JÖNS JACOB BERZELIUS

Jöns Jacob Berzelius was born on August 20, 1779 in Väversunda Sörgård, Sweden. He was born into a well-educated family but had an unhappy childhood because his father and mother died while he was a child. At twelve, he was sent to a school in Linkoping, where he supported himself as a tutor. At seventeen, he began his medical studies at the University of Uppsala but was forced to withdraw when his scholarship was withdrawn. To help him, his uncle found him an apprenticeship to a pharmacist. This was followed by an apprenticeship to one of the physicians at the Medivi mineral springs. It was here that he learned the quantitative techniques that would be the foundation for his later work. In 1798, he won a small scholarship and reentered the medical school. He obtained his degree in 1802 with a dissertation on the analysis of Medivi mineral waters. Then, he became an unpaid assistant to the professor of surgery at Stockholm. He began a series of chemical investigations in collaboration with a young mine owner by the name of Wilhelm Witssinger with whom he collaborated on several researches. In 1806, he was appointed Reader in Chemistry at the Carlsberg Military Academy. One year later, he became Professor of Medicine and Pharmacy in the School of Surgery at Stockholm. After a reorganization of the medical schools in 1810, he was appointed to the chair of chemistry and pharmacy at the Karolinska Medical-Chirurgical Institute. One year later, he began his long association with the Royal Swedish Academy of Sciences serving as the Permanent Secretary of from 1818 to 1848.

His research was characterized by systematic diligence, chemical instinct, and experimental precision unparalled by other 19th century researchers. The collaboration with Hisinger led to the discovery of a new element, cerium, in 1803. Besides cerium, selenium, silicon, and thorium were discovered by him. Students working in his laboratory also discovered lithium, vanadium, and several rare earths. He had an innate ability to learn languages and soon became proficient in both German and French. Perhaps, this command of languages led him to try to simplify the chemical formulas and symbols, and the present chemical symbols were suggested by him. His determination of accurate atomic weights based on thousands of analyses allowed the composition of chemical compounds to be determined and led to the law of definite proportions. He composed the first accurate table of atomic weights. His experiments with electricity and electrolysis led to his development of the dualistic theory of bonding that could be successfully applied to inorganic but not organic compounds. He introduced the name halogen and allotropy. In mineralogy, he applied his organizing abilities classifying minerals by their chemical composition rather than by their crystalline type as had previously been done. He invented the mercury cathode, discovered the ammonium amalgam and pyruvic acid, studied chemistry of silicic acid, and investigated fluorides of many elements. Also, he analyzed meteorites and concluded they were of extraterrestrial origin.

His Textbook of Chemistry ran through several editions and was translated into five languages. Even more influential was the series of Annual Reports that he wrote from 1821 until his death. In these reports, he summarized the most important achievements of the previous year and gave his judgment. Often, he gave an explanation and coined a name for a new phenomenon such as catalysis and

polymerization. He was the leading chemical authority in Europe during the first half of the 19th century.

He was also a great organizer of men and institutions. As the Permanent Secretary of the Royal Swedish Academy of Sciences, he revived what had become a moribund organization. He continued to write textbooks, which were widely translated.

When he married in 1835, he was made a baron by Charles XIV. He died is Stockholm, Sweden on August 7, 1848

REFERENCES

http://www.chemheritage.org/classroom/chemach/electrochem/berzelius.html

http://www.woodrow.org/teachers/chemistry/institutes/1992/Berzelius.html

E. M. Melado, *J. Berzelius Foundations and Development of His Chemistry*, Dissertation, Princeton University, 1977, p. 12

http://chem.ch.huji.ac.il/history/berzelius.htm

A tidy laboratory means a lazy chemist.
— Jons Jakob Berzelius
Berzelius to Nils Sefstrom, 8th July 1812. In C. G. Bernard, 'Berzelius as a European Traveller', in E. M. Melhardo and T. Frängsmyr (eds.), *Enlightenment Science in the Romantic Era* (1992