

Who Says Women Can't be Doctors?: The Story of Elizabeth Blackwell

by Tanya Lee Stone

Published in 2013

Real women, real lives: Born in 1821 in Bristol, England, Elizabeth Blackwell moved to the U.S. with her family when she was 11 years old. Her father supported the abolition movement as well as women's rights, leading him to educate his daughters to the same standard as his sons, which was a truly progressive stance at the time (as adults, his children took up this legacy of social reform). It was this early education that undoubtedly contributed to Blackwell's confidence in the face of her derisive male medical school colleagues. After becoming the first woman to earn an M.D. from a U.S. medical school in 1849, she worked in London and Paris before returning to New York City and establishing her own practice. She was forced to close it soon thereafter, largely due to lack of patients, but did not give up. With her sister Emily, who had also become a doctor, she opened the New York Infirmary for Women and Children in 1857. It provided free healthcare to the poor and was the "first hospital run by women, for women." In 1868 Blackwell widened its mission, very fittingly adding a women's medical college. She lived until she was 81 and advocated for the education and training of women physicians throughout her long life.

Questions to ponder with your kids: Elizabeth Blackwell was rejected from 28 medical schools before she gained acceptance to Geneva Medical College, where she was finally able to achieve her goal and study to become a doctor. Ask your child if she/he has ever been rejected from something they cared about (sports team, bus patrol, etc.)? How did she/he handle it? Did she/he keep trying like Elizabeth? If not, why not? Elizabeth became a doctor long before many other women did, and the book offers an opportunity to discuss women's history, particularly women's jobs and professions. The book states that in the 1830s, "girls were only supposed to become wives and mothers. Or maybe teachers, or seamstresses." Take time to list the jobs your child knows that women do today, then research when women first took on that role. Use these books - all of the women featured in this set were among the first in their fields - check out more books, google, etc. Make sure to highlight that in almost every field it required a pioneer like Elizabeth to do it first and open the door to other women.

I am Jane Goodall

by Brad Meltzer

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Real women, real lives: Jane Goodall was born in London in 1934 and, as the book charmingly demonstrates, showed an early inclination for animals. She left school at the age of 18 and began observing chimpanzees in Gombe before obtaining any formal scientific training. As she would discover upon entering the PhD program at Cambridge after completing her first season of fieldwork, she had done everything wrong - a scientific observer was not meant to name her subjects or attribute emotions and individuality to nonhuman animals. But it was arguably her lack of training that enabled her to connect to the chimps and make her groundbreaking discoveries; her observation that chimpanzees make and use tools is considered to be “one of the greatest achievements of twentieth-century scholarship.” Goodall’s innate connection to animals has shaped her international advocacy work in conservation and her role as a UN Messenger of Peace. To keep abreast of her current activities, follow @JaneGoodallInst on Twitter.

Questions to ponder with your kids: Jane Goodall's love for animals began when she was a child, and was fueled by books. Ask your child what she/he is passionate about right now, and if that has changed over the years (it's fun to remind them of things they loved when they were toddlers too!). Take some time and explore how those passions might lead to future jobs and careers like they did for Jane. What careers would they be? Jane's path to Africa and becoming a chimpanzee researcher took time, persistence, and several other jobs along the way. What would the careers you explored together require? Ask your child to imagine the paths she/he would take to get there, and what challenges/pitfalls she/he might face along the way. The book, and Jane's career, also has a powerful message about cooperation and conservation. Work with your child to identify several things we (including animals!) all have in common. How can we work together to help protect endangered animals and the environment? Read about Jane Goodall's efforts in the end pages of the book, and come up with a few ideas on your own (including, if your child is interested, joining Jane's Roots & Shoots network for young people; find out more at www.rootsandshoots.org).

Margaret and the Moon

by Dean Hamilton

Published in 2017

Real women, real lives: Margaret Hamilton was born in 1936 in Indiana and went on to earn a BA in mathematics in the 1950s when only 5.2% of U.S. women 25 and older completed four or more years of college. As a young wife and mother she took a job as a programmer predicting weather for MIT to help support her family while her husband attended law school. She was planning to attend graduate school once law school was over, but by the time that happened her job at MIT had evolved into work for NASA's Project Apollo, and she chose the latter. Hamilton was two anomalies in the 1960s - both a working mother and a woman in a technical world dominated by men. And neither gave her pause. She frequently brought her daughter to the lab with her on nights and weekends; Lauren slept on the floor while her mother created code. It was Lauren, in fact, who inadvertently led to Hamilton's development of software that recognized error conditions and included recovery programs - the innovations that saved Apollo 11's moon landing. While playing with the command module, Lauren caused it to crash, leading Hamilton to advocate for error-checking code although NASA countered that astronauts were trained to be "perfect". Today, the

woman who taught herself to code and coined the term “software engineer” runs her own software company and in 2016, won the Presidential Medal of Freedom for her work on Apollo.

Questions to ponder with your kids: When Margaret Hamilton was growing up in the 1940s and 50s, she wondered why many girls didn't play baseball, or grow up to become scientists and doctors. This was nearly 70 years ago - do many girls play baseball now, or become scientists and doctors? Ask your child if there are other things that mostly boys or mostly girls do. Are any of her/his activities like this? Why does she/he think this happens? Margaret decides that her solution to being anything she wants to be is to study hard at school. Ask your child what they would do to change the activity they identified as mainly male or female. Margaret loves math, and decides to apply that to computers, which took up entire rooms when she was working with NASA in the 1960s! Ask your child to imagine what they would like computers to do now that they are much smaller and even more powerful than the ones Margaret worked with. How would they do it? This is an excellent opportunity to start exploring coding with your child.

For little ones, Hello Ruby: An Adventure in Coding is a great way to begin; free platforms like Scratch (scratch.mit.edu) and Alice (alice.org) work well for older children who want to get going on the computer as soon as possible.

Grace Hopper: Queen of Computer Code

by Laurie Wallmark

Published in 2017

Real women, real lives: Grace Hopper, the woman who coined the term “bug” in relation to computers and invented the compiler, the basis for software as we know it, was born in New York City in 1906. After earning her PhD in mathematics from Yale (quite the rare feat for a woman in the 1930s), she taught math at Vassar college until WWII when the widespread enlistment of able-bodied men forced the Navy to start accepting women. It was the Navy that brought Hopper into contact with computers, and her persistence and imagination led to innovations that continue to dictate how humans interact with computers. Hopper facilitated the development of open source by encouraging programmers to share code that worked, streamlined coding by storing frequently used instructions in the code rather than repeating them ad nauseum, and “taught” computers how to use English by creating code that translated it into binary. Without Hopper’s innovations and others like it, for example, Microsoft Windows would take nearly 5,000 years to install if each switch on the semiconductor chip had to be flipped manually. Hopper is a pioneer in computing, and

everything from an annual women's technology conference to a naval guided missile destroyer carry her name. In 2016, she posthumously received the Presidential Medal of Freedom along with Margaret Hamilton, another subject of a book in this collection, for her visionary work.

Questions to ponder with your kids: Grace Hopper faced several setbacks on her way to becoming one of the world's first and most notable computer programmers. Ask your child to identify them and describe how Grace overcame each one. Has she/he ever faced setbacks like Grace? How did they get past them? What lessons could we all learn from Grace? While Grace was doing her pioneering work on FLOW-MATIC, a computer program that essentially translated English into binary, the "language" used by computers, she took a break and doodled in order to think unconventionally and get her brain to consider new ideas. Ask your child what helps her/him to problem-solve and think creatively. As Grace Hopper said, "Humans are allergic to change. They like to say, 'We've always done it this way.'" What problems, in her/his life and the wider world, require new ideas and solutions? What would she/he do/create/solve if there were no rules or expectations? Take this activity further by asking your child to define their idea more fully, whether it be drawing a new invention she/he has come up with or outlining her/his plan of action in a bulleted list.

The Girl Who Thought in Pictures: The Story of Dr. Temple Grandin

by **Julia Finley Mosca**

Published in 2017

Real women, real lives: Born in 1947, Temple Grandin failed to meet developmental milestones, particularly related to speech, and physicians believed she suffered from brain damage. As she grew, however, it became clear that she was autistic. She was sent to a preschool for children with special needs, began intensive speech therapy, and started talking at age 4. While academic success eventually followed, her difficulty relating to her classmates and others persisted. As Temple herself has explained it, "I couldn't figure out what I was doing wrong...I could never figure out why I didn't fit in." She has since realized this difference was due to her inability to pick up on the niceties of typical social interactions and exchanges; she can't "read" social languages. She found her refuge, however, in the explicit language of science, earning a PhD in animal science and making several noteworthy contributions to the field, including the center track restrainer system and a curved loading chute. Both inventions are for livestock and both relate to her own experience with autism - they are designed to make animals more comfortable and thus more calm. She also

lectures worldwide on her experience with autism, and serves as a source of inspiration for the autistic community. In light of the obstacles she has faced and overcome, it seems remarkable that she describes her greatest challenge in life as “being a woman in a man’s world” - the world of farms and animal science.

Questions to ponder with your kids: Temple Grandin has autism, which means her brain processes the world differently than other people. Ask your child to identify what Temple does differently in the book - what did she like as a child, and what didn’t she like? What difficulties did she encounter? Continue by asking your child if they know anyone like Temple with autism or other special needs. How does she/he navigate the world? What is easy? What is difficult, and how does she/he overcome it like Temple? The book offers an excellent avenue into a conversation about difference and acceptance, and an opportunity to encourage empathy. Ask your child what makes them feel different. How does she/he, like Temple and other friends with special needs, get the courage to put aside that sense of difference and “march through that door”? How can she/he help others find that courage?

The Doctor with an Eye for Eyes: The Story of Dr. Patricia Bath

by **Julia Finley Mosca**

Published in 2017

Real women, real lives: Patricia Bath was born in 1942 in Harlem, New York and, like Jane Goodall's stuffed chimpanzee named Jubilee, found her life's inspiration in a toy. But for her, it was a chemistry set that she received when she was eight. Bath decided to become a doctor to help people, and her parents empowered her to do so, emphasizing that education was the key. At a summer program while she was 16, she contributed to cancer research that made national headlines, eventually co-authoring a paper that led to her winning Mademoiselle magazine's merit award in 1960, which was awarded to young women that show promise of great achievement. Bath certainly fulfilled upon that promise, developing a medical discipline (community ophthalmology), becoming the first African American to complete an ophthalmology residency at NYU, serving as the first full-time female faculty member in the Department of Ophthalmology at the Jules Stein Eye Institute (UCLA), founding the American Institute for the Prevention of Blindness (AIPB) with three colleagues, and developing the Laserphaco Probe, a device and method for removing cataracts, the most common cause of vision loss in people over 40).

The device was patented in 1988, making her the first African-American female doctor to earn a medical patent in the U.S. Today, Dr. Bath is retired but continues to direct the AIPB and hopes to expand its mission worldwide through the creation of the World Eye Institute. While conscious that she has broken significant barriers as both a woman and an African American, her greatest hope is that one day society will no longer see these distinctions: "Sometimes I want to say to people, just look at my work. . . . I've had technological obstacles, scientific obstacles, and obstacles being a woman. Yes, I'm interested in equal opportunities, but my battles are in science."

Questions to ponder with your kids: Dr. Bath's story touches on many important issues, particularly gender and civil rights. Ask your child about differences between boys and girls (this conversation can be eye opening!). Do they think, like Patricia, that "anything boys can do, girls can do to"? If not, why not? Be sure to extend the conversation to professions and if you've already read "Who Says Women Can't Be Doctors" (included in this set), draw parallels to that book. Elizabeth Blackwell graduated from medical school in 1849, and by the 1960s when Patricia Bath was a teenager, there still weren't many women doctors, particularly African American ones.

Does she believe that the color of your skin should determine your opportunities and/or treatment? Last, but not least, Dr. Bath is famous for inventing the laserphaco probe, which helps people with cataracts (the clouding of the eye's natural lens). Ask your child if she/he could create an invention to help people and improve their health what would be it? How would it help, what would it look like, and how would it work? For the particularly inspired, ask her/him to draw and design it!