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

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Survival Lay Beneath Their Feet
P. 2

The Desert Shall Blossom as the Rose
Pioneering Irrigation
P. 10

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FEATURES

2 Survival Lay Beneath Their Feet
   by Jennifer Weiler

4 Briton Plowed First Half-Acre in Valley
   by Glen M. Leonard

7 The Sego Lily
   by Jennifer Weiler

10 The Desert Shall Blossom as the Rose
   Pioneering Irrigation
   by J. Michael Hunter

15 Memories of Irrigating
   by Jennifer Adams

16 Brigham Young's Forest Farm
   by Boyd Matheson

22 Utah State University
   Agricultural College of Utah
   by Vanessa Christenson

24 John A. Widtsoe
   by J. Michael Hunter

DEPARTMENTS

1 President's Message
   by Louis Pickett

20 Pioneer Spotlight:
   Cornelius Peter Lott
   by Kent V. Lott

21 SUP New Members

21 Legacy Trust Fund

33 National Highlights
   Tomorrow's Pioneers
   SUP Scholarship Awards

27 National Encampment
   2003
   Pioneers Past and Present

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faith in God, devotion to family, loyalty to church and
country, hard work, service to others, courage in adversity,
personal integrity, and
unyielding determination. Pioneer Magazine supports
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COVER ART
The Cranes Flew By, © by Robert Duncan. All Rights Reserved.
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

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." 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." When the vision had passed, Brigham Young said, "It is enough. This is the right place. Drive on."

As the pioneers began to settle in this "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 bellies in the mud. We had to wait until this land dried enough to hold our teams up. We then plowed our land." 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."

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

When Brigham Young returned to the Salt Lake Valley, he realized that cooperative efforts would be necessary of the Saints to survive. Constructing dams, digging ditches and canals, and distributing water were all tasks requiring a great deal of coordinated labor. He believed the Saints with 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.” 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.” Early efforts at irrigation were not sufficient to divert small streams into 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.”

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 neighborhood 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.”

At first local bishops were often put in charge of distributing labor and resources for the building of canals and ditches. Bishops had 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.

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. 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.”

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.

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 $56 million. By 1865, the pioneers had dug 277 canals, and by 1895, the irrigated lands of Utah had increased to 417,000 acres. By 1900,
T
he Utah pioneers did more than just sur-
 vive in the dry climate of the Great Basin—
 they thrived, creating an oasis in an
 otherwise desolate wilderness.

At the turn of the century, the politics of water and irrigation in the West drew na-
tional political attention. The federal govern-
ment backed many western reclamation

canals. 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 1935.7 Between 1900 and 1920,
irrigated lands in Utah increased by 132
percent.8 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 disci-
pline of irrigators to use beneficially the lim-
ited water available to them.”9 Both Brigham Young and Wilford Woodruff, like
anyone who lives or lived in Utah, had to be
familiar with irrigation in order to sur-
vive. 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
our orchards and to improve the desert country, making it like the Garden of Eden.”10 In
1872, Wilford Woodruff said: “When we came
here our position demanded that the
very first thing we did was to plant our pota-
toes and sow our wheat, or we had starvation before us; and I will here say that... the
Lord heard our prayers, and we sowed here many years and tilled these valleys for six hundred
miles with cities, towns, villages, gardens,
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.”11

Notes

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Memories of Irrigating

By Jennifer Adams

W
ater means richness and new growth. Water means food. Water means power. Water, as it has from the beginning of
time, means life.

If you have ever lived close to the
land, you know the quiet thrill of open
space, the rich wetness of pasture, the
soft, pungent smell of new-mowed hay.
My great aunt Grace told my father from the time he was a boy that there
is beauty in plowed ground, if you look
for it.” My father must have taught me
to see, for I always love to drive into
west Layton in the late afternoon, when
the warm, patterned sun soaks the
lines of turned earth waiting to be
planted. The texture and depth of color
in the soil—the strength and richness
of it—fills me with a peace and satisfaction that is hard to explain. Those of us
whose ancestors walked the Plains and
settled Utah and planted these fields have
a connection to this land and a love for it that ties us to each other as well as to our past.

My great grandfather, Joseph
Samuel Adams, helped settle Layton, Utah. My family still has thirty-four acres of beautiful pasture—what is left
of his homestead. My father lives in
the red brick Victorian home that Joseph
Samuel built in 1889. This past summer
my mother helped my husband re-
store the log cabin that the family lived
in while the main house was built. I
loved growing up on that land.

I still remember the Saturdays my
dad would irrigate when I was young.
My brother and I would take off our
shoes and socks and hike up our pants
to splash in the water. The water would run down the land, covering the whole lawn, covering our feet well over our
ankles. We’d play tag, float sticks and
goose feathers, have races. Our
feet would get so cold in the wet, still
gritty, and we could smell the wild
mint that grew on the ditch banks.

I understood even then the impor-
tance of the water, the significance
of our family’s water shares. There would
be occasional disputes with the city try-
ing to buy out our shares, and my uncle Sherm and father would still get up four o’clock in the morning to go up
and put in the headgate to change the
water. Once in a while a someone would
forget to take their turn at irrigating.
They would forget to change the water
and our ditches would overflow. You’d
see the precious water spill down the
end of the property and across the road.

My brother and I loved the ditches on the property. My father built us a
cage swing over the ditch in the north
pasture. He tied knots in a green-and-
white nylon rope so we could hold on,
tie it to a tree on the lower bank, and put a swing action back and forth. We
would hold the rope tightly, close our
eyes, and fling ourselves across the ditch from one bank to the other and back
again. My dad had tied a cowbell in the
top of the tree, and our weight on the rope pulling on the branches made it chime
noisily.

We were not the only ones to
enjoy the open irrigation ditch. For
years now the Canadian geese have
topped the trees and started to nest.
They rest there about two
weeks. Each year the number has
grown—there is just not enough open space left anymore. About three years
ago we counted eight hundred geese.
They drink from the ditch and sleep in
the pasture. Their call is achingly
beautiful. I love to watch them, and
I always feel sad when they leave, for I
feel I am losing something so beautiful and some small part of me worries that they will not come back again.

My family is selling the land. I
ache with the loss of it. My aunt and
uncle have been farming it seventy
years. The issues of inheritance are
complicated and they want it settled
and get their affairs in order. I can
understand that—I really can—and
their thoughtful, measured approach to selling it, their careful consideration of each other’s feelings, has made me proud of them and made the loss somewhat easier to bear.

My dad will be keeping his
portion of the land. His land will be
around the red brick house. He will keep his water shares. And our irriga-
tion ditches will remain open. My
children will play there, floating toy
boats of sticks and feathers, swinging
across the ditch, their feet dangling.
The geese will still come. The water
will still flow.
been named director of the Experiment Station, felt that Kerr's aggressive style of leadership sacrificed the agricultural curriculum to the expansion of other fields of study. Widtsoe resigned, was hired at Brigham Young University in Provo, and convinced several of his fellow Agricultural College professors to follow him. He attacked Kerr’s activities, as well as the college itself, in the Utah Farmer. Other, more serious attacks followed. The result was that Governor Cutler proposed the restriction of teaching or training in certain academic areas at the Agricultural College that would compete with the University of Utah. A bill was signed into law on 20 March 1907, restricting the duplication of courses between the universities.

Kerr resigned in 1907 and was succeeded by John A. Widtsoe himself. Widtsoe stuck to the restricted curriculum, but at the same time dedicated his efforts to the expansion of the agricultural studies of the college and its Experiment Station.

THE EXPERIMENT STATION AND EXTENSION SERVICE

As home to the Utah Agricultural Experiment Station, the university “was founded with the idea that it would take its discoveries from the campus to the people.”

Dr. Widtsoe and Professor Lewis A. Merrill tested soils from many different locations in Utah and talked with farmers. Test results led to publications, including Widtsoe’s classic Dry Farming, A System of Agriculture for Countries under Low Rainfall.

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.

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Above: Utah State University class of students studying plant specimens in the agricultural lab.

Utah State University campus photos courtesy Utah State University Archives (22-23), Background photos of Utah State University (24-25) and city photos (26-27). © Utah State Historical Society. John A. Widtsoe (24) and Carter Widtsoe (25) courtesy Church Archives. The Church of Jesus Christ of Latter-day Saints.

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