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**The Desert Shall Blossom As the Rose : Pioneering Irrigation /
John A. Widtsoe**

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PIONEER

Summer 2003

SURVIVAL LAY BENEATH THEIR FEET

P. 2

THE DESERT SHALL BLOSSOM AS THE ROSE

Pioneering Irrigation

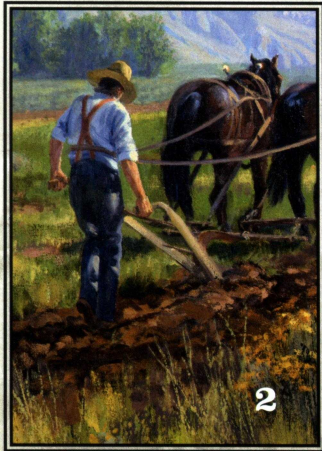
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PIONEER

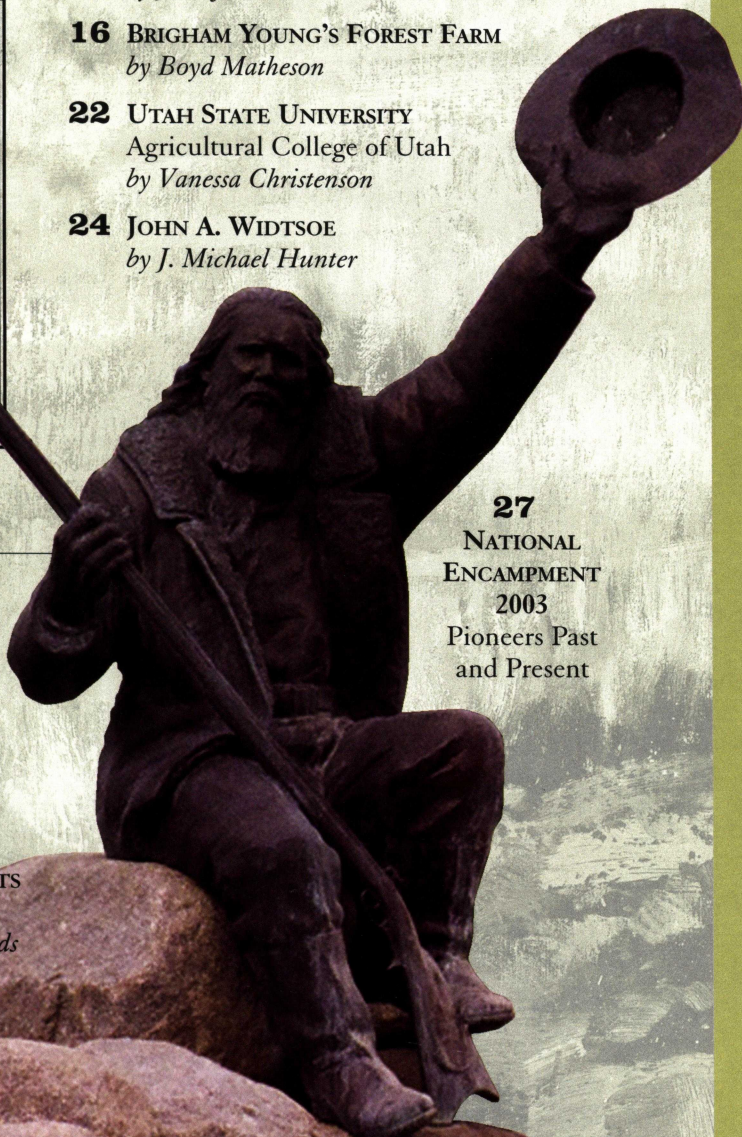
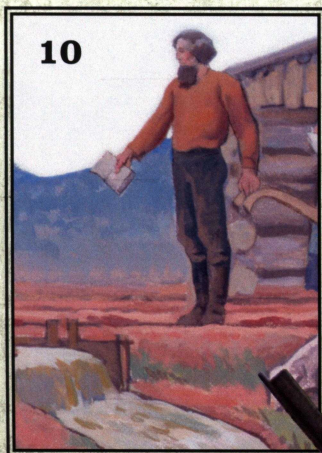
Summer 2003

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2003
Pioneers Past
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COVER ART

The Cranes Flew By, © by Robert Duncan. All Rights Reserved.

The Desert Shall Blossom as the Rose

“We had a desire to try the soil to know that it could produce. . . . Of course we had no experience in irrigation.”

—Wilford Woodruff

Pioneering Irrigation

By J. Michael Hunter

On 24 July 1847, Brigham Young and the rear company of pioneers made their way along a road freshly cleared of underbrush to the mouth of Emigration Canyon. In his carriage, Wilford Woodruff drove an ailing Brigham Young to a point where they could view the entire Salt Lake Valley. Wilford Woodruff said, “While gazing upon the scene before us,

he [Brigham Young] was enraptured in vision for several minutes. He had seen the valley before in vision, and upon this occasion he saw the future glory of Zion and of Israel, as they would be, planted in the valleys of these mountains.”¹ In his journal under that date, Wilford Woodruff wrote, “Thoughts of pleasing meditations ran in rapid succession through our minds while we contemplated that [in] not many years the House of God would stand upon the top of the mountains while the valleys would be converted into orchard, vineyard, gardens and fields by the inhabitants of Zion and the standard be

unfurled for the nations to gather there to.”² When the vision had passed, Brigham Young said, “It is enough. This is the right place. Drive on.”³

As the pioneers began to settle in this the “right place,” they discovered a new challenge—fulfilling the biblical prophecy of Isaiah, “The desert shall rejoice, and blossom as the rose” (Isaiah 35:1).

Most of the Mormon pioneers had some experience with farming in more humid areas before moving into the Salt Lake Valley in 1847. However, growing crops in the dry climate of the Great Basin would be a challenge for them. Wilford Woodruff recalled: “We had a desire to try the soil to know that it could produce. Of course all this company—nearly the whole of us were born and raised in the New England States. . . . Of course we had no experience in irrigation. We pitched our camp, put some teams onto our plows . . .

and undertook to plow the earth, but found neither wood nor iron were strong enough to make furrows here in this hard soil. It was like adamant. Of course we had

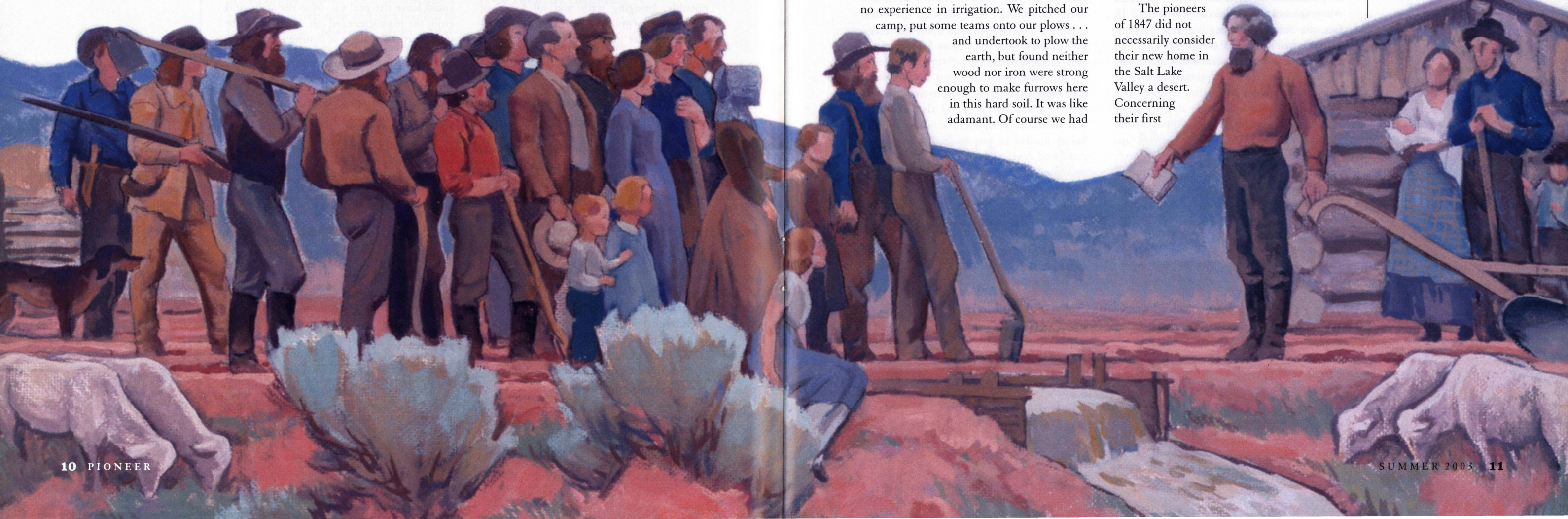
to turn water on it. We would have done anything. We went and turned out the City Creek. We turned it over our ground. Come to put our teams on it, of course they sank down to their belleys in the mud. We had to wait until this land dried enough to hold our teams up. We then plowed our land.”⁴

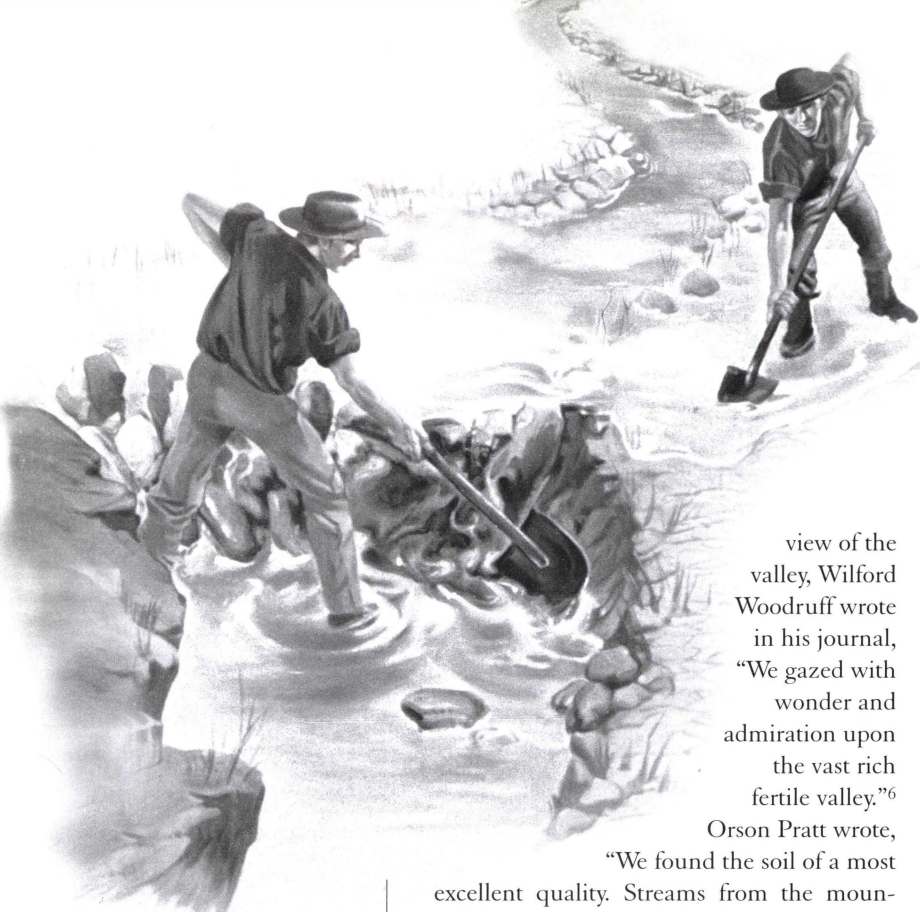
Thus Wilford Woodruff described the first efforts of the Utah pioneers at irrigation. It consisted of building a diversion dam across the shallow and narrow (perhaps eight feet wide) City Creek. The pioneers then scratched a ditch a few hundred feet long to a spot selected for the planting of potatoes. George Q. Cannon said, “We went at it as best we could, and took the water out by the simplest means in our reach, and were successful in raising at least part of a crop.”⁵

The pioneers of 1847 did not necessarily consider their new home in the Salt Lake Valley a desert. Concerning their first

We went and turned out the City Creek. We turned it over our ground. Come to put our teams on it, of course they sank down to their belleys in the mud.”

—Wilford Woodruff





During the early years, pioneer efforts at irrigation would consist of diversion dams and canals that could be built by a few men in a short time.

view of the valley, Wilford Woodruff wrote in his journal, "We gazed with wonder and admiration upon the vast rich fertile valley."⁶

Orson Pratt wrote, "We found the soil of a most excellent quality. Streams from the mountains and springs were very abundant, the water excellent, and generally with gravel bottoms. A very great variety of green grass, and very luxuriant, covered the bottoms for miles where the soil was sufficiently damp. . . ."⁷ In fact, the Salt Lake Valley was not a desert. The Wasatch Range east of the Valley acted as a barrier to moisture-laden winds approaching from the west. As the approaching air rose to clear the mountain crests, temperatures would drop, allowing the air to give up its moisture. Mountain streams flowed to the valley below. The Valley itself received approximately fifteen inches of rain each year.⁸

When the pioneers experimented with crop planting in the spring of 1848, they were hopeful that irrigation would not be necessary. They planted their wheat and grain early in spring without irrigating. By June, the crops began to wither. The precipitation was not enough to sustain crops. They would have to irrigate. Brigham Young, who had returned to Winter Quarters in the fall of 1847, wrote a letter to the Salt Lake Saints in the spring of 1848: "Should irrigation be found necessary, prepare pools, vats, tubs, reservoirs, and ditches at the highest points of land in your field or fields that may be filled during the night and be drawn off to any point you may find necessary."⁹ However, the Saints would not attempt to build large reservoirs for water storage until the 1870s.

When Brigham Young returned to the Salt Lake Valley, he realized that cooperative effort would be necessary if the Saints were to survive. Constructing dams, digging ditches and canals, and distributing water were all tasks requiring a great deal of coordinated labor. He buoyed the Saints with his vision of what their valley could become. "The Lord wished us to gather to this place," Brigham Young said. "He wished us to cultivate the earth, and make these valleys like the Garden of Eden, and make all the improvements in our power, and build a temple as soon as circumstances would permit."¹⁰ He also said: "I have promised the people South, that if they will cultivate the ground and ask the blessings of God upon it, the desert shall blossom as a rose, pools of living water shall spring up on the parched ground, and the wilderness shall become glad. The Lord has planted the feet of the Saints in the most forbidding portion of the earth, apparently, that he may see what they will do with it. I may confidently say that no other people on the earth could live here and make themselves comfortable. If we settle on these desert and parched plains, upon the sides of these rugged and sterile mountains, and cultivate the earth, praying the blessing of God upon our labors, he will make this country as fruitful as any other portion of the earth."¹¹

Brigham Young realized that it would take more than physical exertion to survive their new location; it would also take spiritual fortitude. With so little water, pioneer Saints needed to put aside selfishness and greed and develop a sense of neighborly love and community effort. He said, "There shall be no private ownership of the streams that come out of the canyons, nor the timber that grows on the hills. These belong to the people: all the people."¹²

At first local bishops were often put in charge of distributing labor and resources for the building of canals and dams. Bishops also distributed water based on their judgment of the needs of the individual irrigator. In 1852 the territorial legislature granted authority to the county courts to control and distribute the use of water and other natural resources. In 1865 the territorial legislature granted individual irrigators the authority to organize into irrigation districts. Districts could then levy water or canal assessments on their members for the operation and maintenance of

their canals. In 1867, irrigation districts were granted the power to form irrigation companies. Watermasters, who were appointed to coordinate the distribution of water, became highly respected in their communities.¹³

The early Utah pioneers built their homes in a central village, with farming lands located outside of the settlement. Individual farms were small, 10 to 20 acres, and geared toward supporting individual families rather than the production of produce for the commercial market. The farming village increased the opportunities for social contact needed to plan and operate cooperative irrigation projects. During the early years, pioneer efforts at irrigation would consist of diversion dams and canals that could be built by a few men in a short time. Early canals had small carrying capacities and extended only two or three miles.¹⁴ While construction equipment generally consisted of teams and plows, the pioneers used a device called a "go-devil" for larger projects. "The go-devil consisted of heavy planks or logs bolted together in the shape of an A. Pulled by a pair of draft animals, it dug deeply into the soil with its pointed end, throwing dirt up and out at the sides."¹⁵

The Utah pioneers went through a period of trial and error as they learned how much water a given type of soil or seed would need. They experimented with corrugations and flooding in order to promote maximum

yields. They experimented with slope, soil texture, and mineral content. They experimented with new varieties of field crops.

In 1880 the territorial legislature granted the county selectmen the power to adjudicate water disputes, and for the first time in Utah, irrigation rights became personal property. Farmers began to move from the small, self-sufficient farms to larger more productive farms for commercial gain. Many new canals were built during this period. The newer canals were higher up on the foothills; they were also longer and deeper with larger carrying capacities. Irrigation companies looked to the federal government and eastern entrepreneurs to finance large irrigation projects. However, the farmers of Wasatch and Sanpete counties constructed two tunnels and diversion canals to divert water from the Colorado River drainage system to the Great Basin drainage system without using outside resources.¹⁶

All of this pioneer cooperative effort had significant results. By 1860, Utah had become the most prosperous western territory with improved farmlands valued at over \$1 million, manufacturers valued at nearly \$1 million, and its real and personal property at nearly \$5.6 million.¹⁷ By 1865, the pioneers had dug 277 canals,¹⁸ and by 1895, the irrigated lands of Utah had increased to 417,000 acres.¹⁹ By 1900,

In 1880 the territorial legislature granted the county selectmen the power to adjudicate water disputes, and for the first time in Utah, irrigation rights became personal property.



The Hand of God, by Maynard Dixon (10-11), © courtesy of Brigham Young University Museum of Art. All Rights Reserved. Irrigating (13) © Utah State Historical Society.

The Utah pioneers did more than just survive in the dry climate of the Great Basin—they thrived, creating an oasis in an otherwise desolate wilderness.



more than 400 farming villages had been established in Utah.²⁰

At the turn of the century, the politics of water and irrigation in the West drew national political attention. The federal government backed many western reclamation endeavors. With these new resources, large dams and reservoirs were built. The number of Utah farms increased from 10,517 in 1890 to 30,695 in 1935.²¹ Between 1900 and 1920, irrigated lands in Utah increased by 132 percent.²²

Perhaps when they looked out over the Salt Lake Valley in 1847, Brigham Young and Wilford Woodruff did not yet know the role irrigation would play in realizing the vision that was opened upon them. Yet, as historian Craig Fuller has stated, "The success of building Zion rested squarely on communal cooperative efforts and the individual discipline of irrigators to use beneficially the limited water available to them."²³ Both Brigham Young and Wilford Woodruff, like anyone who lives or lived in Utah, had to become familiar with irrigation in order to survive. Yet the Utah pioneers did more than just survive in the dry climate of the Great Basin—they thrived, creating an oasis in an otherwise desolate wilderness. Both Brigham Young and Wilford Woodruff lived to see their visions realized. In 1877, Brigham Young said, "Children, we are the pioneers of this country, . . . we were the first to plant out orchards and to improve the desert country, making it like the Garden of Eden."²⁴ In 1872, Wilford Woodruff said: "When we came here our position demanded that the very first thing we did was to plant our potatoes and sow our wheat, or we had starvation before us; and I will here say that . . . the Lord heard our prayers, and we dwelt here many years and filled these valleys for six hundred miles with cities, towns, villages, gardens, orchards, fields, vineyards, hundreds of schoolhouses, and places of worship, until we made the desert blossom as the rose, and had a supply of wheat, bread and clothing upon our hands."²⁵

Scientists continue to do research on irrigation techniques and water conservation. What began with a roughly dug ditch in 1847 has developed into a sophisticated and intricate system of water distribution that makes the contemporary lifestyle in Utah possible. ▼

Notes

- 1 Quoted in "Pioneers' Day," *Deseret Evening News*, 26 July 1880, 2.
- 2 Wilford Woodruff's Journal, 1833–1898, ed. Scott G. Kenney, vol. 3 (*Midvale, Utah: Signature Books*, 1983), 234.
- 3 Quoted in "Pioneers' Day," 2.
- 4 Quoted in Leonard J. Arrington and Dean May, "A Different Mode of Life": *Irrigation and Society in Nineteenth-Century Utah*, *Agricultural History* 49 (January 1975): 7.
- 5 Quoted in *ibid.*
- 6 Wilford Woodruff's Journal, 1833–1898, 234.
- 7 Orson Pratt Journals, ed. Elden J. Watson (*Salt Lake City: Elden J. Watson*, 1975), 455.
- 8 *Atlas of Utah (Ogden and Provo: Weber State College and Brigham Young University*, 1981), 55.
- 9 "Journal History of The Church of Jesus Christ of Latter-day Saints," 9, September 1847, *Church History Library, Family and Church History Department, The Church of Jesus Christ of Latter-day Saints, Salt Lake City, Utah*.
- 10 Brigham Young, 14 February 1853, *Journal of Discourses* 1:277.
- 11 Brigham Young, 28 September 1862, *Journal of Discourses* 10:6.
- 12 Quoted in Leonard J. Arrington, *Great Basin Kingdom: An Economic History of the Latter-day Saints, 1830–1900 (Cambridge: Harvard University Press*, 1958), 52.
- 13 Craig Fuller, "Irrigation in Utah," in *Utah History Encyclopedia*, ed. Allan Kent Powell (*Salt Lake City: University of Utah Press*, 1994), 276–77.
- 14 Arrington and May, 8.
- 15 *Ibid.*, 9.
- 16 Fuller, 277–78.
- 17 Donald Worster, "The Kingdom, the Power, and the Water," in *Great Basin Kingdom Revisited (Logan: Utah State University Press*, 1991), 25.
- 18 Arrington and May, 8.
- 19 Worster, 24.
- 20 Charles S. Peterson, "Agriculture in Utah," in *Utah History Encyclopedia*, ed. Allan Kent Powell (*Salt Lake City: University of Utah Press*, 1994), 5.
- 21 *Ibid.*
- 22 Fuller, 278.
- 23 Fuller, 276.
- 24 Brigham Young, 24 July 1877, *Journal of Discourses* 19:60.
- 25 Wilford Woodruff, 8 April 1872, *Journal of Discourses* 15:78.

Joseph Samuel home, courtesy Jennifer Adams (15). Brigham Young's Forest Farm (16–17) © Utah State Historical Society. Farms Are for Kids, © by Robert Duncan (18–19), used by permission.



John A. Widtsoe

By J. Michael Hunter

John A. Widtsoe was born 31 January 1872 on the tiny island of Froyen, Norway, to John A. Widtsoe and Anna Karine Daarden. When John was six years old, his father died, leaving a wife and two sons. After being taught by Latter-day Saint missionaries, John's mother joined the Church and soon found herself ostracized from society. When John was eleven years old, his mother took the family to Utah hoping for better opportunities for her two sons.

John's father had been a schoolmaster, and his mother Karine Widtsoe

was dedicated to seeing that her children received an excellent education. John A. Widtsoe distinguished himself at Brigham Young University and graduated from Harvard University. He went on to receive master's and Ph.D. degrees at one of the world's highest rated universities: Goettingen in Germany.

John A. Widtsoe became an international authority on soil chemistry, irrigation, and dry-farming. In 1911, he published through Macmillan in New York his widely acclaimed *Dry Farming*. It was praised by the American Academy of Political and Social Science and by the journal *Nature*. In 1914,

Widtsoe published, again through Macmillan, *Principles of Irrigation Practice*. The aim of the book was to provide farmers with a guide to modern irrigation practice written in simple language. The book became an important standard in irrigation farming.

Widtsoe became the first director of the Utah Experiment Station and president of Utah State Agricultural College (now Utah State University). He was appointed principal of agriculture at Brigham Young University and later became president of the University of Utah.

Having distinguished himself as a leading authority in the field of irrigation, he was appointed to the Hoover Commission, which was charged with management of the Colorado River. He spent two years in Washington, D.C., reorganizing the Federal Bureau of Reclamation.

Widtsoe's unique contributions to irrigation and reclamation are honored today through the John A. Widtsoe Building, home to Brigham Young University's Department of Biology and Agriculture, and the newly completed \$28 million John A. Widtsoe Chemistry Building at Utah State University. Still standing today is the John Widtsoe Building, one of the very first buildings on the University of Utah campus. It is part of the President's Circle in the heart of campus. ▼

Bibliography

- Parrish, Alan K. John A. Widtsoe: A Biography. *Salt Lake City: Deseret Book, 2003.*
- Widtsoe, John A. *Dry Farming*. New York: Macmillan, 1911.
- Widtsoe, John A. *The Principles of Irrigation Practice*. New York: Macmillan, 1914.

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