conditions as intermittent discharge, high-speed pulse discharge, and regenerative charging. Nevertheless, a state-of-the-art review of traction battery performance and some indication of areas in which further research and development is needed would have provided a fitting finale to Bode's modern account of the characteristics of this historic and intriguing application of electrochemistry in our everyday lives.

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Principles and Applications of Solar Energy,
by P. N. Cheremisinoff and T. C. Regino, published by Ann Arbor Science Publishers Inc. and distributed by John Wiley and Sons Ltd. Published 1978, price £ 9.45.

Sometimes, during the past years, I have been invited to give a talk on solar energy to audiences consisting of college students and their professors. Often, not only technical persons were present, but also teachers of human and social sciences who appeared able to resist incipient sleep only when I succeeded in avoiding technicalities, without on the other hand being imprecise or incorrect.

This is just the aim of this book which, starting from B.C. with the Egyptians and Archimedes and their burning mirrors, journeys through the Middle Ages to our time before starting a detailed description of modern solar energy opportunities.

Typical of this book is to give preference to active systems, leaving to other books the discussion of passive systems and energy conservation, although a little space is given to the consideration that for millenia man has used the sun in a very rational way, accumulating knowledge that has been forgotten with the advent of cheap energy from fossil fuels.

Thermal collector devices are discussed as a means of obtaining hot water for residential use or for power generation; non-concentrating and concentrating collectors are fully covered but described in a very qualitative way which, however, fulfills the scope of simply informing the reader more on the concept than on performances. Also, excellent information is given on realisations and applications.

Less space and emphasis is given to photovoltaic devices, and this is presumably due to unfamiliarity of the authors with this field. For this reason one tends to pass over such naiveties as "the (silicon) purification process entails high temperature melting of the sand and simultaneous reduction in the presence of hydrogen", concentrating, if you please, into

one single step the reduction of sand with carbon, the chlorination and the subsequent reduction of the chlorinated compounds with hydrogen. Amorphous silicon and compound semiconductor cells are also dealt with in a very easy manner by a single citation from *Science*.

As far as the photoelectrochemical conversion of solar energy is concerned, some further doubts arise as to the consciousness of the authors that they are debating well known questions, considering that when they are discussing the self-dissociation and electrolysis of water they actually state:

"the situation can be represented, as discussed by Wrighton,

$$4H^+ + 4e^- \longrightarrow 2H_2$$

$$4OH^- \rightarrow O_2 + 2H_2O + 4e^-"$$

where poor Wrighton takes some of the credit from the old fathers of electrochemistry.

A better future is forecast for wind energy and ocean thermal gradient power, with some intriguing connections between the generation of power by thermal gradients and the production of aluminium, ammonia, and other chemicals, albeit it is emphasised that the ocean thermal energy conversion machine should be considered not solely as a power plant but also as a factory which produces energy-intensive materials which can be shipped with less cost than transmitting electricity.

In conclusion, this book provides a good summary of results and ideas concerning progress in the field of solar energy research and development, with some weaknesses in areas such as photovoltaics and electrochemistry where technicalities are insufficient and a little science is also necessary.

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