

CHAPTER X

IRRIGATION. 1860 to 1938

The beginning of irrigation is lost in antiquity, and, since there is no use trying to find it, this History will pick it up at the point where it concerns Weld county most, where *The History of Agriculture*, published by the State Board of Agriculture in 1926 gives Weld county first place among the counties of the state in its development, and the colonists of the Greeley district credit for the initial push toward leadership.

From *The Reservoir System of the Cache la Poudre* by E. S. Nettleton, former state engineer and agent in irrigation investigation for the U. S. Department of Agriculture, published in 1901, the following facts relating to the county are taken.

The drainage basin of the Cache la Poudre begins in north-central Colorado east of the Rocky mountains. The summits of Laramie and Medicine Bow ranges form the western basin and are a part of the mountainous area running on into Wyoming. The elevation where the Cache la Poudre leaves the mountains and enters the plains is 5,200 feet. The head of the river at the outlet of Chambers Lake is 9,000 feet. Area of the lake is 54 acres.

On its way down the mountains the Cache la Poudre is reinforced by its own North and South Forks and by several smaller tributaries. With these exceptions the waters of the river come direct from the melting snows in the mountainous parts of the basin.

The volume of water coming down the river varies with the melting of the snows in the mountains and affects the flow from month to month, even at times, from day to day and from hour to hour. The high tide usually reaches the mouth of the canon early in the morning after a day of unusually high temperature, often being at that time double its volume later in the day.

The general course of the river after it leaves the mountains is southeast until it joins the Platte three miles below Greeley, and thirty-five miles from the mouth of the canon.

IRRIGATION 1860 TO 1938

The above authority gives Weld county first place in agricultural development. It says: page 10,

“The real and rapid development of the Cache la Poudre Valley began with the building of the Union Pacific railroad and the coming of the Greeley Colony to the lower end of the valley. Prior to this were a few settlers scattered along the entire length of the valley, and two settlements, one at Laporte and the other at Ft. Collins.” It also states that the first attempts at irrigation made at Laporte were so successful that when the famous Gold Rush of 1859 brought its thousands into the valley, the settlers, who had learned irrigation, were able to sell hay to the mining camps at prices ranging from \$50 to \$100 a ton. It seems incredible, but considering that hay was an essential and that the next nearest cultivated lands were hundreds of miles away with transportation slow and costly, it does not seem improbable. Vegetables also brought fabulous prices.

The building of ditches was at first confined to the river bottoms because easier to build and because the land was richer and gave better returns for the labor and money expended.

The Greeley colonists laid out three main ditches, numbered not in the order of their building, but according to the height of the land each was to water. No. 3, the first one constructed, was to water the lowest, or bottom lands; No. 2 the next above or “second bench” lands and No. 1 the highest lands. This last named was never built by the colonists but was later taken over by Ben Eaton, becoming a part of the Eaton system. The Poudre was tapped but a few miles up stream, (west) from the colony grounds for No. 3, farther up for No. 2, and for No. 1 still farther. No. 2 was at first called the “high line” because it reached lands hitherto considered inaccessible.

RESERVOIR SITES.

Nature, Mr. Nettleton says, p. 15, has provided suitable sites for the storage of water at comparatively small expense. These sites are depressions in the surface of the land with depths of from five to fifty feet, and most of them with level bottoms.

The soil at the bottom is usually an impervious heavy clay, void of vegetation; they are usually found at the termini of the ravines where the gathering grounds are capable of collecting more water than is lost by evaporation. An evidence that these depressions had once supplied water for the antelope and buffalo is found in the deep-worn trails leading down to them, and their practically water-tight bottoms, made so by the constant tramping of unnumbered hoofs. Before the days of planned reservoirs the farmer looked upon these depressions as a misfortune, but after their great value as reservoir sites was discovered a farm holding such a basin was many times more valuable than one that did not.

Two other forms of reservoirs are in use, but not so extensively nor profitably as the basin form. They are: the building of dams across ravines at suitable points for gathering water, and the damming of streams. But these have not the natural advantages of the basin and are more expensive in up-keep. In the two counties of Weld and Larimer 113 filings for natural basin reservoirs had been made up to 1901.

The Cache la Poudre Reservoir Company was organized in 1892, its incorporators being farmers owning lands under Greeley ditch No. 2.

Among the principal reservoirs of this district may be mentioned: the one near Timnath, six miles from Ft. Collins, which, when filled to a depth of 30 feet covers an area of 520 acres and has an estimated capacity of 8,218 acre feet. It has an outlet running directly to ditch No. 2.

The Windsor Reservoir, owned originally by B. F. Eaton, is situated three and a half miles north of Windsor and connects with the Poudre. Its area 28 feet above its outlet is 700 acres; it has a holding capacity of 14,004 acre feet. This is one of the natural basins described. A peculiar feature is that the bottom of the basin is several feet below the outlet, and therefore, at all times holds about 150 surface feet of "dead water" that is never drained off.

The Larimer & Weld Reservoir is located two miles north of Ft. Collins, just above the Larimer & Weld canal through

IRRIGATION 1860 TO 1938

which its water is distributed. This reservoir, also a natural basin, was once Terry Lake. The area covered at high water is 470 acres, and its holding capacity is 8,035 acre feet. Its supply comes from several sources other than the river; from seepage, storm water from Dry Creek and the drainage and seepage that originally formed Terry Lake.

The Water Supply & Storage Reservoir Company owns more storage reservoirs than any other in the valley, including at it does Chambers Lake at the head of the Cache la Poudre. Its supply of water, outside of drainage, comes mostly through the "sky line" ditch which conducts the water of the Laramie River over the divide into Chambers Lake, and which is for the most part, cut through the rocky slopes of the mountain. This system has a group of reservoirs, in some places connected by under-ground tunnels. The combined capacity of Chambers Lake and six of its reservoirs is 12,645 acre feet.

The North Poudre Reservoir System supplies all arable lands in the northwest corner of the plains section of the district east of the front range of the Rockies. Water comes from the north fork of the Cache la Poudre. Six of its basins have a capacity of 26,106 acre feet.

Besides these there are a large number of smaller reservoirs in the district among which may be mentioned:

The Milton, nine miles east of Platteville.

The Latham, three miles east of La Salle.

Horse Creek, two and a half miles east and four south of Hudson.

Jim Creek, between Keenesburg and Hudson.

Prospect, six miles south of Keenesburg.

Coal Creek, seven miles east of Galeton.

March, four miles north and four east of Galeton.

Riverside, twenty miles east and six south of Greeley.

McGree Lake, four miles north and three west of Purcell.

Empire, twenty-five miles east and ten south of Greeley.

Union, four south and two west of Mead.

Black Hollow, two miles north of a bend in the Larimer ditch at west line of county.

Riverside has a capacity of 57,615 and Empire 37,720 acre feet.

An "acre foot" means the amount of water needed to cover an acre of ground one foot deep. A "second foot" means the amount of water that can fill a space or box one foot square in one second of time. It is just double the amount of an acre foot.

The best information concerning the whole Poudre Valley system is found in the book here quoted, *The Reservoir System of the Cache la Poudre*, by Nettleton. But this book only runs to 1901 and many changes have developed since then. However, as a foundation it is invaluable.

WELLS AND PUMPS.

Until quite recent years irrigation ended with ditches and reservoirs, but progress moved on. When it began to be seen that surface water might not always be sufficient to meet the demands upon it, the need for something else arose upon the agricultural horizon.

True, on general principles, it is ridiculous to suppose that on a planet made up of three parts water to one of land, that the land could ever suffer for the want of water. But the time when science will be able to tackle successfully the big question of how to divest the waters of the oceans of their agriculturally destructive minerals and carry them across the continent to assuage the thirst of parching lands is as yet too remote, too big, too incomprehensible to hold a place in the practical affairs of today. So the thought to which the experts turn to meet the insufficiency of the reservoirs and ditches is the drawing of water from beneath the surface of the ground.

The thought is not new. Ever since man came out of the cave and stirred the earth with a crooked stick he has known that he could get water by digging a hole in the ground; and that when there was not enough on the surface to fill the hole he could get more by digging deeper. And this is the principle he is now applying.

When this inquiry was made there were 322 irrigating wells in Weld county, and more have been dug in the last two years.

They are operated by various power devices. Under the ditch system many a farmer has paid his water assessment—which is never a small item—knowing full well that he could not expect to get the water paid for, and many a one has seen his crops wither in the heat of summer while absolutely powerless to prevent it. Of course even now with wells penetrating to the unfailing waters beneath the ground, there are still farmers who must stand by and see their crops die for the want of water, for the digging of wells is expensive and not all can afford it. But for those who can avail themselves of it, the wells system is a boon.

There is a fair assumption of a subterranean body of water underlying most of this agricultural region. It is tapped at various depths from 15 to 100 feet. The principle pumping areas are: Ault and Pierce north, Lone Tree east of Eaton, Crow Creek from Hereford south through Gill and Barnesville, then the Greeley area, La Salle, Peckham and Gilcrest, the Windsor area westward, Platteville and Ft. Lupton southward and Prospect Valley southeastward.

But even the well is not a recent discovery; one was dug in Weld county fifty years ago. Andrew Wilson dug it, and put in the first steam pumping plant on the Lone Tree Creek east of Eaton in 1888. The motive power has been changed to electricity, but that first well is still doing business, delivering about 200 gallons of water per minute. It was at first only fifteen feet deep.

Two miles north of this a second well was dug in 1892. It has also been electrified and at last accounts was delivering 1,117 gallons of water per minute and supplying about 300 acres in two farms.

The first pumps used coal for motive power, but all later wells use gasoline, oil or electricity, with electricity gaining over the others.

The old time "water witch" who located water veins with his crooked stick is no more. The method now used is to guess where a branch of the subterranean river is and sink a test hole; if you get water your guess was good; if not, well, try again. A

test hole costs about a dollar a foot. The crooked stick was cheaper.

Wells vary in size from one to four feet in diameter; the one foot size costing about \$3.75 per foot for digging; the four foot size about \$16; approximately the same in proportion.

THE SPRINKLING SYSTEM.

A few years ago a considerable sum of money was invested by a company known as the Findyson Co., in the neighborhood of Hereford in experiments along the line of a sprinkling system. But this system was found to be impractical for field operations for the reason that the pipes necessary to carry the water were in the way of plowing or other cultivation. Other arguments were in its favor, but it broke on point of practicability. In its favor were the arguments that it conserved water by carrying it directly to the crops that needed it, wasting none on the way; that it washed the foliage free of dust, giving it a chance to breathe; that the spray passing through the air produced an atmospheric condition that was conducive to growth, the moisture in the air protecting foliage from the withering effects of a burning sun which is almost as necessary as moisture at the roots.

HOW THE WATERS ARE ADMINISTERED.

The public administration of the water supply is in the hands of the state engineer who is appointed by the Governor. The state is divided into six divisions, each in charge of a division engineer; and these again are divided into districts of which there are seventy in the state. Each of these is in charge of a water commissioner who is appointed by the Governor on recommendation of the county commissiners.

There are 765 reservoirs in the state of which 80 are in Weld.

In addition to the two main rivers and their forks, the six big reservoirs and twelve or more smaller ones, the county is taversed by at least forty creeks and smaller watercourses.