This week we are dedicating some time to shine light on a woman in history who made significant contributions in the Science Technology Engineering & Mathematics (STEM) field, broke barriers & paved the way for future generations of women.

Yvonne Brill (1924 – 2013)

Born and raised in Winnipeg, Manitoba, Yvonne was inspired to pursue academics by another notable woman making history, the first woman pilot, Amelia Earhart (Barry, 2020). Yvonne persevered after being denied admittance to the University of Manitoba's engineering program due to being a woman, the rejection lit a fire in Yvonne to fight against gender-based discrimination, as well as encourage & inspire other women in science (Smith, 2013). At the age of 20, she graduated at the top of her class with a degree in chemistry and mathematics.

Following her graduation, Yvonne obtained a job working for Douglas Aircraft, calculating trajectories for potential satellites (Barry, 2020). It's believed that during the 1940s she was the only woman who worked on rockets in the United States. She continued pursuing her career and academics, working for Marquardt Corporation (MC) while obtaining a master's degree in Chemistry from the University of Southern California at the same time. Yvonne's work at MC perfecting a type of rocket fuel system led to the first successful test of a US-made ramjet, a missile propulsion technology (Smith, 2013).

While at USC Yvonne met & married research chemist, William Brill & they together moved away in the 1950s. Yvonne began working for the RAND Corporation where she researched and developed data on the combination of rocket fuels that were later used as standard practice in America for decades (Barry, 2020). Yvonne took some time off to raise her three children & returned to working full-time for RCA Astro in 1966 (Douglas, 2013). While at RCA Astro she worked on the NOVA rockets that powered NASA's Apollo missions to the moon & achieved her most significant contribution as a scientist; creating the electrothermal hydrazine thruster (EHT) (aka., the tech that allows satellites to remain in the same position in space in relation to the Earth/staying in orbit) to fuel more efficiently & therefore be able to operate longer (Smith, 2013). This technology began to be used to keep satellites in orbit in 1983 and remains the industry standard to this day.

Yvonne's career ended working with NASA, overseeing the Space Shuttle Solid Rocket Program, serving on the Aerospace Safety Advisory Panel & numerous other national research councils related to space flight and exploration (Barry, 2020). Her brilliance contributed to rocket systems that powered the first weather satellites, NASA's moon missions, the first upper-atmosphere satellites, the Mars Observer and space shuttle. Despite never officially obtaining a degree/license as an engineer, she has been widely recognized for her contributions to the field, notably, in 2009 the American Association of Engineering Societies awarded Yvonne the John Fritz Medal which is often described as "the Nobel prize of engineering" (Tau Beta Pi, 2023). Throughout her life, she received numerous awards, recognitions, and medals for her contributions to the field of science and technology including being admitted into the National Inventors Hall of Fame and obtaining the National Medal of Technology and Innovation (see image of Barack Obama bestowing it to her) (Smith, 2013). Up to the end of her life, Yvonne continued

her efforts to promote women in science and engineering, recognizing and nominating women for awards and prizes she believed they deserved.

Fun Fact: this notable woman in history is the great-aunt of one of our CASON counsellors!

Figure 3: Awarded by Barack Obama, Getty Images

Figure 1: courtesy of the National Science and Technology Medals Foundation

Figure 2: Courtesy of the Winnipeg Sun

References

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