"The Discovery and Control of Electricity: A Historical Overview

The discovery and, more importantly, the control of electricity in the 18th century marked one of humanity's greatest revolutions, bringing with it the possibility of extending human activity periods with illumination and, later, increasing work capacity with motors, transforming the way humans interact with the planet.

Initially, however, electricity was confined to static locations, as it depended on cables as a means of conduction. Therefore, it can be said that the invention of batteries marked a second "electrical revolution," from which electronic devices became portable, with their electricity supply. But how did this technological innovation come about?

Although it may seem associated with the discovery of electricity, the invention of the battery dates back over 2000 years, at least in terms of its basic principle. In 1936, during the construction of a railway near Baghdad, workers found what is now known as the Parthian Battery, illustrated in Figure 1, an artifact over 2000 years old that is capable of producing 1 to 2 volts of electricity. The battery consisted of a clay pot filled with a vinegar solution in which an iron rod was inserted. Electricity is generated from the process of galvanization, which will be explored in the following units of this course.

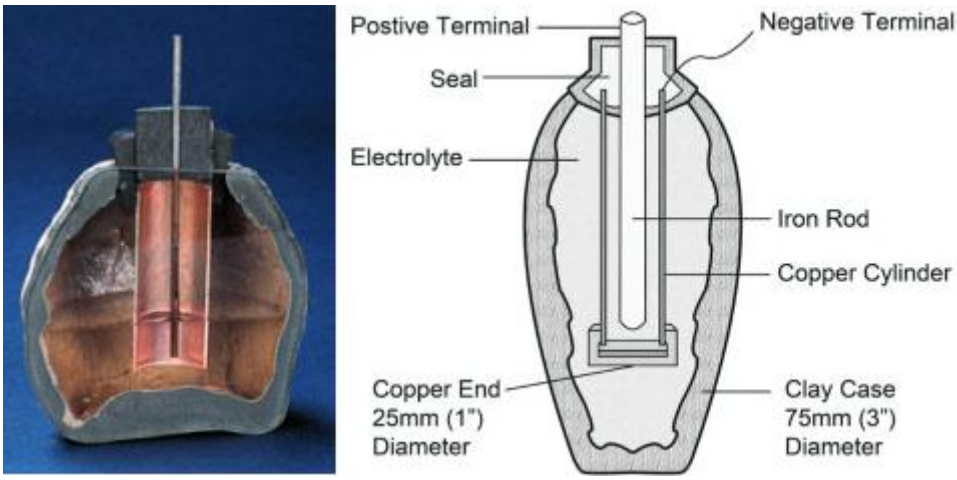

Figure 1: Parthian Battery.

The first practical use of static electricity was proposed by Alessandro Volta (1745-1827) with the invention of the "electric pistol". Volta conceived a long-distance communication system, albeit rudimentary, capable of transmitting only one bit of information. The idea was to stretch an iron wire between the cities of Como and Milan, Italy, supported by wooden poles. At the receiving end, the wire would terminate in a container containing methane. To send a message, an electric spark would be fired through the wire, detonating the gas and signaling the event. Despite its ingenuity, this communication system was never built. Figure 2 shows a portrait of Alessandro Volta.

Figure 2: Alessandro Volta, inventor of the electric battery.

Volta's discoveries found fertile ground in France to be recognized and valued. At a time when France was leading scientific advances, Volta was invited to present his research at the Institute of France. In spectacular demonstrations recorded in Figure 3, he impressed the audience, including Napoleon Bonaparte himself.

Figure 3: 1800: Alessandro Volta's experiments that impressed Napoleon

In 1802, William Cruickshank revolutionized electricity production by developing the first large-scale battery. His invention consisted of a rectangular wooden box where alternating plates of copper and zinc, of the same size, were soldered and fixed in grooves. By filling the box with a saline solution or dilute acid, Cruickshank created a flooded battery, like models still used today. This innovation, illustrated in Figure 4, made electricity more accessible and practical for various applications.

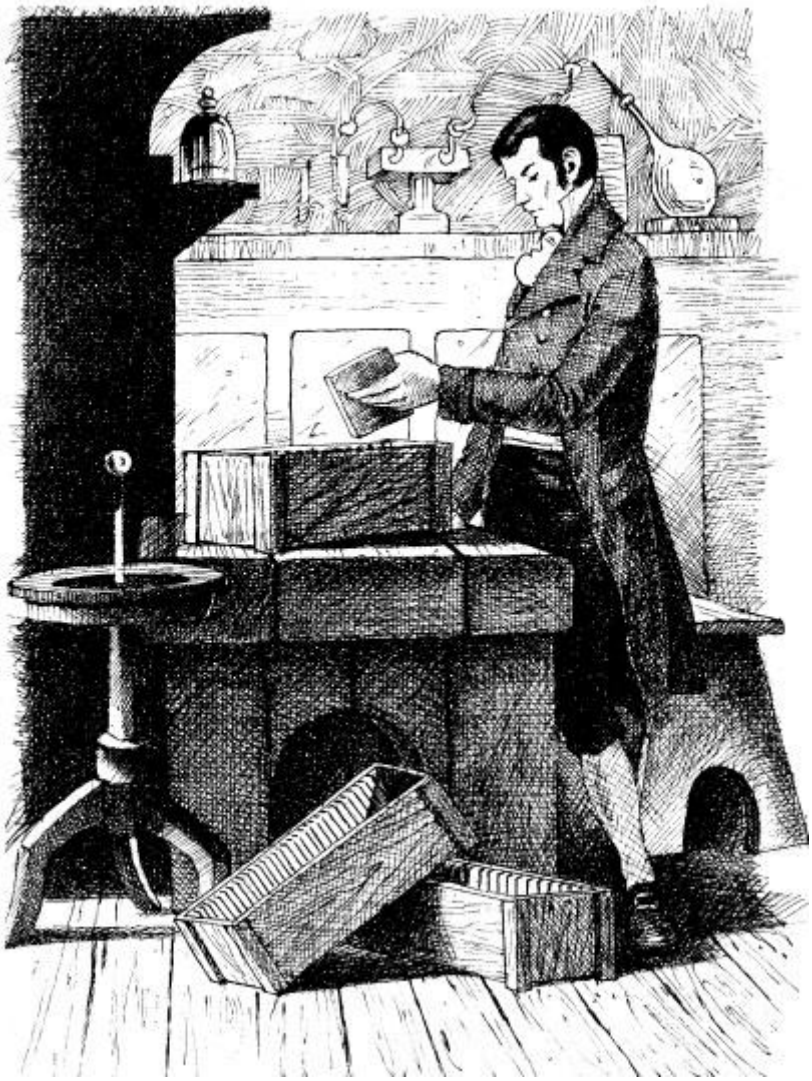

Figure 4: Cruickshank and the first flooded battery.

From this point on, the battery as a product was established, being improved over time and with investigations into other chemical compounds that could be used for electricity production.

A significant milestone was the invention of the rechargeable battery. Gaston Planté, a French physician, is credited with inventing the first rechargeable battery in 1859. This device, based on lead acid, enabled the reversible conversion of electrical energy into chemical energy and vice versa. Until then, primary batteries did not allow recharging.

Only with this brief history of batteries can we see the different discoveries and potential applications of a system capable of storing and providing electricity. But are all batteries the same? How do they work? These questions will be explored in units **2 - Battery Types** and **3 - Battery Compositions**, where we will understand more about the different types of batteries and how they work."

References:

Figures:

BU-101: When Was the Battery Invented?

https://batteryuniversity.com/article/bu-101-when-was-the-battery-invented

Content:
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