future Energy Source

by D. K. McDaniel, University of Oregon. Published by John Wiley & Sons, Inc., 1979, 265 pp., £ 13.00 (\$ 27.50), paperback £ 6.50.

This book originated from lecture notes for a one-quarter introductory course on solar energy taught by the author at the University of Oregon. It provides a broad background in scientific ideas and methods about what solar energy is and how it can be tapped.

The text is not directed to specialists on solar energy matters, but to individuals who wish to obtain a general but sufficiently deep knowledge on every question related to solar energy utilization.

To experts, the book is a good topic gatherer and, maybe, a guide to explain the subject to individuals not directly involved in the solar energy field. The book is readable and is divided into 11 chapters. At the end of every chapter, the author presents problems and multi-choice questions. This allows its utilization as a text-book for introductory courses on solar energy.

The first three chapters are not directly concerned with solar energy but they provide valuable information on the place of solar energy conversion in the present socio-economic world. Questions of energy growth

and crisis, and resource usage in a finite world; concepts and uses of energy, work, power and efficiency; and a description of our nonrenewable energy sources, fossil fuels, geothermal energy and nuclear fission are discussed here.

The next two chapters present an historical review of what has been done on solar energy utilization, since the Archimedes legend to current developments. There follows a brief description of the sun, its situation in the universe and the physical phenomena which produce the energy we receive each day.

The next chapter deals with solar radiation and includes a discussion on all one needs to know in order to reach a good understanding of the phenomena occurring in solar energy tapping.

In the last five chapters, the author discusses the primary solar energy applications.

Chapter VII discusses flat plate collectors; how they work and what basic concepts must be known relative to efficient designs, heat loss analysis and selective surfaces.

The following chapter integrates the collector into the overall heating system, including such topics as heat exchange fluids, heat storage, delivery and control of the collected solar heat, solar cooling, and the use of reflector enhancement.

Several examples of active and passive solar houses are included in chapter IX. The author emphasizes that passive systems will be, probably, the most economic way to utilize solar energy for space heating.

The most promising ways to generate electricity by using thermally driven devices are reviewed in chapter X. Here the author describes a large field of tracking mirrors reflecting the sunlight upon a central receiver. Intermediate-temperature collection by using linear focusing collectors, and the generation of electricity by using ocean temperature gradients are discussed in depth.

The last chapter is devoted to the even more promising device to convert solar energy into electricity: solar cells. Basic principles of the photovoltaic effect and promising lines of research and development are discussed.

An extensive bibliography is given at the end of every chapter and there are two appendices at the end of the book: flat plate collector heat loss analysis and solar ponds.

In brief, this is an interesting book for people who desire a complete, but not specialized, idea concerning the state of the art in solar energy at the present time. It is specially valuable for those involved in teaching and explaining energy and solar energy conversion.

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