

When I read the Great Minds articles, in the Wisconsin State Journal, I was surprised that they neither included any women nor mentioned the lack of recorded history about significant women and minority philosophers and scientists.

At a Madison Environmental Group staff meeting, I asked who we thought should be added to the list. Amanda Fuller went to the library and we started to read *Hypatia's Heritage: A history of Women in Science from Antiquity through the Nineteenth Century* by Margaret Alic (1986). Here is what we learned.

Hypatia of Alexandria (370-415 AD) is often regarded as the only women scientist listed in history books until 20th century Marie Curie. The advancement of algebra was her main contribution to science. She also advanced Greek scientific rationalism and was murdered in 415 by fanatical monks for her ideas and scientific beliefs.

Hildegard of Bingen, Germany (1098-1171), described by historian George Sarton as “the most distinguished naturalist and most original thinker of the twelfth century”, wrote an encyclopedia of natural history and developed the German botanical nomenclature. She advanced biology by introducing the idea of hereditary theory and she pioneered the now universally accepted notion that hygiene, diet, rest and exercise are critical to our health. She was also the first person to promote the boiling of drinking water and in her free time she composed music.

At the height of the smallpox epidemic, Lady Mary Montagu (1689-1762) unveiled a practice known to milkmaids that provided smallpox immunity. Her procedure of immunization spread rapidly, despite discouragement from the church and medical community. Montagu's

diligent research, combining observation with experimentation, also paved the path for germ theory of disease.

In the late nineteenth century Aletta Jacobs (1854-1929), the first woman physician in The Netherlands, was the first person to systematically study contraception. She also opened the world's first birth control clinic, which was located in Amsterdam.

The United States has fostered great minds too. Ellen Swallow (1842-1911), was an interdisciplinary scientist dedicated to protecting public health. The first female scientist graduate from MIT, her chemistry research was the foundation for our nation's first water-quality standards and for the Food and Drug Acts. An internationally recognized water scientist, Swallow considered water "a national asset and therefore not to be diverted from its natural channels for the pleasure or profit of any one to the exclusion of the rest." Fluent in German, she also introduced zoologist Ernst Haeckel's new discipline "oecology" to US scientists -- renaming it ecology.

Then there's Rachel Carson (1907-1964) -- my modern hero. She popularized science through her best-selling book *The Sea Around Us* (1950), which provided her with the funds to research and write *Silent Spring* (1962). This book, which uncovers the known and unknown risks of inappropriate chemical use, revolutionized the environmental movement and initiated the Environmental Protection Agency.

Thank you for creating an incentive for us to do some research and share this contribution, which represents only a small number of women throughout history that have contributed significantly to science and philosophy.