Willie Hobbs Moore

THE FIRST AFRICAN AMERICAN WOMAN TO EARN HER PH.D. IN PHYSICS

A Pioneer in Physics

Willie Hobbs Moore was born on May 23, 1934 in Atlantic City, New Jersey. She and her sisters were the Hobbs family's first generation of college graduates. Moore left for the University of Michigan College of Engineering in 1954, the same year that the U.S. Supreme Court decided against de jure segregation in the landmark *Brown v. Board of Education of Topeka, Kansas* case. She earned three degrees from the University of Michigan: her Bachelor's in 1958, her Master's in 1961, and her Ph.D. in Physics in 1972. When she received her doctorate, she became the first African American woman to earn a Ph.D. in Physics, almost 100 years after Edward Bouchet, the first African American to earn his Ph.D. in Physics in 1876. Moore's doctorate was completed under the direction of the noted infrared spectroscopist, Dr. Samuel Krimm and focused on a theoretical analysis of secondary chlorides for polyvinyl-chloride polymers. Her research has been published in a number of scientific journals including the Journal of Molecular Spectroscopy, the Journal of Chemical Physics, and the Journal of Applied Physics. She held engineering positions at Bendix Aerospace Systems Division, Barnes Engineering Company, and Sensor Dynamics Inc. and later became an executive with Ford Motor Company, working with the warranty department of automobile assembly. She was also very active in STEM education for minorities. She died at the age of sixty in 1994, in Ann Arbor, MI. In 1995, she was awarded the Edward A. Bouchet award at the National Conference of Black Physics Students posthumously. Dr. Moore's trailblazing life will be remembered in how she paved a way for so many.

Willie Hobbs Moore circa 1958 pictured in Women in Engineering Magazine. *Courtesy of the Ronald E. Mickens Collection, Niels Bohr Library & Archives, American Institute of Physics.*

AIP Center for History of Physics

The American Institute of Physics' Center for History of Physics works to preserve and make known the historical record of modern physics and allied sciences. Through documentation, archival collections and educational initiatives, the Center ensures that the heritage of modern physics is safeguarded and its story is accurately told. The Teacher's Guide on African Americans in Physics, Astronomy, and Related Disciplines is part of an initiative to increase knowledge on the history of women and minorities in the physical sciences. More information at http://www.aip.org/history-programs.

Dr. Shirley Ann Jackson, Image Courtesy of the AIP Emilio Segre Visual Archives.

THE SECOND AFRICAN AMERICAN WOMAN TO EARN HER PH.D IN PHYSICS

Shirley Ann Jackson

Shirley Ann Jackson was born in Washington, D.C. on August 5, 1946. Jackson graduated as valedictorian of her high school class and completed her bachelor's degree at MIT in 1968. She is the first African American woman to earn a Ph.D. from the MIT in any field, in 1973, and the second African American woman to earn a Ph.D. in Physics. In 1995, President Clinton named her the head of the U.S. Nuclear Regulatory Commission, making her the first African American and the first woman to hold that position. She has worked at the Stanford Linear Accelerator, the Aspen Center for Physics, and Bell Laboratories, and Rutgers University. In 1998, Jackson was named to the National Women's Hall of Fame. Her commitment to education may be her most enduring legacy. "One wants to be recognized in one's own field by other scientists," she says, "but I also want to have an impact on young people." Jackson aims to "close the talent gap" by encouraging women and minorities, and by engaging very young children in the mysteries of science. She is the first African American woman to be president of a national science and engineering research university, Rensselaer Polytechnic Institute in Troy, N.Y., a post she has held since 1999. Her achievements have been recognized with numerous awards from institutions such as the National Science Foundation, the American Physical Society, and the American Association of Physics Teachers. In 2009, President Obama appointed Jackson to serve on the President's Council of Advisors on Science and Technology. Dr. Jackson continues to be an inspiration to women and minority students who have a passion or science.

Dr. Shirley Ann Jackson's Formula for Power:

{Preparation^{10} (Passion + Persistence)}
{Connection^{10} (Compassion + Courage)}
{Excellence^{10} (Achievement + Wisdom)}
= Power

$$\{P_1^{10}\ (P_2 + P_3)\} + \{C_1^{10}(\ C_2 + C_3)\} + \{E^{10}\ (A + W)\} = \text{Power}$$

"Follow your passion with persistence, magnified by intense preparation. Use compassion and courage to weave a strong web of connections. Use focused excellence to drive achievements and gain wisdom. It is through the combination of all these things that your power will reveal itself.

The magnitude and reach of your power is up to you.

You must be prepared; you must commit the time, energy, and effort required to achieve. Be persistent. The passion you exhibit for your ideas and ideals and the compassion you show for others will further enhance your power.

Connectivity is key; it is what creates and strengthens your web of opportunity. The more connected you are, and the stronger your connections, the more effective you will be in obtaining and using power to achieve your goals.

All of this requires courage: the courage of your convictions; the courage to get started; the courage to keep going."

From the September 2009 Issue of O, The Oprah Magazine

RESOURCES

Dr. Scott Williams, *Physicists of the African Diaspora,* http://www.math.buffalo.edu/mad/physics/.

Ronald E. Mickens, *Edward Bouchet: The First African-American Doctorate* (River Edge, NJ: World Scientific Publishing, Co., 2002).

The Ronald E. Mickens Collection, Niels Bohr Library & Archives, American Institute of Physics.

Fore more resources by AIP on African Americans in physics, astronomy, and related disciplines: