

# Federick Haynes Newell

Donald J. Pisani

*Newell, Frederick Haynes* (1862-1931), along with Francis Newlands, Gifford Pinchot, and John Wesley Powell, is remembered as a pioneer in the movement to reclaim the American West and as a principal architect of the Reclamation Act of 1902 (see photograph). While in the employ of the U.S. Geological Survey, Newell became chief engineer of the newly organized U.S. Reclamation Service (now the Bureau of Reclamation) in 1902. After Reclamation Service broke away from the Survey in 1907, Newell became the first director of the new organization.



*Federick Haynes Newell*

Newell was born on March 5, 1862, in Bradford, Pennsylvania, a small lumber and mining town in the northwest part of the state. "The people [in Bradford] were what might be called typical mountaineers and laborers in the lumber camps, rough, illiterate and with many queer old country habits and superstitions," Newell recalled in his unpublished memoirs, written in 1927. Newell's mother died in childbirth the year after he was born, and so did the child she carried. So young Frederick grew up without siblings, and for most of his youth lived with relatives. As he put it, "I attended many public schools in different parts of the country not staying very long at any one as I moved from place to place." Nevertheless, Newell was a good student, and after attending high school in Newton, Massachusetts, where he lived with an uncle, he entered the Massachusetts Institute of Technology in 1880, in part so that he could live at his grandfather's house in Brookline, Massachusetts.

Not surprisingly, Frederick Newell would exhibit a curious distance and detachment when he wrote about his father, who at various times tried the feed and grain business in Chicago—and got "skinned," as Frederick put it—then sold boilers, machinery and safes in Detroit, then made furniture, until in mid-life he returned to Bradford, where he found oil and financial success after many failures. Frederick described his father as "always sanguine, full of entrancing schemes . . . He was surveyor, engineer and general all around man . . . He bought and sold coal and timber lands and went into various ventures, characteristic of the time and place." In short, his father was an American type: wanderer, dreamer and speculator—the kind you find in so many American novels, including Mark Twain and Charles Dudley Warner's *The Gilded Age*. The life of Frederick's father drove home to the boy a Darwinian lesson he would carry with him through life: for many success did not come easily. It comes only to those who are persistent and tenacious, and how people bear hardship is as important as whether or not they achieved success.

After Newell graduated from MIT in 1885, with a B.A. in mining engineering, he first returned to Bradford and worked for his father—who hadn't wanted him to go to college in the first place—then caught on with the Ohio Geological Survey studying oil-bearing rocks. At the time geology was in its infancy, and those who knew the

most about the subject were more likely to work for the federal or state governments than teach at a university. So Newell's big break came in 1888, when he met John Wesley Powell, the head of the United States Geological Survey in Boston, and later in that year, in Washington, he met two other prominent figures in the USGS, G. K. Gilbert and Henry Gannett. At the time, Powell was organizing the Irrigation Survey within the USGS to investigate and map potential dams and canals in the West, and Powell asked Newell to take charge of a crew of 14 recent engineering graduates from Harvard, Yale, and Troy to study the characteristics and volume of streams in the West. This was far-removed from petroleum geology, but Newell jumped at the chance.

The training camp at remote and isolated Embudo, New Mexico, on the Rio Grande, changed Newell's life. However, Congress cancelled the Irrigation Survey in 1890, and it cut the USGS appropriation by half in 1892. Powell resigned as director of the Survey in 1894, and Newell learned another valuable lesson: Western politicians cared little about science but everything about economic development. It was a lesson he would long remember.

Frederick Newell was not a hydraulic engineer, and he never designed an irrigation project—either before or after 1902. He knew a lot about the nature of rivers, and he also prepared the census of irrigation for the United States in 1890 and 1900, but he had little experience with desert agriculture. More than his adaptability, and more than his raw intelligence, what Newell had was the right political and scientific connections. In 1890 he joined the Cosmos Club, which until he found a house in Washington, served, he recalled in his memoirs, as his "main refuge." Within a year he became a regular member of the "Great Basin Lunch Mess," which included G. K. Gilbert, Henry Gannett, W J McGee and Gifford Pinchot. The group met over lunch to discuss the critical natural resource issues facing the nation in the 1890s. In the next few years he became active in the National Geographic Society, the American Geographical Society, and the American Forestry Association, and he gave frequent lectures before scientific and engineering societies—more often on forestry than hydrology. Newell and Gifford Pinchot frequently discussed the need to improve the administration of the national forests, in part to protect the flow of the many streams that originated on the public domain. Through Pinchot, Newell met the then governor of New York in 1900, Theodore Roosevelt. Newell and Pinchot became Roosevelt's closest advisors on natural resources, and it was only natural that when the Reclamation Act passed Congress in 1902, the United States Geological Survey would administer the new program and Frederick Haynes Newell would take charge.

Roosevelt wanted to maintain the Republican support he already enjoyed in states like Wyoming and Montana. Therefore, in consultation with Charles D. Walcott and Newell, Roosevelt made a fateful decision: the Reclamation Service would not build one or two model irrigation projects so that it could learn from experience. Nor would it build the large projects beyond the means of private enterprise that A. P. Davis, J. D. Lippincott and others had favored for the Colorado and Sacramento rivers. Instead, within a few years of 1902 it launched smaller irrigation projects in every western state and territory to spread the wealth of the reclamation fund as evenly as possible. To be sure, Congress required in the Reclamation Act that 51 percent of the money raised from public land sales be spent on reclamation within the state or territory in which that land was located. But that did not mean that the Reclamation Service had to launch 28 projects within a few years. So fast did the Service undertake these dams and canals that it could not profit from mistakes and misconceptions. And by 1915, when Newell left the Reclamation Service, the mistakes were all too obvious: the soils—which had not been tested prior to opening the original projects—were uneven and often of poor quality, inadequate attention had been paid to finding transportation and markets for the crops raised, and those crops were likely to be low value alfalfa rather than the high value citrus fruits or vegetables that promoters of government irrigation had hoped would be raised on the projects in 1902.

By 1909, the Reclamation Service was bombarded with complaints from the projects and from Congress, and Newell had become defensive and evasive. He tried to hide the seriousness of the problems on the projects from the president, from the secretaries of the Interior, and from Congress. A. P. Davis remembered a meeting in 1914 with Secretary of the Interior Franklin K. Lane and the so-called "father of the Reclamation Act," Francis G. Newlands, then a United States senator from Nevada. Newlands had long been a friend and supporter of Newell, but at this meeting, according to Davis, even Newlands lost his patience. Davis was a team player and he had gone out of his way to defend Newell. But Newlands—who was generally mild-mannered—asked "almost savagely," or so Davis later remembered, what Newell's faults were. "I told the Senator that Mr. Newell's principle weakness was his inability to say 'No,' and that his principal mistake was in taking up too much work which was the result of his yielding to pressure in various regions, for the sake of avoiding antagonism and criticism, but that it had had the reverse effect. I told him I had often protested against taking up so many projects beyond the capacity of funds to properly push, and that I could prevent this when in the Washington office, but when I was absent in the field . . . commitments were made to new work which had tied up the funds and made it necessary to ask Congress for additional appropriations. It had also led to delay of the work on all of the projects, so that settlers were exposed to great hardships in waiting for water . . . ."

Newell accomplished a great deal. By 1906, 28 government projects had been selected. When completed, they were expected to irrigate as few as 8,000 acres on the Garden City project in Kansas to as many as 200,000

acres on the Salt River Project in Arizona and the Truckee-Carson Project in Nevada. In all, more than 3,000,000 acres would be reclaimed from the desert and 62,000 farms created. As head of the Reclamation Service, Newell supervised the construction of 100 dams, 25 miles of tunnels and 1,300 [check this] miles of canals and ditches that supplied water to 20,000 farmers. At 328 feet, the Shoshone Dam in northeastern Wyoming, completed in 1910, was the highest dam in the world, and Roosevelt Dam, built on the Salt River between 1906 and 1911, was the largest masonry dam in the world. By 1916, Arrowrock Dam, which was 385 feet high, had eclipsed the Shoshone Dam.

Nevertheless, Newell had many blind spots, and for a partial explanation we can go back to his childhood and the decades he was growing up. Newell shared the same faith in Social Darwinism that many Progressives held, and the experience of his father must have suggested to him that the natural order of human existence included failure and uncertainty. What most hampered Newell's judgment is that he refused to recognize how vastly different agriculture was in the United States in 1900 or 1910 than in 1860 or 1880. In one of his annual reports, when he was under heavy fire from Congress, Newell acknowledged some of the "fallacies" that had retarded federal reclamation. The most important, he said, was that "it was not anticipated how difficult it would be to secure the right kind of farmers to handle the reclaimed land, and utilize it to advantage."

Newell was right. Many penniless and inexperienced farmers flooded onto the government projects before water was available, and they were doomed to fail. Nevertheless, those settlers had been encouraged to take up land on the projects by the Reclamation Service, and one wonders whether Newell's own versatility—remember that he was neither a hydraulic engineer nor a soil scientist—played some part in the decision to open the projects to all comers. Of course, when those settlers proved less resourceful than he had hoped, Newell quickly lost faith in them. In 1912, he suggested that the problems on the federal reclamation projects were due mainly to character faults in those who settled the government projects, not in the administration of the Reclamation Service or even in limitations imposed by Congress. "The characteristics of present settlers are in many respects entirely different from those of the older pioneer communities," he wrote. "[T]here is not the spirit of cooperation which ruled the early pioneers; the class of people now attracted to the lands are not as capable of adapting themselves to existing conditions and initiating the building of distributing works." Disgruntled farmers, Newell believed, had blamed the Reclamation Service for their own weaknesses. If anything, the Reclamation service had done too much.

Newell was forced to resign from the Reclamation Bureau in 1915 by Secretary of the Interior Franklin K. Lane, and soon thereafter became head of the Civil Engineering Department at the University of Illinois. He remained very active in national engineering societies, but in the years that followed showed little interest in science or conservation, and he was not in demand as a consultant. He enjoyed academic life but riding herd over nine academic engineers provided little challenge. As he wrote after he left the University of Illinois in 1920: "everything seemed too easy in the sense that there was not enough stimulus to keep an active man from becoming a typical college professor emersed [sic] in petty routine." In 1918, the American Geographical Society, of which Newell had been a prominent member, awarded him its Cullum Gold Medal. One side of the medallion bore the inscription: "He carried water from a mountain wilderness to turn the waste places of the desert into homes for freemen." Yet, ironically, Newell died in 1931 convinced that federal reclamation had been unnecessary and unwise. Congress, Newell argued at the end of his life, had paid too much attention to the arid West; the farms of the humid United States were more than adequate to feed the entire nation. The crops produced on government projects represented less than one percent of the value of all farm products raised in the United States and only six percent of the value of the arid region's output. There was no demand for new homes and—given farm mechanization, the labor-saving value of electricity, and the continuing migration to cities—the family farm had no future in the West. Newell died an embittered man.

**Source:** Pisani, Donald J., 2002. "A Tale of Two Commissioners: Frederick H. Newell and Floyd Dominy," presented at *History of the Bureau of Reclamation: A Symposium*, Las Vegas, NV, June 18.