**William Knox, the only black supervisor in the Manhattan Project**

*The story of the Knox family is one of education overcoming adversity, finds Kit Chapman*

The Manhattan Project was one of the largest and most expensive endeavours of the second world war. At its peak, around 130,000 people were working simultaneously on the US effort to create atomic weapons, with almost $2 billion (around £17 billion today) spent on the effort. Its staff included men and women from all walks of life, multiple races and nationalities. Yet despite its scale, there was only one black supervisor: William Jacob Knox Jr.

Knox was born in 1904 in Massachusetts, US, the eldest of five children. His grandfather Elijah had been a slave in North Carolina, and Elijah’s sister, Harriet Jacobs, had written *Incidents in the Life of a Slave Girl*, now regarded as one of the most important first-hand accounts of the southern states before the US civil war. Knox’s father, a postman, emphasised the power of education in gaining a better life, and made the young Knox study hard. The effort was rewarded: in 1921, he gained a place to study chemistry at Harvard University.

Here, Knox faced immediate racist abuse. He was refused a place in the white-only dorms. Overcoming the indignities he faced, he graduated and became a teacher, before in 1928 returning to Boston for a masters degree at MIT. After a brief time at Howard University, where he was tutored by renowned black chemist Percy Julian and met his future wife, Edna, Knox returned to MIT to complete a PhD in chemical engineering.

With limited opportunities for black chemists, Knox became a lecturer at North Carolina A&T, then Talladega College. By this point, his two brothers, Larry and Clinton, had also gained doctorates – meaning the Knox family made up 7% of all black PhD holders in the US.

And yet Knox’s greatest achievement was still to come. In 1942, eager to serve his country, Knox got in touch with future Nobel laureate Willard Libby, offering to help his war work at Columbia University. In 1943, he joined the Manhattan Project, working on how to use uranium hexafluoride gas (UF6), a highly corrosive gas, to separate isotopes and obtain the U-235 necessary for a nuclear weapon. “U-235 helps nuclear reactions go forward, U-238 makes many nuclear reactions stop,” explains Jason Donev, a nuclear expert at the University of Calgary, Canada. “Uranium naturally has around 99.2% U-238 and 0.72% U-235, but power plants need 3-5% U-235. Nuclear bombs need to be 85% U-235. Knox's division made this possible.”

Knox excelled. For the first time in his life, he later recalled, he had become a welcome part of the whole scientific community. When the corrosion division’s supervisor left the project, Libby appointed Knox to the role, making him head of an otherwise all-white department. [Declassified documents signed by Knox](https://www.osti.gov/opennet/detail?osti-id=16434634) tell of the complicated chemistry of his work, including extensive research into extracting lanthanum fluoride (LaF3). In1944, he was joined at Columbia by his brother Larry – also a chemist – who studied the potential impact of radiation following an atomic bomb. (Clinton was not a chemist; he would later join the state department and find fame as the US ambassador to Haiti and secretary to NATO).

After the war, Knox wasn’t ready to go back to teaching. Instead, with Libby’s help, he secured a job as a chemist for Kodak in Rochester, US. Here, he was awarded 21 patents and became renowned as a coatings expert, helping usher in a golden age in photographic film. Despite his success, discrimination still hounded him. Now with a young daughter, he was only offered an abandoned brothel as a home by estate agents. Eventually, one of Knox’s co-workers had to buy a house, then sell it on to the Knox family directly.

It was the final straw. Knox later wrote of his “unwillingness to continue to subject myself and my family to the indignities associated with living in the South” and dedicated himself to civil rights, co-founding the Urban League of Rochester, which continues to advocate for black, Latinx and the poor today. He also became an active member of the National Association for the Advancement of Colored People (NAACP). Refusing to see the next generation of black students struggle as he did, he set up a range of scholarships for minority students; in 1964, he resigned from Rochester’s housing authority after they refused to increase the number of public housing units in predominantly white, middle-class neighbourhoods. After he retired from Kodak, he returned to North Carolina A&T for three years, once again helping young black students excel in chemistry at a time when their voices were often overlooked. His brother Larry also took jobs in industry, eventually moving to Mexico, where he died in a carbon monoxide poisoning accident in 1966.

William Knox died of prostate cancer in 1995, aged 91. He was a gifted chemist who found a way to break the colour barrier through science. And yet his story is not simply a celebration of triumph over adversity; it is an important reminder of the value of education, and how we all have a duty to make sure future generations do not experience the struggles of the past.

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