

Quarterly Publication - March 2020

Number 5 in a Series

# NOAH TECHNOLOGIES HONORS

NOTABLE WOMEN IN SCIENCE

SALLY RIDE

*Astronaut & PhD in Physics*

GRACE HOPPER

*United States Navy Rear Admiral & Computer Scientist*

KATHERINE JOHNSON

*Research Mathematician & NASA Orbital Mechanics Specialist*

The ENIAC Six

*Computer Programmers*



SALLY RIDE

GRACE HOPPER

KATHERINE JOHNSON



The use of this scientific information is to honor the scientist and does not imply any endorsement of Noah Technologies products.

## Highlighting a few notable women who have made enormous impacts in the Science industry.

*STEM, which stands for Science, Technology, Engineering, and Math, is an interdisciplinary approach to educating the next generation for the jobs of the future. STEM jobs are growing at nearly double the rate of other jobs (17% and 9.8% respectively), but women remain extremely underrepresented in all STEM fields except healthcare.*

### **SALLY RIDE** – Astronaut

Although she was not the first woman in space (that was Soviet cosmonaut Valentina Tereshkova in 1963), Sally Ride was the first American woman to travel to space. After graduating from Stanford University with a double major bachelor's degree in physics and English, Dr. Ride remained at Stanford to earn a master's and a PhD in physics.



**MAY 26, 1951 – JULY 23, 2012**

She joined NASA shortly after graduation in 1978 and became a mission specialist of the Space Shuttle challenger in 1983. Dr. Ride returned to space in 1984. Her third mission was cancelled after the Challenger disaster in 1986 and she joined the commission to investigate the incident. Dr. Ride dedicated the rest of her life to inspiring girls in STEM.

### **GRACE HOPPER** – United States Navy Rear Admiral and Computer Scientist

You may not have heard of Grace Hopper, but if you've ever used a computer you are familiar with her work. Rear Admiral Hopper held a PhD in mathematics from Yale when she joined the Naval Reserve in 1943 and was assigned to the Mark I automatic calculator project at Harvard. She coined the term "computer bug" when a moth entered the Mark I circuitry, and she went on to help develop the UNIVAC-1 computer as well as early computer languages that would directly inspire the COBOL programming language.



**DEC. 9, 1906 – JAN. 1, 1992**

Hopper retired from the Navy in 1966, but she was recalled a year later to work on the Navy's programming languages. She would continue this work and not retire again until 1986, at the age of 79.

### **KATHERINE JOHNSON – Research Mathematician and NASA Orbital Mechanics Specialist**

If you've seen the Hollywood film "Hidden Figures", you might know of Katherine Johnson. Brilliant with numbers even as a child, she entered high school at age 10 and graduated with highest honors from West Virginia State College at age



**AUG. 26, 1918 – FEB. 24, 2020**

18, earning a double bachelor's degree in French and mathematics. This would be remarkable on its own, but even more so when you consider the fact that it was 1937 and Johnson was female and black. She was handpicked to become one of the first three African-American students to enroll in West Virginia University's graduate school in 1939, but she soon left to start a family.

In 1953, Johnson joined the West Area Computing Unit of the National Advisory Committee for Aeronautics (NACA), an all-black team of women who analyzed flight test data and performed essential calculations for the beginnings of the space program. As NACA was absorbed by NASA, Johnson made the transition to the Space Task Group. She co-authored numerous papers and performed trajectory analysis for America's first human spaceflight. But her most famous work was on John Glenn's 1962 orbital mission. He didn't trust the computer calculations of his flight path, so he requested that Johnson confirm the calculations manually. Johnson remained with NASA until her retirement in 1986.

### **The ENIAC Six – Computer Programmers**

Debuted in 1945, ENIAC (Electronic Numerical Integrator and Computer) was the world's first large scale digital computer. Designed to calculate artillery firing tables, ENIAC was also useful in research that led to the atomic bomb. Programming the ENIAC, though, was an extremely complex task that involved physically manipulating hundreds of wires and thousands of switches. There were no stored programs or even programming languages, and the classified nature of the system meant that its programmers couldn't even get access to it in advance. Instead, they received six weeks of Army training, the blueprints and wiring diagrams, and instructions to figure it out.

The programmers tasked with such an arduous mission? Six women served as "computers," performing complex military calculations by hand. While most women were expected to leave their wartime jobs to make room for soldiers returning from World War II, no returning soldier had the necessary skills or experience to program the ENIAC, so the women stayed on. Unfortunately, their names and contributions were swept under the rug, and they were lost to history until the mid-1980s. Today, we know the names of the ENIAC Six: Jean Jennings, Marlyn Wescoff, Ruth Lichterman, Betty Snyder, Frances Bilas, and Kay McNulty. But much is still unknown about their lives.

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The remarkable women detailed above are just a handful of those whose STEM careers have changed the world as we know it. As STEM jobs continue to proliferate, there are innumerable chances for today's kids to become the next game changers. But parents and educators need to make sure that girls are not left behind. Educators are taking a proactive approach to boosting girls' interest in STEM. One of the biggest ways that parents can help is to expose girls to successful female role models in STEM careers.



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Ammonium Thiocyanate	Lead Oxide	Potassium Fluoride	Sodium Sulfate
Antimony Potassium Tartrate	Lead Acetate	Potassium Hydrogen Sulfate	Sodium Sulfide
Arsenic Oxide	Lead Carbonate	Potassium Hydroxide	Sodium Sulfite
Barium Acetate	Lead Subacetate	Potassium Iodate	Sodium Tartrate
Barium Carbonate	Lithium Carbonate	Potassium Iodide	Sodium Tetraborate
Barium Chloride	Lithium Chloride	Potassium Nitrate	Sodium Thiosulfate
Barium Hydroxide	Lithium Hydroxide	Potassium Nitrite	Sodium Tungstate
Barium Nitrate	Magnesium Acetate	Potassium Oxalate	Strontium Chloride
Bismuth (III) Nitrate	Magnesium Chloride	Potassium Permanganate	Strontium Nitrate
Boric Acid	Magnesium Nitrate	Potassium Persulfate	Tin Chloride
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Cadmium Sulfate	Magnesium Sulfate	Potassium Sodium Tartrate	Zinc Chloride
Calcium Carbonate	Manganese Chloride	Potassium Sulfate	Zinc Oxide
Calcium Chloride	Manganese Sulfate	Potassium Thiocyanate	Zinc Sulfate
Calcium Hydroxide	Mercury Acetate	Silver Nitrate	
Calcium Nitrate	Mercury Bromide	Silver Sulfate	
Calcium Sulfate	Mercury Chloride	Sodium Acetate	
Cerium Ammonium Nitrate	Mercury Iodide	Sodium Arsenate	
Cerium Ammonium Sulfate	Mercury Nitrate	Sodium Bicarbonate	
		Sodium Bromide	
		Sodium Carbonate	

