

Minority Inventors

African-Americans, Women, and Hispanics(?) who have Contributed to the Development of Technology

AFRICAN-AMERICANS

- Elijah McCoy
- Granville T. Woods
- Lewis Latimer
- Garret A. Morgan
- Frederick M. Jones

Elijah McCoy

- Born in Ontario, Canada
 - Son of runaway slaves.
- International Patents
 - Great Britain
 - France
 - Austria
 - Germany
 - Russia
- Mechanical Eng. Apprentice
 - Edinburgh, Scotland



Drip Cup

- Patented 1872
- Over 57 patents
- Elijah McCoy Manufacturing Firm
 - opened to market and improve inventions



Granville T. Woods

- Born in 1856
- TRAINING
 - Technical School for Electrical and Mechanical Engineering
 - 2 yrs as engineer aboard British Steamer Ironsides



Inventions & Patents

- Inventions
 - Dynamotor - regulated electric motor
 - Induction telegraph - communicate to and from moving trains
 - Electro-mechanical brake
 - Electric railway conduit
- Patents
 - Over 50 Patents - Control and Distribution of Electricity
 - Woods Railway Telegraph Co.- Cincinnati, Ohio

Lewis Latimer

- Member of Edison Pioneers
 - group of distinguished scientists and inventors who worked for Edison
- Joined navy at age 15
- Worked for a Patent Office
 - learned to draft



"LIKE THE LIGHT OF THE SUN IT BEAUTIFIES ALL THINGS ON WHICH IT SHINES, AND IS NO LESS WELCOME IN THE PALACE THAN IN THE HUMBLEST HOME"

Filament

- Electric lamp with cheap filament
- Helped Edison light up the world
- "Incandescent Electric Lighting"
 - book was a guide for lighting engineers



Garrett Augustus Morgan

- Born in 1877 (died 1963)
- Opens Sewing Machine Company (1907)
- Opens Tailoring Shop 1909
 - invented first hair straightening cream
- G. A. Morgan Refining Company (1913)
 - Formed to sell the cream. Still open today
- "The Cleveland Call" (1920)
 - Black newspaper
 - Now called the Cleveland Call and Post
- Patented the de-curling comb



Gas Mask

- Patented the breathing device later called the gas mask (1914)
- Upper Tube
 - Exhale
- Lower Tube
 - Inhale air from the floor where there was the least amount of smoke.
 - Tube close to floor wetted to allow cool air and keep dust out.
 - Tunnel under lake Erie traps 200 men. Morgan and brother use gas mask to save them.



Traffic Signal



- Patented 1923
- T-shaped poll with 3 positions:
 - Stop
 - Go
 - All directional stop
- Run by hand mechanism near base
- Used all over the world

Frederick McKinley Jones

- Born in 1892 (died 1962)
- Sergeant in the U.S. Army (WW1) and served in France as an electrician.
- Elected member of the American Society of Refrigeration Engineers (1944)



Patents

- Over 60 patents
 - 40 which dealt with the refrigeration system
- Invented and patented a ticket-dispensing machine for movie houses (1939)
- Patented first automatic cooling system for trucks (1943)
 - Started the US Thermo Control Company
- Other patents included:
 - Automatically Starting and Stopping Gas Engine
 - Two-Cycle Gas Engine

WOMEN

- | | |
|---------------------|----------------------|
| • Hypatia | • Marjorie Joyner |
| • Mary Kies | • Irene Joliot-Curie |
| • Ada Byron Augusta | • Grace Hopper |
| • Sybilla Masters | • Chien Shiung Wu |
| • Martha Coston | • Bessie Blount |
| • Mary Walton | • Julia Robinson |
| • Amanda Jones | • Rosalind Franklin |
| • Margaret Knight | • Heddy Lamar |
| • Marie Curie | • Stephanie Kwolek |
| • Julia Ann Gardner | • Gertrude Elion |
| • Beulah Henry | • Frances Gabe |
| • Mary Anderson | • Mae Jemison |

- 370(355?) - 415 AD
- Daughter of Theon
 - (mathematician who taught at the Library of Alexandria)
- Taught in Alexandria
 - Known as "the philosopher"
- Wrote four major papers
 - Three on geometry and algebra
 - One on Astronomy
- Invented many tools
 - Distilling instrument
 - Astrolabe
 - Planisphere
- Mob dragged her from her classroom and peeled her to death with oyster shells in the street
 - Death was political, rather than because of her sex

Hypatia



Mary Kies

The First American Woman Patent Holder

- The Patent Act of 1790 allowed anybody to get a patent.
- First woman to receive a U.S. patent
- May 15, 1809
- Method of weaving silk with straw



Sybilla Masters



- First Woman Patenter ?
- English courts awarded a patent to her husband Thomas (1715)
 - Method of making cornmeal from maize--"a new invention," the patent clearly stated, "found out by Sybilla his wife."
 - "used hammers instead of grinding wheels to make hominy meal from Indian maize"
- She continued to invent four years after her first patent
 - patented a new fabric made from palmetto and straw.
 - British patent #401

Ada Byron Augusta



- Nicknamed "Countess of Lovelace"
- Born in 1815 (died 1852)
- Worked with Babbage on the Difference engine
- Ada suggested to Babbage writing a plan as to how the engine might be used to calculate Bernoulli numbers.
 - considered the first computer program
- A software language developed by the US DOD is called "Ada" in her honor

Martha Coston

Civil War Saver



- Inspired to invent a system of signaling flares from her dead husband's notes.
 - Used pyrotechnics to build flares.
 - Obtained the patent for "Pyrotechnic Night Signals" in 1859
 - The Navy bought the right to patent for \$20,000
 - Won the contract to manufacture them.
 - System of signaling flares
- She saved the lives of many shipwrecked soldiers during the civil war

Mary Walton

- Patented a device that minimized the smoke going into air (1879)
 - Deflected emissions into water tanks
 - Flushed into cities sewage systems
- Worked in basement to cut down clanging of trolleys
 - Wooden box
 - Painted with tar
 - Filled with cotton and sand

Amanda Jones



- Invented a vacuum method of canning foods
- Amanda never claimed the invention because she said it was given to her in a vision from her dead brother.
- Amanda received 7 patents in 1873
- Women's Canning and Preserving Co.
 - All female employees
 - "This is a woman's industry. No men will vote our stock, transact our business, pronounce on women's wages, supervise our factories. Give men whatever is suitable, but keep the governing power. This is a business training school for working women...Here is a mission, let it be fulfilled."



Margaret Knight

- Born in 1838
- Stop-motion device machine
 - saved lives
- Bottom of paper bags
 - Charles Annan tried to steal patent
 - was not successful
- over 22 patents



Marie Curie

"Nothing in life is to be feared. It is only to be understood."

- Born in 1867 (died 1934)
- Marie and Pierre worked together on radiation experiments
- In 1898 they discovered two new elements
 - Radium
 - Polonium (named in honor of Poland)
- Curies shared the Noble prize in physics with Becquerel for their work on radiation (1903)
 - Marie Curie was the first woman to ever win the prize
- 1911 she received a 2nd Noble prize in chemistry
- 1914 head of Paris Institute of Radium
- Died of anemia, resulting from radiation overexposure
- She left behind two daughters, one also won a noble prize

Julia Anna Gardner

- American geologist
- Born in 1882 (died 1960)
- B.S. and M.S. from Bryn Mawr
- Johns Hopkins University
 - Ph.D. & research assistant
- Worked for the U.S. Geological Survey (USGS)
- Joined the military unit during WWII
- Geologically mapped the western Pacific Islands
 - Pinpointed Japanese beach launching pads by the sand
- Main work was in stratigraphic paleontology

Beulah Henry

- Born in 1887
- "The Lady Edison"
- 110 inventions & 49 patents

Invented in the fields of business, home and child care.

- Vacuum ice cream freezer (1912)
- "Dolly Dips" soaps w/ sponges for children (1929)
- Photocopier - makes four typewritten copies w/o carbon paper (1932)
- "Miss Illusion" doll - eyes change color (1935)
- First bobbinless sewing machine (1940)
- Continuously attached envelopes for mass mailings (1952)



Mary Anderson

- Invented the windshield wiper
 - "Activated a swinging arm that mechanically swept off the ice and snow."
 - Device was easily removed in warm weather
 - Standard equipment on American cars (1913)
- Labor organizer in the 1920's

Marjorie Joyner

- Born in 1896 (died 1994)
- 1st African American female patent holder
- Invented a permanent wave machine for hair to set for days
 - never received money for her invention
- Marjorie went on to become an inventor and an educator in African American beauty culture.



Irene Joliot-Curie

- born in 1897 (died 1956)
 - Daughter of Marie and Pierre Curie
- Served as a nurse during WWI
- Doctorate in chemistry 1925
 - Thesis on the alpha rays of polonium
- Nobel Prize in Chemistry in 1935
 - Helped in the discovery of uranium fission
- Professor in the Faculty of Science in Paris (1937)
- Director of the Radium Institute
- Commissioner for Atomic Energy
- Appointed Undersecretary of State for Scientific Research (1936)

Grace Murray Hopper

- Born in 1906 (died 1992)
- Nicknamed "Amazing Grace"
- Computer Work
 - Joined the Eckert-Mauchly Computer Corporation as a Senior Mathematician
 - Worked on 1st full scale digital computer (Mark I)
 - Developed 1st computer compiler for UNIVAC
 - invented computer language COBOL
 - said to have coined term "computer bugs"



Chien Shiung Wu

- born in China in 1912 (died 1997)
 - Immigrated to the United States in 1936
- Disproved the law of conservation of parity
 - T. D. Lee and C. N. Yang-won Nobel Prize
 - Chien Shiung Wu was not mentioned
- Worked on polarized electromagnetic radiation
- Worked on the Manhattan Project
 - Developed a process for separating U²³⁵ from U²³⁸
- Performed research on sickle cell anemia
- Comstock Award from the National Academy of Sciences (1964)



Bessie Blount

- Born in 1914
- Invented a device to help disabled soldiers eat
 - Portable receptacle support
 - No one would buy it
 - Signed rights over to the French in 1952
- made statement that she had prove
 - "that a black woman can invent something for the benefit of humankind"

Julia Robinson

- Born in 1919
- Schooling
 - Missed two years of school because of an illness
 - Later made up four years of school in one year
 - Went to San Diego State University
- Inspired by E. T. Bell's book *Men of Mathematics*
- Started her work on Hilbert's tenth problem
 - Her ideas lead to a complete answer
 - Her answer involved many properties of the Fibonacci numbers
- Professorship at the University of California, Berkley.
- First woman elected to the National Academy of Sciences

Rosalind Franklin

- Born in 1920 (died 1958)
 - St. Paul's Girl's School
 - Cambridge University in 1938
- Learned Xray diffraction techniques in Paris
- Worked at King's College
 - First to recognize the helix shape of DNA
 - James Watson, Francis Crick, and Maurice Wilkins- shared the Nobel Prize for the discovery of the double helix
 - Never received official recognition her work
- Also well know for her work on coal and plant viruses.

Heddy Lamar



- Movie star
- Inventor
- Radio control torpedo idea
- Slightly modified method used in satellite technology

Stephanie Kwolek



- Born in 1923
- B.S., Chemistry
 - Carnegie-Mellon University, 1946
- DuPont's synthetic fibers research division
 - obtained 16 patents in her 40 year career
- Discovered Kevlar
 - lightweight material that is five times stronger than steel and does not rust or corrode
 - Used from bulletproof vests to canoes
- Inducted into the National Inventors Hall of Fame

Gertrude Elion

- College degree at age 15
 - Came into lab everyday until death in 1999
- Spent 60 years searching for cures for deadly diseases
 - Compared the functioning of normal human cells with that of bacteria, viruses, and cancer cells in order to find ways to inhibit or kill harmful invading cells without damaging healthy ones
 - cancer, malaria, leukemia, heart disease, and bacterial infections
- Honors
 - 1998 Nobel Laureate in Medicine
 - 1st woman inducted to the Inventors Hall of Fame
 - National Medal of Science
 - National Women's Hall of Fame
 - Engineering and Science Hall of Fame



Frances Gabe

- Inventor of the Self -Cleaning House
- Includes over 68 patented devices
 - Kitchen cabinets where the dishes are washed, dried and stored, clothes are washed and dried in the closet where they hang, etc...



Mae Jemison



- Born in 1956
- Astronaut in 1986
 - 5th African-Am Astronaut
 - One of 15 chosen out of 2000
 - 1st African-Am Woman Astronaut
 - 1st African-Am Woman in Space
 - Science Mission Specialist (Endeavor)
- Prof of Environmental Studies at Dartmouth
 - Heads the Jemison Institute for Advancing Technology in Developing Countries