

Book Review

Chemical Power Sources

by V. S. Bagotzky and A. M. Skundin, translated from the Russian by O. Glebov and V. Kisin, published by Academic Press, New York, London, 1980; pp. 402; price U.S. \$64.50.

This book is in two, almost equal, parts. The first deals with the theory of electrochemical processes and cells, as well as with the general features of the design, construction, operation and maintenance of chemical power sources. The second part considers in detail the various cell systems at present available or under development.

The first chapter introduces the simple theory of chemical power sources and is followed by one which briefly describes the essential requirements for a satisfactory cell system, traces the historical development of practical cells, and concludes with a general consideration of cell design in terms of the various forms of electrode. The electrical characteristics of cells are discussed in the next chapter and this leads naturally to a consideration of cell performance and operational characteristics. The chapter concludes with a useful section on making comparisons between types of cell.

In the subsequent chapter the electrochemical basis of cell operation is dealt with in detail, and is followed by a chapter on actual electrodes. The practical aspects are then dealt with in the following chapters which cover the design details of cells, including electrode balance and separators, the operation and use of cells, including means and methods of charging, and the final chapter of this part discusses cell applications.

The second part of the book consists of 9 chapters in which specific cell systems are considered in detail under the headings: manganese-zinc cells with salt solution electrolytes, lead (acid) storage cells, nickel-cadmium and nickel-iron storage cells, alkaline cells with zinc anodes, various systems with aqueous solutions, compound cells, cells with non-aqueous solutions, cells with solid and molten electrolytes, and fuel cells (electrochemical generators). Finally, Progress in Chemical Power Sources is briefly reviewed together with the problems involved.

The book closes with Appendices giving electrode potentials, the e.m.f. and o.c. values for different cell systems, a list of standard cell sizes, and figures showing the relation between specific mass capacity and the specific power at high drains and the specific volume capacity *vs.* specific power for light drains for various cell systems.

This is a very easy book to read, the style is simple and clear and the manner in which the subject is developed in successive chapters greatly helps in its understanding.

Each chapter is separately referenced, up to 1979, and is therefore practically complete in itself; a great help to persons wishing to obtain information upon specific cell systems.

Its use does not require a deep knowledge of all the branches of science and technology involved in the development and production of electrochemical power sources. It will therefore be of value to the user of cells who is seeking the best system for his particular application, to the student, and to persons engaged in work on electrochemical power sources. It is of particular value in that it contains the important details of almost all cell systems available or likely to be available in the near future, in which respect it would appear to be unique amongst recent publications on the subject. It therefore provides a ready means of refreshing memory or checking details of almost any cell system being used or worked upon.

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Obituary

His many friends will have been deeply grieved to hear of the death on 20th September 1982 at the early age of 60, of Professor Dr-Ing. Karl-Joachim Euler after a long severe illness.

Essentially a great all-rounder, Professor Euler's career was characterised by three stages, an academic period followed by a period in industry and a final return to the academic world as Professor of technical physics at the Gesamthochschule Kassel. A shrewd and alert observer, he was quick to notice unusual behaviour and effects which he would investigate further when the opportunity arose, and it was no surprise that his last work was in the field of powder materials.

In his personal life he suffered more than his fair share of tragedy: his beloved wife Ursula who had suffered for many years from a severe heart disease died early this year at the time when his own health had already deteriorated considerably.

A big man in every way, he was outstandingly kind, generous and helpful right to his last days. I will always remember him for his help and encouragement in the early days of this Journal.

He will be greatly missed. I mourn the passing of a good friend.

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15th October 1982