

A Brief Historiography of African Americans in the Physical Sciences

“The uses of scientific knowledge cannot be separated from the society in which those uses occur.”¹ This was the opening sentence of an editorial in the March 1974 issue of *The Black Scholar* titled “Science and Black People.” This simple yet provocative statement offers a good starting point from which to examine the history and historiography of African Americans in science. While scientists have often seen their pursuit of objective truth as removed from political and social whims, historians and sociologists of science have demonstrated how scientific thought and practice is embedded in the cultural, social, and political structures of its time. As historian Kenneth Manning writes, “Although science purports to be objective and supposedly has imbedded in it a kind of democratic core, scientists are not science, they are not the thing itself- they are people who live in the world with other people and have many of the same social views and behavior patterns of society at large.”² Throughout history, African American scientists have had to struggle against racial discrimination outside and inside the scientific community. In the United States, the long history of racial discrimination against African Americans has resulted in a small but growing number of African Americans in the physical sciences and a dearth of scholarly work on the history of African Americans in science. It is only within the last three decades that scholars have begun, at a slow pace, to recover and seriously consider the stories of African Americans in the physical sciences. Similar to the histories of other marginalized groups in the sciences, such as women, three main types of works exist on African American scientists: compilations of notable scientists in biographical dictionaries, biographies and autobiographies on individual African American physicists, and scholarship that attempts to integrate the history of African Americans into a larger context of the history of science and American history.

Some of the earliest work on African Americans in the physical sciences was written in the years during and following World War II, which marked a watershed moment in the history of race relations. Prior to the War, Jim Crow segregation and pervasive racial discrimination barred African Americans from entering the “pure” sciences, limiting them to research in applied science. The need for more scientists during the War offered an entry-point for advocates of increasing the number of African Americans in the sciences. At the same time, the burgeoning civil rights movement that was pushing for racial integration and equal opportunities for African Americans in the 1940s and 1950s. President Roosevelt’s 1944 executive order ending racial segregation in the military and the 1954 *Brown v. Board of Education* Supreme Court decision were two examples of responses to this evolving context of American race relations.

The first historians of African Americans in the physical sciences were Black scientists who wished to make known the academic and scientific achievements of African Americans in their fields and argue for greater participation of African Americans in the sciences. Physicist Dr. Herman Branson was one of these outspoken scientists. Throughout the 1940s, he wrote several articles for the journal *The Journal of Negro Education* on bolstering the number of African Americans in science in general and physics in particular. Dr. Branson also wrote the introduction to one of the earliest works on African Americans in science: Julius Taylor’s *The Negro in Science*, published in 1955. Although this book is an anthology, not technically a

¹ “Science and Black People,” *The Black Scholar* vol 5., no. 6, Black Science (March 1974).

² Kenneth Manning, “Can History Predict the Future?” in Ronald Mickens (ed.), *The African American Presence in Physics: Materials for an Exhibit*, 1999, 3.

historical study, it showcases the work of African Americans in the fields of biology, chemistry, mathematics, and physics. Branson's introduction added a historical dimension to this study by reviewing the history of African Americans in science. He touched on the lives and careers of Edward Bouchet (the first African-American doctorate in Physics) and physicist Elmer Imes, arguing that "the socio-economic and cultural disadvantages suffered by Negroes is the reason why more have not chosen careers in science."³ Charles Richard Drew, the famous African American physician, also wrote about the history of African Americans in science in *The Journal of Negro History*, in 1950. In the article, Drew highlights four pioneering scientists – Benjamin Banneker, George Washington Carver, Ernest Everett Just, and Daniel Hale Williams – who have "not only opened a small passageway to the outside world, but [are] carving a road in many untrod areas, along which later generations will find it more easy to travel."⁴ These works focused on celebrating the achievements of notable African American scientists within the context of pushing for more opportunities for African Americans to enter the sciences.

The 1960s and 1970s marked another period of increased scholarship on African American scientists, this time by sociologists and historians. In this period a new branch of history emerged, "social history," that focused on the experiences of people who tended to be ignored in conventional histories – working-class people, women, and people of color, among others. At the same time student movements around the country, and particularly in California, pushed for the establishment of ethnic studies departments. Finally, following the work of Thomas Kuhn, the field of History of Science and Technology began to more critically examine the scientific enterprise. Even though this emerging social and political context fostered new approaches to scholarship, the history of African Americans in science continued to be insubstantial. Based on a survey of seventeen textbooks of physics and physical sciences from 1970 to 1983, Physics professor John Pappademos found that "U.S. physics and physical science texts do indeed tend to reinforce racial stereotypes" through the choice of pictures of people, references to the contributions of individuals, and references to the contributions of whole peoples.⁵ Still, several promising trends emerged in this period. The first biographical dictionaries were written at this time including Louis Haber's *Black Pioneers of Science and Invention* (1970), Aaron Klein's *The Hidden Contributors* (1971), and Hattie Carwell's *Blacks in Science* (1977). These works focused on uncovering the hidden stories of Black scientists and compiling these individual biographies into dictionaries that could be used as a resource to encourage young African Americans to pursue the sciences and to have pride in their heritage.

The focus on biographical work has continued from the 1980s to the present. Many individual biographies and autobiographies have been published. Increased interest in the history of African Americans in science also occurred when Guion Bluford, Jr., an engineer and astronaut, became the first African American in space in 1983 and Mae Jemison became the first woman of color in space in 1992. Several biographical dictionaries were published focusing exclusively on astronauts and space science including Octavia Tripp and Stanley Jones' *African-American Astronauts* (add year of publication) and *Distinguished African Americans in Aviation and Space Science* (add year). Historian of science Kenneth Manning also produced

³ Herman Branson, "The Negro Scientist: His Sociological Background, His Record of Achievement, and His Potential," in Julius H. Taylor, *The Negro in Science* (Baltimore, MD: Morgan State College Press, 1955), 1-9.

⁴ Charles Richard Drew, "Negro Scholars in Scientific Research," *The Journal of Negro History*, vol. 35, no. 2 (Apr. 1950), 136.

⁵ John Pappademos, "An Outline of Africa's Role in the History of Physics" in Ivan Van Sertima, *Blacks in Science: Ancient and Modern* (New Brunswick, U.S.A.: Transaction Books, 1983), 178.

the first in-depth biography of an African American scientist with the publication of *Black Apollo of Science: The Life of Ernest Everett Just*, in 1983. Just was a marine biologist, who worked at Howard University, was one of the leading black scientists of the 20th century. The growth of the Black Power movement propelled the term “Black” into wider usage and also encouraged connection between African Americans and the larger African diaspora around the world. Ivan Van Sertima, a linguist and anthropologist who did work in East Africa, produced a biographical dictionary called *Blacks in Science: Ancient and Modern* (1985) exemplary of this kind of intellectual production. His work takes a diasporic approach by examining a long history of contributions to science by people of African descent.

Biographies and autobiographies of prominent contemporary Black scientists, many of whom received their doctorates and established themselves during the 1970s, 1980s, and 1990s, have also increased within the last fifteen years. Among them include Neil DeGrasse Tyson’s *The Sky is Not the Limit: Adventures of an Urban Astrophysicist* (2000), Diane O’Connell’s biography of Shirley Ann Jackson, the second African-American woman to receive her doctorate in physics, and Ronald Mallett’s autobiography *Time Traveler* (2009). Dr. Ronald Mickens, a Black physicist and former historian for the National Society of Black Physicists (NSBP), also contributed an important volume to the history of African American physicists with the publication of *Edward Bouchet: The First African-American Doctorate* in 2002, which includes essays on early 20th century physicist Elmer Imes, Willie Hobbes Moore (the first African American woman to receive a doctorate in physics), and on the origins of the NSBP and the Bouchet Institute.

In addition to biographies, since the 1980s more scholars have also begun examining the connections between race and science from sociological, feminist, and historical perspectives. The first in-depth sociological study of African American scientists was Willie Pearson, Jr.’s *Black Scientists, White Society, and Colorless Science* (1985). In it, Pearson examines the influence of race on the careers of African American scientists. Both Pearson and Manning investigated the struggle of African American scientists, both contemporary and historical, to build careers and succeed in a white-dominated social structure. Sandra Harding also contributed to the theoretical examination of race and science in *The “Racial” Economy of Science: Toward a Democratic Future* (1993). More recent scholarship from the past decade has also tended to focus on African Americans and technology, including biographical studies of African American inventors. Examples of work on African Americans and technology include Raymond Fouché’s *Black Inventors in the Age of Segregation* (2003) and Bruce Sinclair’s *Technology and the African American Experience* (2004). In addition, Patricia Carter Sluby’s *The Inventive Spirit of African Americans* (2004) compiled information on patents to illustrate the significant the contributions of African Americans to invention and technology.

Although historical scholarship on African Americans in the physics sciences has made great strides in the past century, there is considerable work to be done. In many ways, scholarship on African Americans in the sciences echoes the scholarship of African American historians of the 19th century and early 20th century. These bodies of literature sought to counter negative and destructive stereotypes and incorporate African Americans into the dominate historical narrative. As historian V.P. Franklin has written, “Vindicating the Race” became a major social purpose for African American historiography, and ‘contributionism’ became an important discursive structure framing analyses of the African American experience.”⁶ This fact

⁶ V. P. Franklin, “Introduction – Symposium on African American Historiography,” *The Journal of African American History* vol. 92, no. 2 (Spring 2007), 214.

that this framing remains common in scholarship on African Americans in science today, particularly in works intended for the general public, shows that the history of African Americans in science has still not entered the mainstream. More stories need to be uncovered, and more synthetic analysis needs to be done to broaden and deepen the way we think about the history of science and the scientific enterprise in general. A range of archival records and oral histories with Black scientists are now available online and in a number of different repositories, a promising resource for future scholarship. This said the documentary evidence on African Americans in science remains scarce and given that physical science programs at many Historically Black Colleges and Universities are under-funded, it is essential that libraries and archives continue to document the history of their science programs. Attention to the history is inevitably linked with attention to the present and part of building a just and equitable society. If we are to succeed in increasing the number of African Americans in the sciences, it will be important to examine the historical structures that have shaped the present reality. Understanding how the past has shaped the present will allow

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