Small Batteries

Volume 2 Primary Cells

By the same author:

Small Batteries Volume 1 Secondary Cells

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Volume 2 Primary Cells

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Preface

This volume dealing with primary cells is the second of two volumes dealing with all aspects of small batteries. The companion volume deals with rechargeable batteries.

It will be appreciated by the reader that it has been necessary to adopt a somewhat arbitrary distinction between small and large batteries. Generally speaking, the types of battery dealt with in these volumes cover the ampere-hour capacity range from appreciably less than 1 hour to about 30 ampere-hours. It so happens that this is a convenient demarcation between the types of battery discussed in this book and the larger types of battery, such as automotive batteries with capacities of the order of 100 or large stationary batteries with capacities up to 1200 A h.

Some batteries of capacity in excess of 30 A h are discussed but only if the manufacturer's range for a particular battery covers a wider capacity range.

The past twenty years have seen considerable improvements in performance of the well-established types of small battery, as well as the introduction of many new types of battery, each with their own particular advantages and in several cases designed to meet the requirements of a particular application. Over the same period many new applications for such batteries have been developed, ranging from battery-operated portable devices through new military applications to applications in space vehicles.

The designer of such devices has to take into account many conflicting requirements when selecting a suitable battery for such applications and, indeed, the final selection is

usually the result of a compromise between such factors. These volumes will assist designers by not only making them aware of the types of battery currently available and their suppliers, but will also assist in the selection of the most suitable battery to meet a particular application with the best possible compromise of performance and economic factors. If a single golden rule has to be stated it is that the designer should give very serious consideration to his power source from the start of his design project and, in the extreme, he should even design around the battery rather than vice versa.

It is hoped that these volumes will also be of interest to battery producers by enabling them to produce power sources which will meet the requirements of the user industries. They are also intended to be of interest to electronics and electrical engineers and, indeed, to all users of batteries and to students in these subjects.

The author has attempted throughout the texts to give acknowledgement to the many battery producers throughout the world who have provided him with information regarding their products and, indeed, without whose considerable assistance the production of these books would not have been possible. He would also like to give his thanks to R. B. Jay, of the BERE Group Ltd, for supplying the material on battery standards reproduced in appendix A. He would also like to acknowledge his debt to his wife Elisabeth for her help and encouragement throughout, to the typists and to the publishers for their continued assistance throughout the project.

T. R. CROMPTON