

# GREAT GEOGRAPHERS

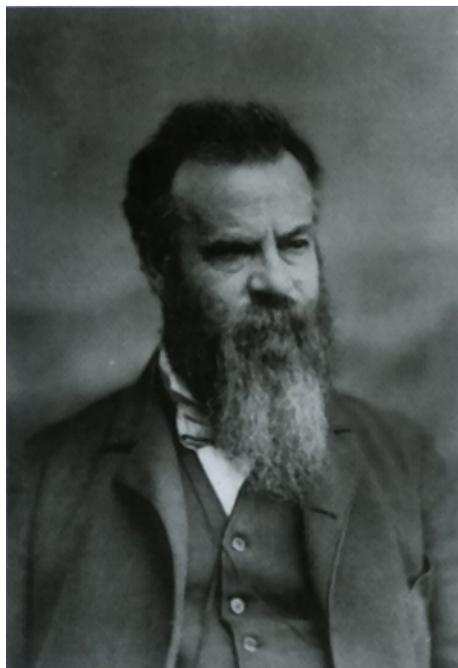
## John Wesley Powell

by  
Jeffrey A. Lee

John Wesley Powell (1834-1902) was a towering figure in the early days of American geography, geology, and anthropology. Within those disciplines, he is best known for his contributions to exploration, geomorphology, and ethnography, along with natural resource use and land use planning. He was born in Mount Morris, New York, to English immigrant parents. His family was staunchly religious, and he was named for John Wesley, the founder of Methodism. They soon moved to southern Ohio, where he spent much of his early childhood. There, an amateur naturalist befriended young Powell and taught him much about the local natural history of the region. In 1846, his family moved to Wisconsin and bought a farm, but as his father decided to be a full-time preacher, that left the farming to twelve-year old Powell and his ten-year old brother. Since they were not farmers when they arrived, Powell had to learn through experience; he even hauled the crops fifty miles by wagon to sell them.

But farming was not to be his future. At age sixteen, Powell quit and attended a secondary school. Up until that time, his schooling had been sporadic. At eighteen, he began teaching in a one room schoolhouse, teaching himself as he taught his pupils. At about the same time, his family moved to Illinois and he soon followed. In his early twenties, he attended three colleges but none for very long due to lack of money and boredom. He also began taking long trips that included natural history collecting. On one trip, he floated the entire length of the Mississippi River. On another, he visited relatives in Detroit, where he met his half cousin, Emma Dean. After several more visits, they became engaged. In 1858, the Natural History Society of Illinois was founded and Powell joined, becoming involved in its activities. To earn money, he went back to being a teacher for two years, also serving as principal.

When the Civil War broke out, Powell



John Wesley Powell (1834 - 1902)

joined immediately due to his lifelong abhorrence of slavery and soon was a lieutenant in the Infantry. Before long, he impressed General Ulysses S. Grant, who made him an artillery captain. He married Emma, and she lived with him throughout the War, a common situation among officers. His first combat experience was at the Battle of Shiloh in April 1862. Twenty thousand men died in the battle and Powell was shot in the wrist. The next day, his right arm was amputated just below the elbow. After three months of recuperating and some time spent recruiting soldiers in Illinois, Powell returned to Grant's army in time for the Battle of Vicksburg. After that victory, he had a second operation on his arm in an attempt to deaden some nerve endings. It was only partially successful, and he was in almost constant pain for the rest of his life. Upon returning, he was promoted to major. His last engagement was at Nashville, and he left the army as the

War was winding down in the winter of 1865.

After the War, Powell got a job as a professor of science at Illinois Wesleyan University in Bloomington. He taught all the sciences, from physical geography to zoology and organic chemistry. After a year and a half, he moved to Illinois State Normal University as curator of the Natural History Museum and professor of geology. In 1867, he led a small party to Colorado Territory to collect specimens for the Museum. While there, he decided that he wanted to explore the then largely unknown Colorado River. He gained modest support from Congress to study the Colorado region, the last place left still largely unexplored in the conterminous US. In 1868, he led a party back to Colorado, where they once again collected specimens and climbed peaks. They spent the winter in Western Colorado in order to be ready to explore the Colorado River in the spring. With his brother Walter and eight other men, Powell set out from Green River City, Wyoming, in four wooden boats in May 1869. Three of the boats were twenty-one feet long, and one was sixteen. They were built to Powell's specifications by a Chicago boat builder and shipped on the just opened Transcontinental Railroad. The purpose of the trip was to map the Colorado River and study the natural history of the area.

The Green River begins in Wyoming and flows south. The Grand River starts in Colorado and flows west. The two meet in Utah, and this is where the Colorado starts. As the Green is longer than the Grand, Powell felt that it was the true source of the Colorado, so he started on there. (In 1921, the State of Colorado declared that the Grand is the upper reach of the Colorado, despite the rules of geographic nomenclature and, so, the Grand no longer appears on maps.)

This was no easy river trip. At every rapid, they had to unload the boats and carry them along the bank or lower them by rope through the rough water. In Lodore

Canyon, the men in one boat missed the signal to pull to shore and plunged down a series of rapids. They survived, but the boat was lost, along with three months food supply and other necessary provisions. The next day, they found some scientific instruments and a keg of smuggled whisky, so it was not a complete loss. Later, they lost more supplies when their camp caught fire, and they had to leave boxes behind. More food was lost due to repeated wetting in the boats. They reached the junction of the Green and Grand by mid-July with half their food gone. Whenever they stopped, the one-armed Powell would go exploring, noting the geology and often carrying a barometer to determine the height of the cliffs. At one point, he got stuck on a cliff, and he was rescued by one of the other men, who dangled his long underwear from a ledge above for Powell to grab. At times, tempers flared and many of the men were unhappy with Powell's leadership. They tended to be more interested in getting out alive than spending time studying geology and collecting natural history specimens for a museum. On the other hand, they enjoyed naming features on the landscape, leaving such toponyms as Flaming Gorge, Desolation Canyon, Cataract Canyon, Dirty Devil River, and Bright Angel Creek.

In August, they floated through the peaceful Glen Canyon in southern Utah (now covered by the Lake Powell Reservoir) and entered the Grand Canyon. Here, they often had to run the rapids because there was no place to stop and lower the boats. By this time, they were down to half rations of bread, stewed dried apples, and coffee. Well into the Canyon, three of the men decided to walk out and find a Mormon settlement in Utah rather than risk any more days on the Colorado River. They were given a share of the food, some guns, and the well wishes of their comrades. Two days later, the party in the boats exited the Canyon safely. They soon met with some Mormon settlers, and Powell and his brother headed for home. The remaining men continued down the Colorado on their own. The three who walked out were killed, most likely by a group of Paiute Indians, although the details of why remain unclear.

After returning home, Powell lectured on the expedition around the country and became a national hero. He then turned his attention to gaining support for a detailed survey of the region he had traversed. He was following in the footsteps of other scientific explorers, such as Ferdinand

Hayden, George Wheeler, and Clarence King, in learning the geography of the American West. With Congressional support, he returned to Utah in 1870 and scouted out supply routes for his survey and befriended Mormons, Paiutes, Hopi, and Navajo; some of these friendships would last decades. He then prepared for a second boat trip down the Colorado.

This second river trip was less eventful, with much more time devoted to studying the landscape. Powell rode in a wooden chair strapped to one of the boats. During quiet stretches, he would read literature and poetry to the others or sing songs. They stopped before reaching the Grand Canyon and spent the winter in a nearby Mormon town. Emma and their new daughter Mary joined them but only until February when the Powell's returned to the East so that he could seek additional support. The crew, in Powell's absence, spent their time doing topographic mapping of the region. In August, Powell returned, and they resumed their river journey. However, news of Indians attacking Whites convinced them to leave the Canyon before finishing the trip. The Powell Survey continued through the 1870s.

Also during the 1870s, Powell spent some of his time studying the Indian groups on the Colorado Plateau. He became involved in advising the government on getting the Indians of Nevada and Utah to live on reservations and take up farming and ranching. He spent several years working out a plan and convincing the Indian groups to comply, although with limited success. His ethnographic studies included documenting languages and collecting stories and material culture. Because he knew many Indians well, he neither saw them as violent savages nor as peoples to be idealized. He tried to convey to white America that the Indians were people who felt threatened, rightly so, and needed help in assimilating into modern society.

In the 1870s, Powell also began to publish geomorphological papers. His main contributions, coming from his Colorado Plateau work, are the concepts of base level and of antecedent, consequent, and superimposed streams. Following Charles Darwin and Charles Lyell, he was an uniformitarianist, believing it obvious that something as vast as the Grand Canyon was carved slowly over a very long period of time.

Powell was full of ideas but rarely followed them through to fruition on his

own. However, he surrounded himself with brilliant scientists, who combined their own insights with his and made many important contributions to science. Most notably were Clarence Dutton, best known for explaining the formation of the Grand Canyon, and Grove Karl Gilbert, arguably the most influential geomorphologist in US history. Later, WJ McGee would be added to the list both for his geological and anthropological writings. Outside of science, Thomas Moran became the preeminent landscape painter in the country after Powell brought him to the Grand Canyon, and Jack Hillers, who started as a young assistant in the second Colorado River expedition, became an accomplished landscape photographer, starting when the hired photographer quit during the trip.

Powell became interested in the advancement of agriculture in the arid West. He knew that the farming he did in Wisconsin could not be replicated in regions of low rainfall. Land was distributed by the government in 160-acre lots, but Powell knew they were the wrong size for the West, where irrigation would be needed. He had learned much from the Mormons in Utah, who, over several decades, had developed a cooperative system of irrigation where all farmers benefited. In 1878, Powell submitted to Congress a "Report on the Lands of the Arid Regions," in which he outlined his plan for the agricultural development of the West. In it, he urged that the irrigable regions be divided into small farms, up to 80 acres, and that the farmers work together to develop irrigation systems. Most of the non-irrigable lands should be divided into large tracts, up to 2,560 acres, for ranching. He warned that small landholders, not corporations, should be in charge of the water. Congress did not implement Powell's ideas, leaving the 160-acre quarter section as the standard land unit.

In 1879, Congress established the US Geological Survey, largely patterned on a plan of Powell's. There were four Western Surveys, including his, and these were consolidated. Among other duties, the agency would be in charge of mapping the country and surveying the land for settlement. Clarence King, head of another of the original Surveys, became its first director. Two years later Powell took over the USGS when King resigned. Powell was already director of the new Bureau of Ethnology at the Smithsonian Institution and he headed both agencies for many

years. In the Bureau of Ethnology, Powell assembled a group of scholars to document the languages and material culture of American Indian groups in order to establish a "Science of Man."

One of Powell's top priorities after taking over the USGS was topographic mapping. In 1884, he told Congress "A Government cannot do any scientific work of more value to the people at large than by causing the construction of proper topographic maps of the country." Congress agreed, and an army of topographers with plane tables set out to map the country.

The USGS originally focused on economic geology, aiding the mining industry and therefore helping industrialize the United States. Powell was not opposed to applied studies, but put much of the Survey's resources into basic sciences, such as geomorphology and paleontology. He weathered many political fights with members of Congress, often winning.

Powell was a founding member of many scientific societies. He was among the group that started the National Geographic Society, along with its magazine, *National Geographic*.

Late in the 1800s, there was a big push for irrigation in the West, and Powell was at the forefront. Unlike his contemporary John Muir, who championed wilderness for its own sake, Powell felt that the land should be civilized and used productively, as in agriculture. His new Irrigation Survey set out to monitor stream flow and locate

dam sites throughout the West. It used the innovative concept of a watershed as a hydrologic unit to plan development based on drainage basins. In a time before truly large dams were possible, Powell envisioned thousands of dams on smaller streams, each irrigating a community of farmers. If the Irrigation Survey was completely successful, he felt, the major rivers of the West would dry up.

Continuing the arguments he put forward in his report on arid lands and following what he had seen among the Mormons in Utah and Hispanic communities in New Mexico, Powell proposed a plan for irrigation development in the West. He was emphatic that the landowners in a watershed should control its water, not corporations and capitalists. A few Western members of Congress who strongly objected to this populist vision led a fight that killed the Irrigation Survey.

At the age of 60, in 1894, Powell tendered his resignation as director of the USGS. His stated reason was the need for an operation on his arm, which had kept him in continuous pain for the past three decades. Unfortunately, the operation was not successful. In addition, he felt he was getting old and disillusioned with the politics of science in Washington. In his later years, Powell wrote a book on philosophy, explaining how it should be based on scientific inquiry. The book was resoundingly unsuccessful both in sales and influence.

He remained in charge of the Bureau of Ethnology but only as a figurehead. W.J.

McGee actually ran the Bureau. One of McGee's interests was in racial differences in brain size. Powell and McGee had a bet, presumably as a joke, over whose brain was larger. After both had died, it was determined that Powell won.

Not much is known about Powell's family life. They lived in a relatively modest house in Washington. It appears that he and Emma were not close in their later years, and their daughter Mary was sickly and never married or had a career.

With ever failing health during his last years, Powell died in 1902. He was among the last of the truly great explorers in the US. He is a commanding figure from the early days of American geography, geology, and anthropology, as well as in the application of scientific knowledge to land management. As a bureaucrat, he was instrumental in the emergence of government supported science. On his tombstone in Arlington National Cemetery outside Washington are the words: Soldier. Explorer. Scientist (photograph below).

#### References

- deBuys, William, ed., 2001, *Seeing Things Whole: The Essential John Wesley Powell*, Washington, Island Press, 388 p.
- Stegner, Wallace, 1953, *Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West*, Boston, Houghton Mifflin Company, 438 p.
- Worster, Donald, 2001, *A River Running West: The Life of John Wesley Powell*, New York, Oxford University Press, 673 p.

