BIOGRAPHY 19.2

19.2 John Tuzo Wilson

John Tuzo Wilson was a professor at the University of Toronto whose love for adventure helped him make major contributions in the field of geophysics. His research on plate tectonics explained volcanic island formation and led to the discovery of transform faults. He also described the formation of oceans, a process later named the Wilson Cycle.

A noteworthy family

John Tuzo Wilson was born in Ottawa, Canada on October 24, 1908. His adventurous parents helped to expand Canada's frontiers. Wilson's mother, Henrietta Tuzo, was a famous mountaineer. Mount Tuzo in western Canada was named in her honor after she scaled its peak. Wilson's father, also named John, helped plan the Canadian Arctic Expedition of 1913 to 1918. He also helped develop airfields throughout Canada.

In 1930, Wilson was the first graduate of geophysics from the University of Toronto. He earned a second degree from Cambridge University. In 1936, Wilson received a doctorate in geology from Princeton University.

An adventurous scholar

Throughout his career, Wilson enjoyed traveling to unusual locations. While a student at Princeton, Wilson became the first person to scale Mount Hague in Montana—an elevation of 12,328 feet.

When World War II broke, Wilson served in the Royal Canadian Army. After the war, Wilson led an expedition called Exercise Musk-Ox. He directed ten army vehicles 3,400 miles through the Canadian Arctic. This journey proved that people could travel to Canada's north country.

In 1946, Wilson began his 30-year career as a professor of geophysics at the University of Toronto. While a professor, Wilson mapped glaciers in Northern Canada. Between 1946 and 1947, he became the second Canadian to fly over the North Pole during his search for unknown Arctic islands.

Plate tectonics and a hot idea

Many scientists contributed to the development of the plate tectonics theory. However, they had difficulty explaining the formation of volcanic islands. These islands, like the Hawaiian Islands, are thousands of kilometers away from plate boundaries.

In the early 1960s, Wilson solved the volcanic island mystery. He explained that sometimes a single hot mantle plume will break through a plate and form a volcanic island. As the plate moves over the mantle plume, a chain of islands forms. At first this theory was rejected. Finally, in 1963, Wilson published his paper.

Slipping and sliding plates

In 1965, Wilson proposed that a type of plate boundary must connect ocean ridges and trenches. He suggested that a plate boundary ends abruptly and transforms into major faults that slip horizontally. Wilson called these boundaries "transform faults."

Wilson's idea was confirmed and quickly became a major milestone in the plate tectonics theory. The San Andreas Fault of southern California is a well-known transform fault.

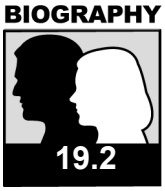
Opening and closing ocean basins

Wilson was one of the first geologists to link seafloor spreading with land geology. In 1967, Wilson published an article that described the repeated process of ocean basins opening and closing. This process later became known as the Wilson Cycle.

Geologists believe that the Atlantic Ocean basin closed millions of years ago. This event led to the formation of the Appalachian and Caledonian mountain systems. The basin later re-opened to form today's Atlantic Ocean.

An honored geologist

Wilson's contributions to the field of geophysics led to many honors and awards throughout his career. In 1967, Wilson became the principle of Erindale College at the University of Toronto. From 1974 to 1985, Wilson served as director of the world-renowned Ontario Science Center. On April 15, 1993, Wilson died at age 84.



Reading reflection

1. How did John Tuzo Wilson's parents contribute to his passion for the outdoors?
2. Why is Wilson sometimes referred to as an adventurous scholar?
3. Describe Wilson's theory of how volcanic islands are formed.
4. What did Wilson discover about plate boundaries and the formation of faults?
5. What is the Wilson Cycle? Give an example of this process.
6. **Research:** On which continent are mountains named in honor of John Tuzo Wilson?