Arthur Walker

Arthur Walker pioneered several new space-based research tools that brought about significant changes in our understanding of the sun and its corona. He was instrumental in the recruitment and retention of minority students at Stanford University, and he advised the United States Congress on physical science policy issues.

Not to be discouraged

Arthur Walker was born in Cleveland in 1936. His father was a lawyer and his mother a social worker. When Arthur was 5, the family moved to New York. Arthur was an excellent student and his mother encouraged him to take the entrance exam for the Bronx High School of Science.

Arthur passed the exam, but when he entered school a faculty member told him that the prospects for a black scientist in the United States were bleak. Rather than allow him to become dissuaded from his aspirations, Arthur's mother visited the school and told them that her son would pursue whatever course of study he wished.

Making his mark in space

Walker went on to earn a bachelor's degree in physics, with honors, from Case Institute of Technology in Cleveland and, by 1962, his master's and doctorate from the University of Illinois. He then spent three years' active duty with the Air Force, where he designed a rocket probe and satellite experiment to measure **radiation** that affects satellite operation. This work sparked Walker's lifelong interest in developing new space-based research tools.

After completing his military service, Walker worked with other scientists to develop the first X-ray **spectrometer** used aboard a satellite. Their device helped determine the temperature and composition of the sun's corona and provided new information about how matter and radiation interact in **plasma**.

Snapshots of the sun

In 1974, Walker joined the faculty at Stanford University. There he pioneered the use of a new multilayer mirror technology in space observations. The mirrors selectively reflected **X rays** of certain wavelengths, and enabled Walker to obtain the first high-resolution images showing different temperature regions of the solar atmosphere. He then worked to develop telescopes using the multilayer mirror technology, and launched them into space on rockets. The telescopes produced detailed photos of the sun and its corona. One of the pictures was featured on the cover of the journal *Science* in September 1988.

A model for student scientists

Walker was a mentor to many graduate students, including Sally Ride, who went on to become the first American woman in space. He worked to recruit and retain minority applicants to Stanford's natural and mathematical science programs, and was instrumental in helping Stanford produce more black doctoral physicists than any university in the United States.

At work in other orbits

Public service was important to Walker, who served on several committees of the National Aeronautics and Space Administration (NASA), National Science Foundation, and National Academy of Science, working to develop policy recommendations for Congress. He was also appointed to the presidential commission that investigated the 1986 space shuttle Challenger accident.

Walker died of cancer in April 2001.

Name: _____ Date: _____

HISTORY 18.1

Reading reflection

1. Use your textbook, an Internet search engine, or a dictionary to find the definition of each word in bold type. Write down the meaning of each word. Be sure to credit your source.

2. What have you learned about pursuing goals from Arthur Walker's biography?

3. Why is a spectrometer a useful device for measuring the temperature and composition of something like the sun's corona?

4. **Research:** Use a library or the Internet to find one of Walker's revolutionary photos of the sun and its corona. Present the image to your class.

5. **Research:** Use a library or the Internet to find more about the commission that investigated the explosion of the space shuttle Challenger in 1986. Summarize the commission's findings and recommendations in two or three paragraphs.