

The Primary Battery, a Retrospective

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The primary battery was mainly represented by the Leclanché system (now called the carbon zinc battery) at the time of the inauguration of The Electrochemical Society in 1902. The dry cell version of the system had been invented near the end of the 19th century. Many studies had established system viability for manufacturing large quantities of cells in a portable configuration and with reasonable quality control. The 6-inch size, a battery type that is produced to this day, was the only size available. Eveready manufactured the battery in the US, while several companies produced it in Europe. Later developments brought new sizes, better current capability, especially for continuous operation, and much better capacity. The electronics revolution of the Second half of the 20th century accompanied the highest development of this battery, but also showed its ultimate limitations and the need for new systems.

Fortunately, the alkaline battery had seen early development in the pre-World War 2 days with the zinc-mercuric oxide cell. The subsequent push of wartime needs developed this system quickly. After WW2, in the early 1950's, the alkaline zinc-manganese system was also quickly developed to satisfy the needs of the newly developed transistorized applications.

The early technology that gave rise to primary batteries will be reviewed. Seminal publications in the Transactions of the Electrochemical Society, and other sources as well as key patents will be reviewed.

Also, the important applications for the technology at the time will be discussed.