Brilliant Minds, Hidden Stories: African-American Inventors

By Lemuel “Bill” Copeland

This report about African-Americans whose inventions have contributed significantly to the “American way of life” was prepared by Brother Lemuel Copeland in 2002 as part of Gamma Rho Sigma Chapter, Phi Beta Sigma Fraternity’s presentation at the Roy Wilkins’ School, (P.S. 132 in Queens. NYC) for their Black History Month observation. It has been updated in 2026 to make it more contemporary. This report reflects Brother Copeland’s (now approaching 90 years of age) own life experiences growing up in the Jim Crow south and information summarized from Nathan Aaseng’s book, “Black Inventors” and from the “Black Inventors” Internet web site.

Americans take pride in being a self-reliant people. We place a considerable value in individuals who rely on their own mind and hard work to plan and control their own destinies. We tend to scorn people who constantly rely on others to make life easier for themselves. This image of rugged individualism, however, is misleading. We are in constant debt to inventors who created useful products, processes and machines that we could never have devised ourselves. Few of us Americans can get through even a few minutes of a day without depending heavily on the efforts of hundreds of people who have created many things to make our comfortable day-to-day life possible. Our day has barely begun before we have used so many ideas and devices from others that we barely take notice of them. We wake up in the morning in a spring mattress bed to the sound of an alarm clock, flick on a light switch and turn on the radio and TV to hear weather reports compiled by satellites and computers. We take milk from a refrigerator, which has been pasteurized and packaged by machines and transported in air-conditioned vehicles.

You probably have been told that Thomas Edison invented the electric light, that Alexander Graham Bell invented the telephone, that Samuel Morse invented the telegraph, that Henry Ford invented the automobile, that Orville and Wilber Wright invented the airplane, that Cyrus McCormick invented the grain harvester, that Charles Goodyear invented the rubber tire, that Robert Fulton invented the steam boat and that Eli Whitney invented the cotton gin. How many African-Americans does the above list include? None. Most of you can rattle off a long list of prominent African-American athletes and entertainers, yet few of

you can recognize the names of African-Americans who have changed the way we live. Most Americans would be hard-pressed to come up with a name of a single African-American inventor. George Washington Carver might be the lone exception. Even the National Inventors Hall of Fame established in 1973 has been slow to honor the work of African-Americans.

One might conclude that African-Americans have had little interest or success in inventing. The truth is we can hardly get through a day without taking advantage of the creative genius of black inventors. An African-American developed the processes that bring sugar to your table and shoes to your feet. An African-American developed the process that lubricates much of our machinery that keeps the country going. An African-American developed the mechanism that keeps the food frozen in your refrigerator. You cannot tee up a golf ball, bait a fishhook, or stop at a traffic light without bumping up against an African American invention.

Unfortunately, no one knows the extent to which black inventors have contributed to our society. Many of their good ideas were stolen from them, quickly imitated and someone else took the credit. Slavery also made it more difficult for Blacks to get credit for their inventions. Most slave owners believed that educating blacks was a waste of time and that slaves who did learn would became less willing to do the hard manual labor required of them. Some masters were so opposed to slaves being educated that they whipped, beat, mutilated and/or sold slaves who were caught reading or learning to read. These restrictions on learning made it difficult for slaves to develop the knowledge and intellectual training needed to be creative. Also, slaves had neither the leisure time nor the equipment to carry out experiments needed to perfect their inventions. Even with those handicaps, however, African-American slaves developed innovative devices and processes.

You may have heard or certainly will hear the common expression, “necessity is the mother of invention”. Nearly all of their inventions involved ways to save labor or improve production on the farm or in the houses where these slaves worked day after day at their tedious and boring tasks. However, the masters claimed ownership of the slave inventions, took credit and put the inventions under their own name. This practice has made it

impossible to determine how much African-American have contributed to inventions that have reshaped our world. There is much evidence that Eli Whitney stole the idea of the cotton gin from a slave named Sam, whose father, also a slave, had invented a device that separated the seeds from cotton. This device made his work easier and enabled him to produce more for the master. There was also a mechanically gifted slave named Joe Anderson, who belonged to Cyrus McCormick. Many historians believe that Joe contributed to the invention of the grain harvester for which McCormick became famous and rich. Unfortunately, this disregard for the rights of slaves made it so that the claims of African-American contributions to the inventions will never be known.

The abolition of slavery did not remove the barriers to blacks getting credit for their inventions. They continued to struggle with inferior education and inferior economic opportunities. Racial prejudice caused many blacks to disguise their inventions by putting them in the names of white people. Again, because of this, the unfortunate result is that many of the inventions of African-Americans will never be known. A few early black Americans made significant contributions to the early development of this country. Benjamin Banneker, a black engineer, played a major role in helping George Washington to design the nation's capital in Washington, D. C. He also built the first clock in the United States. Around 1800 James Forten designed the device for raising and lowering sails on the ships that crossed the oceans.

THE FOLLOWING ARE JUST FIVE OF THE "UNKNOWN" AFRICAN-AMERICANS WHOSE INVENTIONS IMPACT OUR EVERYDAY LIVES.

ELIJAH McCOY

1844-1928

Elijah McCoy was born in 1844 in Canada, near Detroit, Michigan. His parents were former slaves who had escaped from their masters and fled North with the help of the Underground Railroad. Runaway slaves lived in constant fear. Those who remained in the United States never knew when a bounty hunter might break down their door in the dead of night and drag them back to slavery. Many runaways, like the McCoy family, sought protection in Canada, where Elijah attended a school for black children. After ten years, no longer fearing the bounty hunters, the McCoy's came back across the border to live in Michigan. Elijah was a good student

and worked part-time in a machine shop where he became fascinated with the machines and developed a talent for taking them apart and putting them back together. His parents believed that a bright young boy like Elijah could do well in life only if he got a decent education. However, educational opportunities for Blacks were rare. Even people who were opposed to slavery believed that Blacks were inferior and incapable of higher education. Elijah's parents worked hard and saved all they could in order to give Elijah the education they had been denied. Recognizing Elijah's special talent, and the growing importance that machines played in America, they wanted to put Elijah in a school where he could learn more about machines. In 1860, he was sent to study in England where racial prejudice was not as strong as in the United States. He studied, trained and worked as an apprentice mechanical engineer for five years before returning to the United States. Elijah McCoy applied for many jobs that required a mechanical engineering background, but failed to get any of them. The myth that blacks were less intelligent than whites dominated the business world as well as the educational system. While many companies would hire African Americans for unskilled labor, almost none would take a chance on a black person for skilled or high level positions. Also, white workers refused to be supervised or instructed by Black co-workers. To his disappointment, Elijah had to take a job as a fireman with a railroad company, where his main jobs were to shovel coal and to pour oil from a cup to lubricate the train's steam engine. This was an important task because a well-lubricated train engine ran better, lasted longer and did not overheat and cause dangerous fires. However, any untrained, uneducated person could have handled these simple, routine tasks. Harking back to the idiom, "necessity is the mother of invention", searching for something to keep his mind occupied, Elijah started thinking about a process that would put oil into the engine without having to stop the train every few miles. He believed that the ideal solution would be to create an automatic device that could lubricate the engine almost continuously without the fireman having to be involved. Several inventors had developed such a device but none of them worked well.

Elijah spent many of his idle hours thinking of possible ways to create a self-lubricating machine. After two years of work in his tiny shop at home, McCoy came up with a machine that would continuously supply oil to the moving engine parts. On July 23, 1872, he was granted a patent by the United States Patent Office. McCoy's employer quickly recognized the value of the device and put in into use on all of its trains. When word of the invention spread, Elijah McCoy received many inquiries from people all over the world who were

eager to use his invention. However, once again, McCoy found that his race was a barrier. When they discovered he was Black, many executives withdrew their request for consultation and refused to buy his invention. His invention was referred to with a racial slur, the “nigger oil cup”. But McCoy’s lubricator cup worked so well that virtually all engineers eventually adopted it and by 1915 all trains in the United States and all foreign countries used McCoy’s invention. He became a full time consultant and inventor, adapting his invention to many other machine, including ocean going ships and automobile brakes and engines. He also created many household inventions as well. His fifty seven inventions included the ironing board, lawn sprinkler, rubber shoe heel, the car tire tread and cups for administering medicine. McCoy’s inventions became so well known that customers looked carefully for McCoy’s name on products. They would often ask if the product was “the real McCoy”, an expression that is commonly used today to refer to products of genuinely high quality.

Elijah McCoy died in 1928. His favorite advice to young people was STAY IN SCHOOL, BE PROGRESSIVE AND WORK HARD.

A PERSONAL NOTE BY AUTHOR. For the first twenty one years of my life, 1936-57, all of my personal and legal documents and affairs (high school and Virginia State University diplomas, State of Virginia drivers’ license, Social Security Card), reflected that my name was **LEMUEL McCOY COPELAND**. I never had a need to produce a copy of my legal birth certificate until I was drafted into the U. S. Army in 1957. It was then that I discovered that there was no middle name on my birth certificate. Since then, I never included a middle name in my personal or legal affairs. If I had known the significance of the name McCOY, I would have gone through the process to correct my birth certificate. My father was a farmer who always owned cars, many pieces of farm equipment and appliances. I was the youngest of six brothers. My father loved us all but I often wondered why he used to proudly refer to me as “**THE REAL McCOY”.**

GRANVILLE T. WOODS

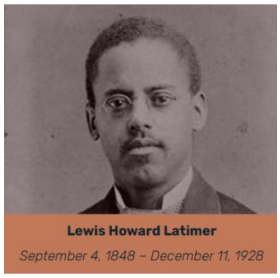
1856-1910

Granville T. Woods developed a telegraph system that helped to make modern railroads possible. His inventions are used by Westinghouse,

General Electric, AT&T, AMTRAK, as well as the New York City Subway System. He was such a good inventor that some referred to him as “The Black Thomas Edison”.

Granville T. Woods was born on April 23, 1856 in Columbus, Ohio, one of the first black children to attend school in Ohio. Before he started school, there had been a law against black children attending school. He was always an observant, curious boy and absorbed all the information he could and then made use of that information to move on to better positions. When Granville took a job in a machine shop that repaired railroad equipment, he became fascinated by machines and read whatever he could find about them. With money saved from his small pay, he paid an expert mechanic at the shop to give him private lessons on how to operate the machines. He also took electrical and mechanical engineering classes. However, despite his education and experience, employers were unwilling to entrust a position of high responsibility to a Black man. In 1884 he and his brother formed their own company, The Woods Electric Company, where he invented the steam boiler furnace, which provides heat to our homes, offices and other large buildings.

In 1885 Woods was responsible for an invention that combined two of the most important inventions of the century, the telegraph and the telephone, enabling people to make long distance telephone calls. Granville Woods’ greatest invention deals with railroad train safety. During the early days several trains had to use the same track and there were frequent train wrecks. Woods developed a system of codes so that engineers could know who was in front of them and who was behind them. Today his invention is still used by the New York City Subway System and is known throughout the world as the “Third Rail”. During his career he and his brother had more than fifty other inventions, including an improved phonographic machine, the development of the automatic air brake and a new method for digging tunnels. He also invented he automatic egg incubator. But like so many other African-American inventors, he died a poor man on December 30, 1910 in New York City.



LEWIS LATIMER

1848-1928

Thomas Edison has received all the credit for inventing the electric lights. However, he owes a major portion of his success to Lewis Latimer. Lewis Latimer’s father, George Latimer, was the child of a

white slave owner and a slave woman. George worked as a house servant but received harsh treatment from his slave owner father. Once, when the slave owner received a prison sentence, he sent George to serve time in his place. When George married another slave, Rebecca, the master would not allow them to live together and tried to keep them from seeing each other. When Rebecca became pregnant, she and George could not bear the thought of their child being born a slave. In 1842, they escaped to Boston, Massachusetts with the help of the Underground Railroad. When the slave owner learned where they had escaped to, he went to bring them back. However, George and Rebecca raised $400 to buy their freedom and they were able to stay in Boston. However, they continued to live in fear that the bounty hunters would grab them and sell them back into slavery.

Lewis Latimer was born in Chelsea, Massachusetts in 1848, six years after his parents escaped. He was their fourth child. Lewis enjoyed school very much and did so well in class that he was skipped a grade. His favorite subjects were reading, creative writing and art. When Lewis was ten years old, his father disappeared. No one ever knew what happened to him but the likelihood was that he was picked up by bounty hunters and sold back into slavery.

Lewis' father's disappearance doomed the family to poverty. His mother took jobs as a seamstress on ocean ships that required her to be away from home for long periods of time. Lewis dropped out of school to work full time. When he was old enough, he joined the Union Army to fight against the South in the Civil War. After the war, Lewis got a job as an office boy with an engineering company, where he closely watched the mechanical engineers do their work. He bought books and tools and spent many hours at home reading the books and practicing, hoping that someday he might be able to use them. One day Lewis' opportunity came. He arrived early at work and found an engineer already on the job. When Lewis asked "Can I do some drawing for you?" the engineer laughed at him, thinking that Lewis, a black boy, must be joking. But playing along with the game, the engineer gave Lewis a minor job to do. To the engineer's astonishment, Lewis completed the job as quickly and as well as any professional engineer. Word of Lewis' skill spread thorough out the company and, before long, all the engineers were giving Lewis assignments. Eventually Lewis became the company's chief engineer before he left to establish his own company.

Until 1880, all lighting was done with candles and fuel lamps. The U. S. Electric Company had developed the light bulb and needed a person with delicate mechanical knowledge, skills and experience to get it patented. Lewis Latimer applied for the job. As was with Elijah McCoy, white businessmen were astonished at the thought of a Black man having the skill to perform such delicate and technical work. However, he was hired after it was obvious that he was the most qualified. Lewis got caught up in the excitement over the light bulb and learned all he could about electricity. A light bulb that had been invented would burn out after a few minutes. Lewis worked non-stop for nearly two years to perfect the light bulb that would burn for a much longer period of time. On July 17, 1882, he was granted the patent for the filament that would enable a light bulb to burn for hundreds of hours. However, it was patented as the “Maxim light”, the name of the company president, instead of the “Latimer light”, after the inventor.

Lewis Latimer later became the chief engineer of the company and was in demand all over the world. He set up lighting systems in large buildings, rail stations and on the streets of New York City, Philadelphia and Montreal. He was sent to England to oversee the construction of streetlights in London. Again, as was with Elijah McCoy, some businessmen refused to take orders from him because he was a Black man. Later, Lewis Latimer became the Chief Engineer for the now well-known company, Con Edison, the electric company for New York City. While Lewis Latimer is primarily known for his work on electricity, his other inventions include: bathroom compartments on railroad trains, a safety device in elevators, a rack for hats, coats and umbrellas, and a service used in libraries to keep rows of books from toppling when one book is removed.

Lewis Latimer died on December 11, 1928.

PERCY JULIAN

1899-1975

Percy Julian was born on April 11, 1899 in Birmingham, Alabama, the oldest of six children in a family where education was considered a sacred privilege. He was never allowed to forget the price that one of his grandfathers paid for knowledge: a slave owner chopped off two of the man’s fingers after discovering him secretly trying to learn to read and write. The emphasis on education

proved successful as his two of brothers became doctors and his three sisters would all receive Masters Degrees. However, it was Percy who would become the best known and perhaps the most successful. He graduated from the Alabama State Normal School for Negroes in 1916, one of the few high schools in the South for Negroes. He received a scholarship to attend DePauw University in Indiana, where he was the only Negro on campus. Even though he excelled academically, became a member of Phi Beta Kappa, was valedictorian of his class and received a degree in Chemistry, he was not recommended to attend graduate school. He was told that as a Black person, he would never be able to get a job in the business world. Instead, he taught college for two years at Fisk University before he studied for a Master's degree at Harvard University where he finished at the top of his class with a straight "A" average. Still, he was not able to get a teaching job at a major college because it was felt that White students would refuse to learn under a Black teacher. Instead, he taught at West Virginia State College for Negroes and Howard University, before going to Europe to study for a PHD in Chemistry.

Julian became the Chief Chemist and Director of the Glidden Company, becoming the first Black scientist in such a position in the United States. He developed a foam product from soybeans that was used in fire extinguishers used by the United States Navy to save thousands of sailors from painful deaths during World War II. Julian also developed female hormones from soybeans that would help to prevent miscarriages in pregnant women and would also be used to fight cancer and other ailments. He also developed cortisone from soybeans that would relieve the pain and swelling of arthritis, enabling millions of people around the world to relieve arthritic pain at a reasonable price. Previously, cortisone was so expensive that only the rich could afford it.

In 1954, Julian established his own research company, Julian Laboratories, where he discovered sweet potatoes to be more effective than beans in the developing his synthetic medical products. In 1961, Julian sold his company for 2.3 million dollars, an incredible amount of money for a Black man at that time. After years of struggling for respect in his field, Julian was recognized as a genius and a pioneer. He was known worldwide as a trailblazer in the world of Chemistry and as an advocate for Black scientists.

Percy Julian died in 1975.

GLADYS BROWN WEST
1930-2026

Dr. Gladys Brown West was a pioneering mathematician who helped invent the Global Positioning System (GPS). West, a graduate of Virginia State University, went from a childhood in rural Jim Crow Virginia to an adulthood formulating pioneering models for the shape of the Earth—which helped inform the technology of global positioning systems (GPS) for navigation by developing complex, precise mathematical models of the Earth's shape. In the 1970s and 80s, working for the U.S. Navy, West programmed computers to process satellite data, which led to the accurate modeling required for satellite navigation. But West didn't really describe herself as one of the four billion users of GPS. When asked about it in 2020, West said she used GPS on a "minimal" basis. "I prefer maps," she added.

Gladys West died in January 2026