

A Little Piece of Zion: The Saint George Town Lot



On the Cover

Albert Bierstadt's, *Sunset in Yosemite*, 1866
End Paper, Leviathan, Thomas Hobbes, 1651 Edition

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This book is dedicated to Reuel S. Kohler,
my father, born in 1920,
who grew up on a town lot in Utah's Cache Valley.

Architectural illustrations in this book were made by the author with ArchiCAD software

Acknowledgements

This book project was begun in 2011 prior to the start of the *St. George: Outpost of Civilization* book published that same year. In January of 2011, the St. George City Historic District Commission and the Washington County Historical Society collaborated on a historic home tour. I served as a tour guide for the historic home on the corner of Second South and Second East streets. Many of those people visiting the home had recollections about the parts of a historic home, (vegetable gardens, orchards, vineyards, corrals, fences, water barrels, wash tubs) that were no longer there. I made a 3d computer model of what I thought those missing parts might have looked like on this particular corner lot. The resulting images stimulated even more memories and recollections, resulting in this book project.

A little more than a year later in 2012, I applied for and received a grant from the Business of Art, Center for Education, Business and the Arts program administered by Christina Schultz and Kathy Cieslewisc of Dixie State College. At that time I knew I wanted to write about the physical features of a typical town lot, and I had collected quite a few historic photographs which I thought would bring the illustrations to life. What I didn't appreciate was the historical context of a typical town lot. Every time I asked why... it took days or weeks to do the research and find satisfactory answers.

I thought I had the book project pretty much wrapped up by the first of September this year, but I was ask to guide a bus tour of documentary filmmakers to Zion Park in connection with the DOCUTAH film festival. (My wife and I serve as a members of the DOCUTAH steering committee throughout the year.) I mentioned this book project's working title "*a little piece of Zion*" and was immediately inundated with questions and comments about my use of the term *Zion* from this very diverse group of talented and creative *documentarians*.

I've been mentored in this endeavor by Doug Alder, George Cannon, LoAnne Barnes, Eric Fleming, Lyman and Karen Platt, Lynne Johnston, Elaine Tyler, Jane Whalen, Susan Crook, Ian Crowe, Herb Basso and other historical society members. George Cannon's work on the Washington County Historical Society's website is particularly amazing. Go to www.wchsutah.org, where you'll find a wealth of information. Storytellers Kelton, Edd and Lyman Hafen graciously helped me with the local nuances of being a historical book author when I published *St. George: Outpost of Civilization* two years ago.

My artist sister Linda Barnes helped with the cover art on both books. My son Nik and I have enjoyed architectural discussions about the construction details, energy use and economics embedded in the books illustrations. My wife Jennifer has patiently listened to and criticized my various hypotheses of "what really happened" and "why is that important" that were needed to write this book.

Over that last two years, my father and mother, Reuel and Dolores Kohler, contributed their personal recollections about of life on a town lot. This book project gave me an opportunity to hear some of Dad's (and Mom's) best stories. Since Dad grew up on a town lot with a farm field just down the road in Cache Valley, he was a product of the Mormon village. On the other hand, Mom grew up in Rochester, New York, and went to a Catholic girls' school. When she came to Utah as a new bride, after World War II, "it was a whole different way of life", and the contrast she experienced prompted questions. Some of the answers may have worked their way into the narrative of this book. In any case, we had a good time talking and remembering. And it was a timely project, my Dad passed away earlier this year.

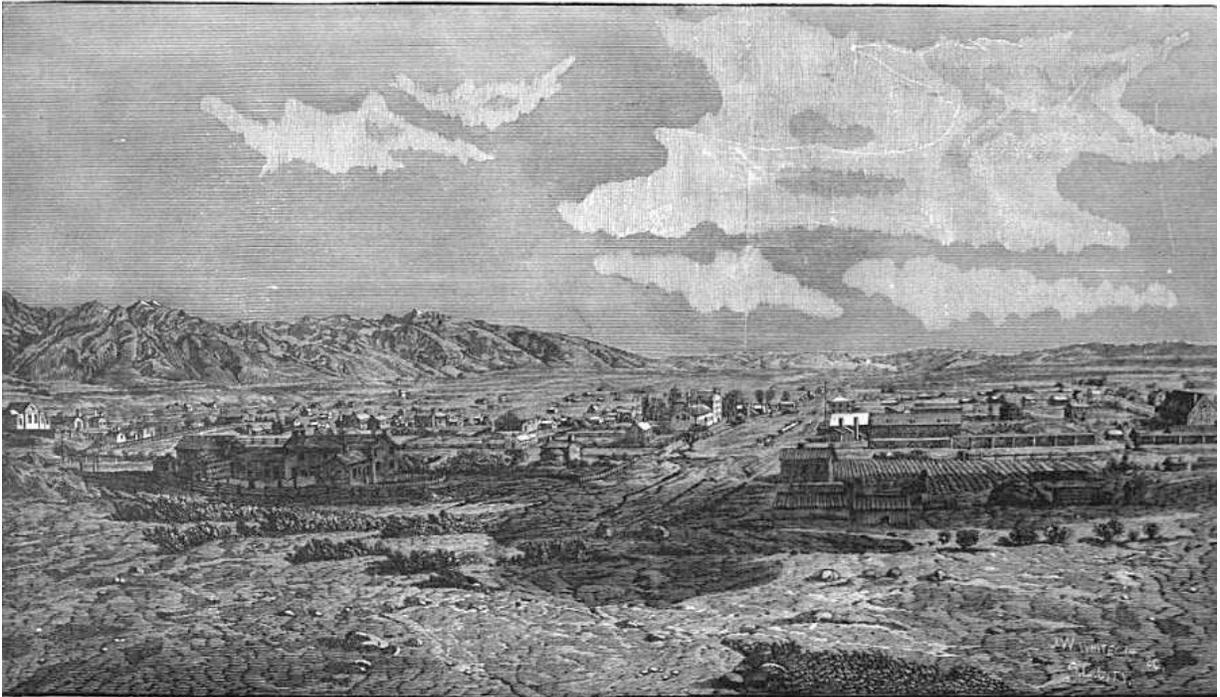
Contents

Introduction	5
A Typical Town Lot	7
The Town Lot and the Town Plat Context	59
Historic Energy and Water Conservation Measures	65
Roots of the Concept of Zion	77
Political Context of the Town Lot	93
Afterword	101
Appendix 1 The Mormon Land System	103
Appendix 2 George Edward Anderson Panorama	105
Bibliography	107

Introduction

Our pioneers, when they went into that country, arranged in the first place that men at the head of the household should receive a city lot. The city was divided in blocks of ten acres, containing eight lots... I remember applying for a lot and was told that I was not a married man and could not have the land. Outside the city the first lots were five-acre lots, later ten acre lots and later twenty acre lots (all used for farming).

George Q. Cannon, *The Mormon Land System in Utah (speech)*, Third National Irrigation Congress (Denver), 1894



GREAT SALT LAKE CITY, 1853.

See page 19.

Over a fifty year period during the last half of the nineteenth century, more than five hundred cities, towns and agricultural villages were successfully colonized by the Mormons. Each of these were based on the principles and precepts laid down in a hastily drawn plat (or map) for the *City of Zion* to be located near the town of Independence in Jackson County, Missouri, drawn to the instructions Joseph Smith, prophet and founder of the Church of Jesus Christ of Latter-day Saints (the Mormons) in 1833.

This book is intended to document and illustrate the physical features and way of life that emerged from the *Plat of Zion* concept realized in these cooperative communities scattered across the American West. A detailed depiction of a typical town lot in St. George, Utah with its house, gardens and outbuildings is our point of departure. These *little pieces of Zion* are remarkable remnants from a time when independent self-sufficiency and united cooperation were forged together with prayerful vision and hard work into delightful places to live.

They and others embraced Mormonism presumably because it had everything the other religions had, and more: not only total immersion, seizures, the gift of tongues and other aspects of the Holy Ghost, baptism for remission of sins, and the promise or threat of the imminent Second Coming, but also the true apostolic succession and the renewal of the ancient personal communication with God. Those who bought that package revealed a susceptibility that was characteristically nineteenth-century American. And they bought it the more eagerly because the package also contained the promise of the Kingdom of God on earth, the New Jerusalem.

Wallace Stegner, *The Gathering of Zion: The Story of the Mormon Trail*, 1992



The first portion of the book depicts the collection of structures, fences, ditches and landscape features that were encountered on a prototypical town lot, in an attempt to provide some insight into the daily lives of the families that built these places.

The second portion of the book places these *little pieces of Zion* in their proper historical context. The relationship of the individual town lot to the entire physical community setting is explored. Some of the measures taken to conserve resources, water and energy in the era before indoor plumbing, piped water or electricity are described. The theoretical and religious roots of the Mormon's concept of Zion are investigated and lastly, the politics of land settlement in the United States is examined.

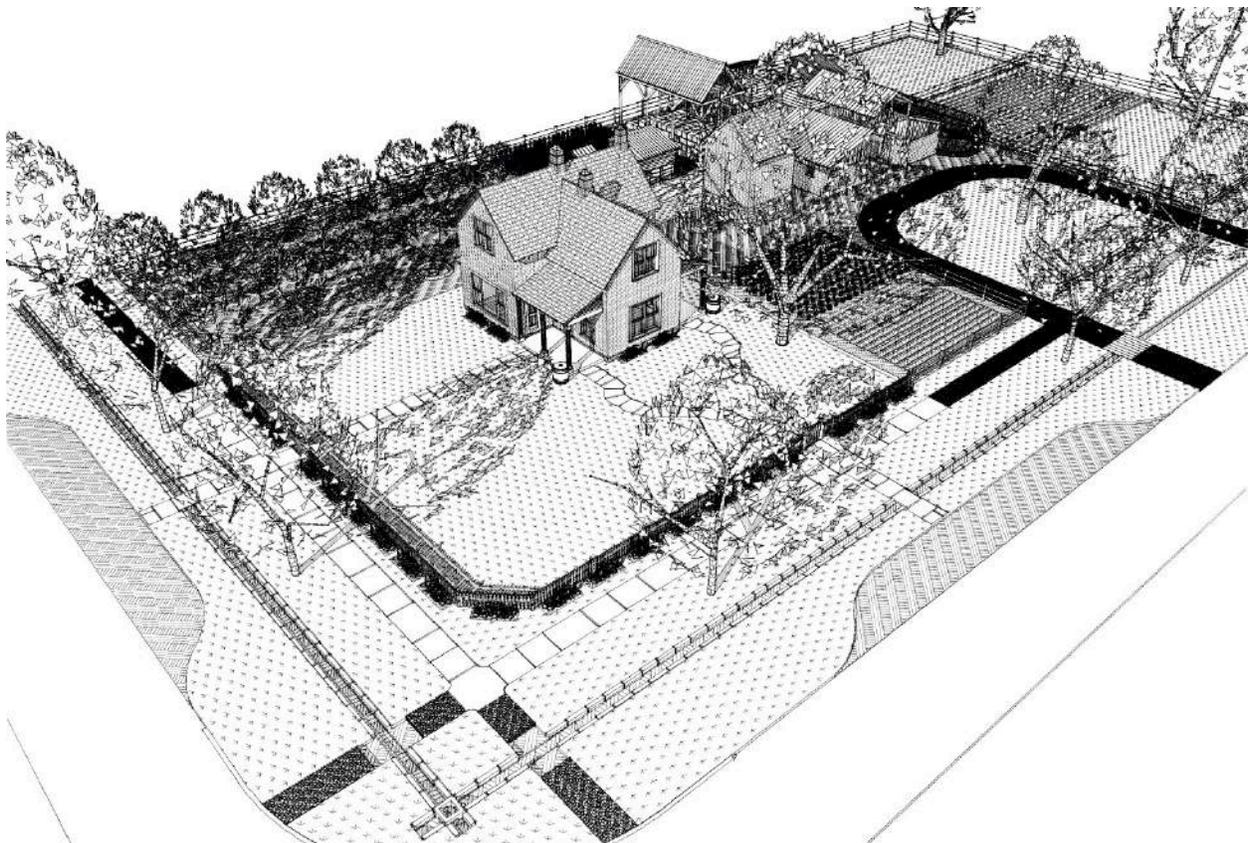
Council Bluffs Ferry and Cottonwood Trees, Liverpool to the Great Salt Lake Valley, Frederick Piercy, 1855

In late May of this year, more than a thousand members of the Congress of New Urbanism, an international organization dedicated to smart growth, compact livable cities and quality urbanism, met in Salt Lake City. Keynote speaker and CNU founder, Andres Duany, recognized the 19th century “agrarian urbanism” of Mormon town planning as a possible model for sustainable food production within future new urbanist communities. He also lauded Joseph Smith and Brigham Young for transcending the limitations of their own times with their rational and sensible patterns for cooperative, sociable communities. Perhaps, a rediscovery of the principles that informed the creation of these *little pieces of Zion* could yet improve our future communities.

A Typical Town Lot

What was it like to live in Saint George, Utah before modern conveniences like indoor plumbing, automobiles, electric light, air-conditioning, food refrigeration and the corner store? Mormon colonists were self-sustaining and self-sufficient in a very different way back then. If you needed something, you grew it, or made it. And nothing went to waste.

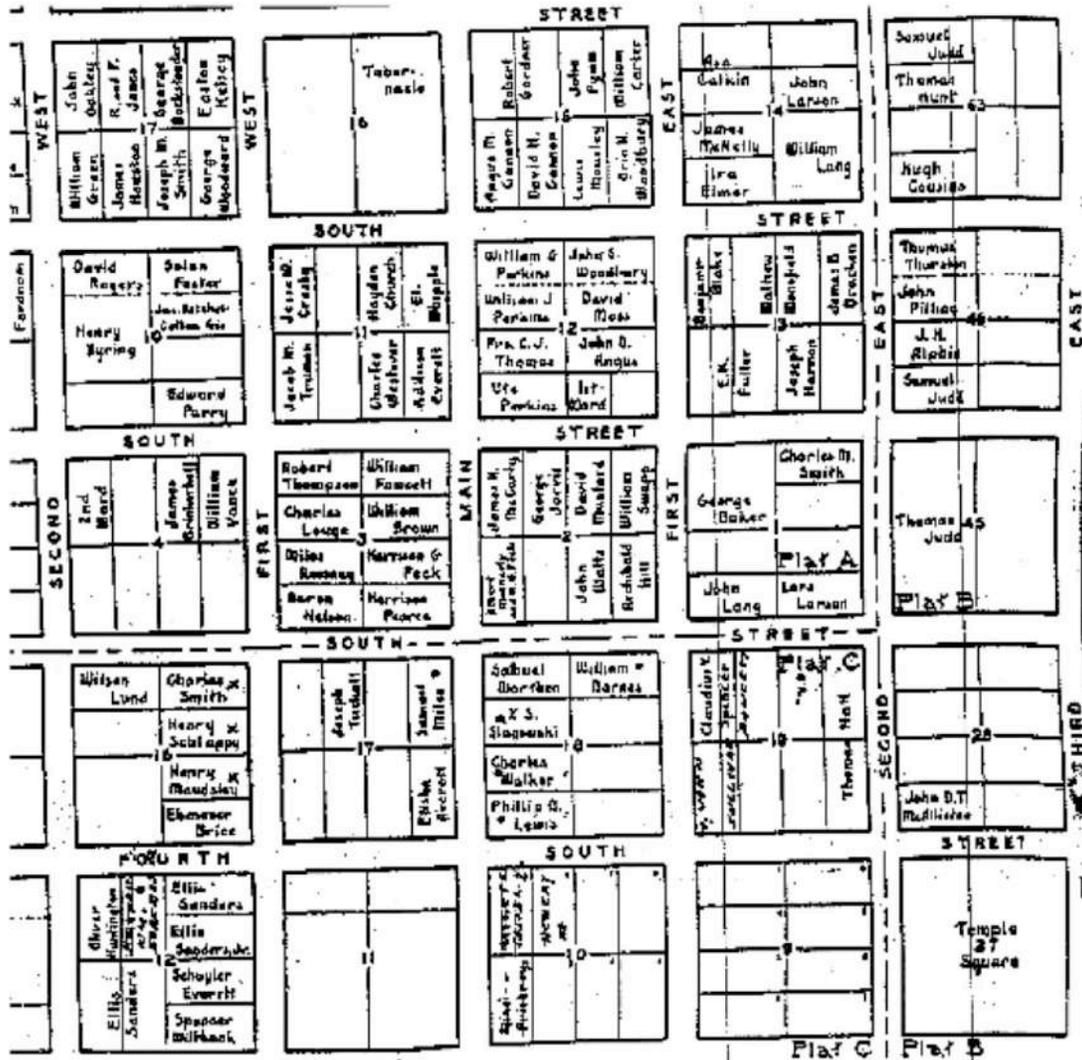
The home illustrated here, although based on the Arthur Miles home on the southwest corner of Second South and Second East, is meant to depict the characteristic attributes of the early settlement patterns in Saint George. Except for the town lot's dimensions, the ditches, the older portions of the house, the granary and two fruit trees; the outbuildings, locations, dimensions and configuration shown are conjecture. Conjecture informed by historical research, but nonetheless a depiction of what might have been rather than what was.



House on Town Lot, Saint George, Utah

The location of the buildings and landscape features shown here is far from arbitrary. Each structure, each water course, each planted tree and each fence had an essential purpose that dictated its particular placement with respect to convenience and necessity. Many factors had to be accounted for including the slope of the land, the type of soil and drainage, the prevailing winds, the hours of sunshine and the normal seasonal temperatures. Prior placement of neighboring houses and outbuildings was also accommodated.

Only months after arriving in Saint George from Salt Lake City in the fall of 1861, the pioneers divided the townsite into blocks eight chains square (528 feet) containing eight lots with 90 foot wide streets between them. Originally, the lots were distributed to the settlers through a lottery at no cost.



A portion of the St. George Town Plat showing "original" owners prepared by Albert E. Miller circa 1920

This town lot, on the corner of Second East and Second South, was owned by Charles M. Smith, a son of Charles Smith, a watchmaker and the installer of the clock in the Saint George Tabernacle spire. The lot, along with a home built in 1876, was purchased by Arthur Miles in 1893. The lot pattern varies in a manner intended to provide more privacy; lots don't front each other across a street. This pattern is typical of most Mormon town plats and consistent with *Plat of Zion* principles articulated by prophet Joseph Smith in 1833.

A Little Piece of Zion: The Saint George Town Lot



2009 Aerial Photo of Block 1 Plat A

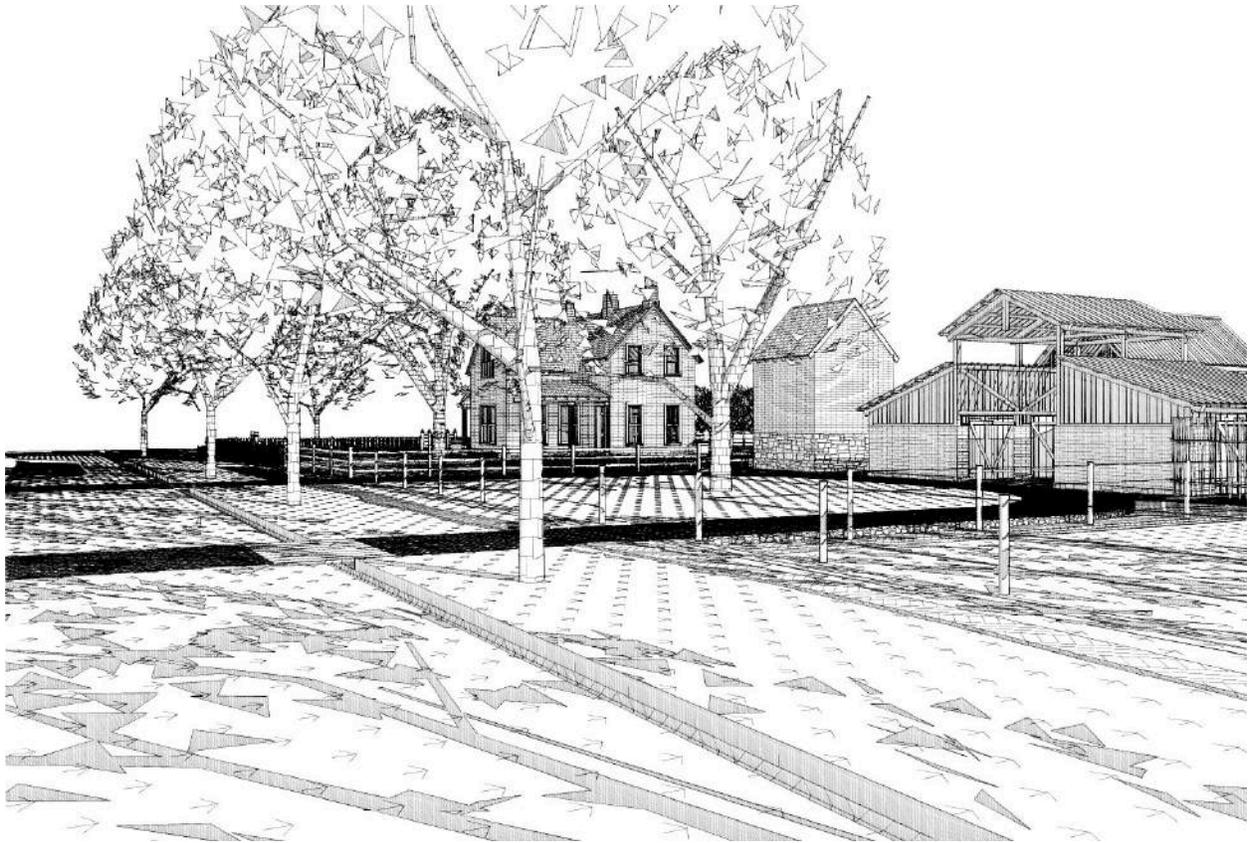
The lot pattern created at the time of settlement is still distinguishable in this 2009 aerial photo despite a number of additional lots which have been created over the last one hundred and fifty years. There are two newer homes built on what was the original corner lot, but the original home and its granary have survived.



Superimposition of the Original Homestead on 2009 Block 1

The original homestead would have occupied the entire lot. The town ditch would have been placed in approximately the same location the concrete ditch is today and would have been improved over the years. Over time, the original earthen ditch would have been improved first to a stone lined ditch and then at a later date to a concrete formed ditch. Many of these concrete ditches remain along the sides of Saint George city streets and are distinguished by their shape and depth which is quite different from today's common concrete curb and gutter.

The ditches conveyed water to each lot in the town plat about once a week. The original water source was a spring located near today's Dixie Red Hills golf course, more than twenty blocks away toward the northwest. The reliable West Spring was preferred to the Virgin River water which could vary from too much to almost nothing, throughout the year. Water turns for every lot required adherence to "the clock" on the Tabernacle's spire.



Ditch along Second South

The town ditch carried water which would be used to water orchards and vineyards; pastures and vegetable gardens; horses, pigs and cows; lawns, trees, and flowers; and until 1912, it also provided drinking water. Saint George City established a “drinking hour” (from 5 to 6 am in the summer and 6 to 7 am in the winter) when a household member, typically the young boys, would dip water out of the ditch for the day’s needs for every family in town.

Since the ditches ran along the streets near livestock corrals, cow pastures and even outhouses, the water often became contaminated. Infants and young children perished in large numbers from drinking the water since they hadn’t developed a strong immunity to the bacteria like their older siblings and parents. The practice of boiling water to purify it wasn’t widely understood until near the turn of the twentieth century. Some families got their drinking water directly from the spring since it was clear, cool and tasted better.

Each household’s need for irrigation water varied according to the crops they raised and the animals they kept. A family might have owned two lots but kept one fallow in order to have sufficient water at crucial summer times for the family homestead.

While the platted street width was ninety feet, the graded dirt roadways were much narrower than today’s streets (20 feet in most residential locations). They were most often dusty, only occasionally muddy and usually passable. They had a wide verge between the roadway and the town ditch where native grasses and noxious weeds flourished after the infrequent rainstorms. Wooden plank bridges allowed the wagons to cross the irrigation ditches without getting mired down. Stone lined ditches were more common in front of the home, while earthen ditches prevailed where the pastures, barns and corrals met the street.



Roadside Irrigation Ditch, 2013

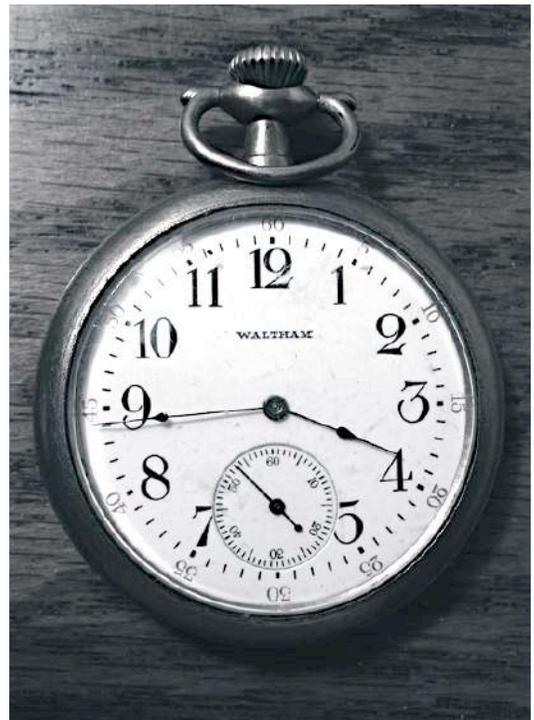
In Saint George, ditches conducted water from reliable perennial springs to each lot throughout the year. Once the water arrived, it was moved to each part of the parcel. The garden, the orchard, the lawn, the flower patch, the pasture, wash tubs, water barrels and tanks, and the water troughs were all patiently filled... if there was enough water... before any excess needed to be turned back to the ditch so it could be used by a neighbor.

Water turns were allocated by time. An essential tool for every head of household was a reliable pocket watch. Periodically, it was necessary to adjust the time kept by the pocket watch to match that shown on the four-sided clock atop the Tabernacle on Main Street. Many water disputes were the result of faulty timepieces.

Kohler Family Pocket Watch, 1990

John W. Taylor, the successor to Brigham Young, continued to advocate colonization of cooperative communities in the 1880's.

“By this means the people can retain their ecclesiastical organizations, have regular meetings of the quorums of the priesthood, and establish and maintain day and Sunday schools, Improvement Associations, and Relief Societies. They can also co-operate for the good of all in financial and secular matters, making ditches, fencing fields, building bridges, and other necessary improvements. Further than this they are a mutual protection and a source of strength against horse and cattle thieves, land jumpers, etc., and against hostile Indians, should there be any.”





Water Barrels Placed Outside the Kitchen

The young boys carried the “culinary” water dipped from the ditch to storage barrels near the house. Multiple barrels were required since the dipped water was often murky with sediment and needed to settle overnight before it was used for cooking, cleaning or bathing.

These same storage barrels could be located where the downspouts conveying water off the roof would fill them during the infrequent rainstorms. Care had to be taken to insure that the excess rain water was conveyed away from the house during storms so that it couldn’t pool around foundations leading to structural problems. The presence of heavy clay soils with shrink-swell problems added to this concern for good drainage away from structures, but the storm water often wasn’t conveyed all the way off the lot. Instead, a low spot was made in a pasture, orchard or garden area where water might puddle and seep into the soil to be used by plants in drier seasons.

Keeping the water cool during the summer required placing the storage barrels in a shady location and wrapping them in an old quilt soaked with water. This kept the temperatures down through the cooling effect of evaporation but was only employed when water was plentiful.

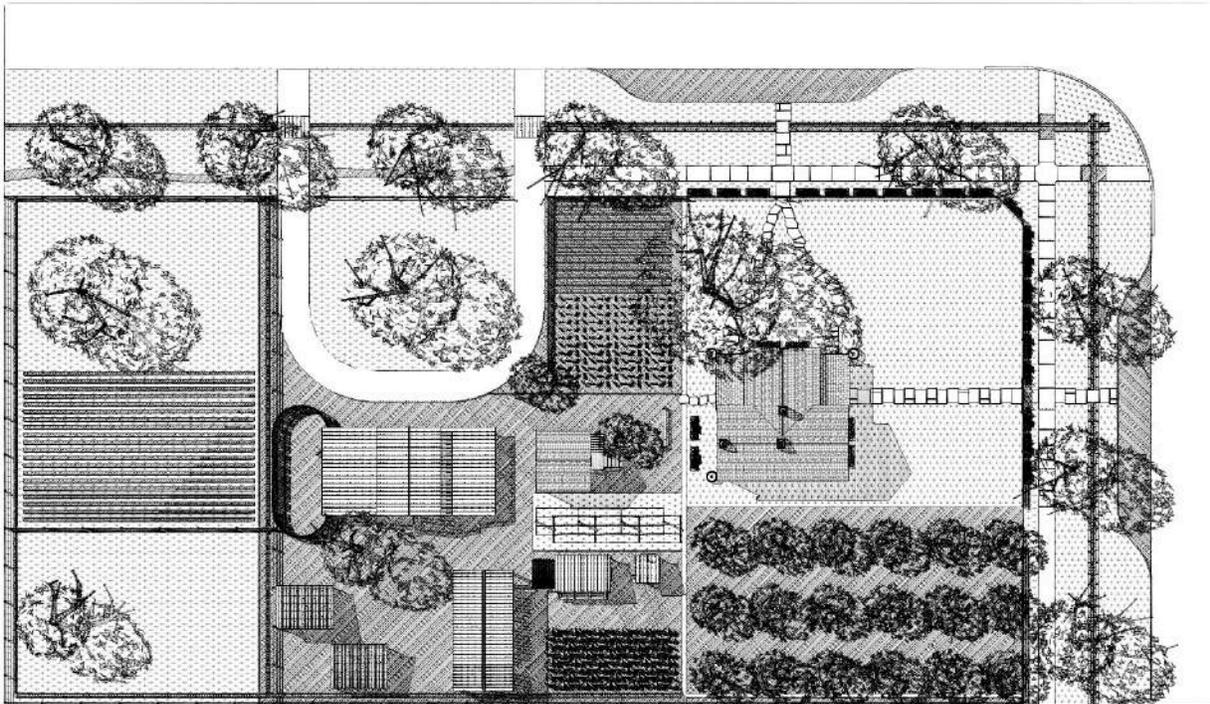
Not only was it difficult to keep the water cool in the summer, but keeping it from freezing during the winter could also be a challenge. If a suitable thickness of ice formed, the broken chunks were wrapped in burlap and straw, then stored in the cellar below the granary making a seasonal ice box where perishable foodstuffs could be kept.



A Cooper Making Barrels, Library of Congress, 1939

A cooper or barrel maker was an essential member of each community. His special skills allowed the construction of the water tight casks and barrels upon which the community depended throughout the years.

Having water where you needed it and when you wanted it was a constant struggle. Desert journeys of even modest distances required carrying a supply of drinking water. Storm caused damage to stream diversion headgates, canals or ditches, which might happen at anytime, could require transporting water in barrels while repairs were being made over considerable distances. Some outlying communities with less reliable water sources, made regular trips to Saint George to replenish their drinking water reserves.

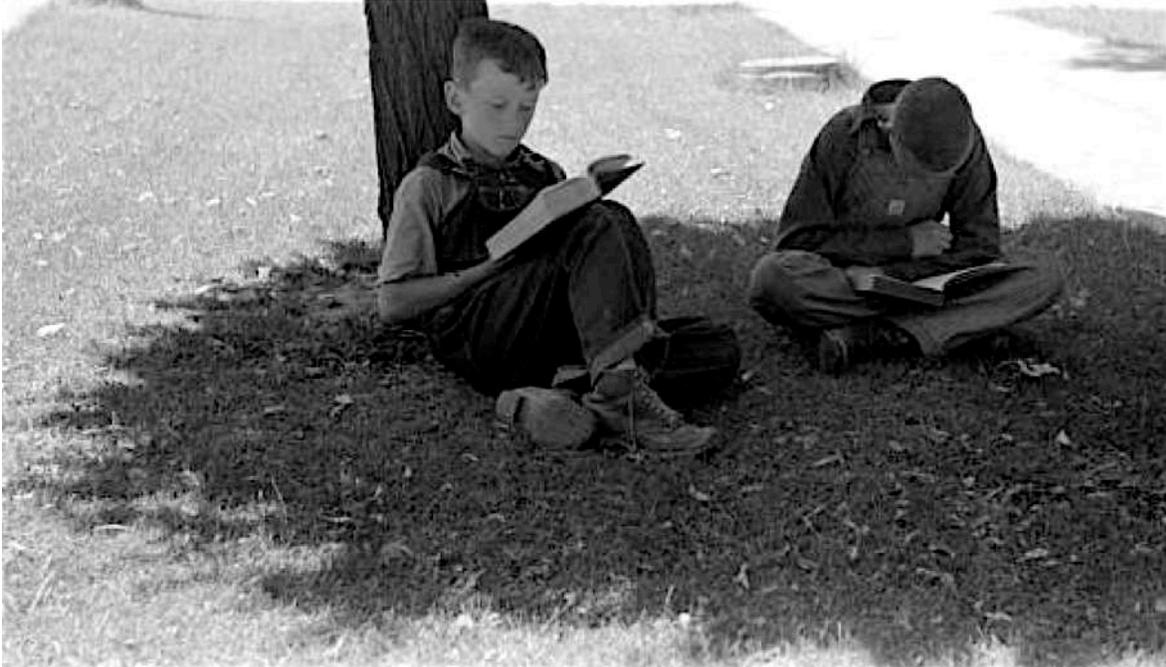


Town Lot Layout

Generally, the choice lots were the corner lots since the city streets could be used to access the stables and pastures without the necessity of added barnyard traffic past the home itself. On a corner lot, visual enhancement was provided for both streets, but more often than not the home faced the narrow street end of the lot, as intended by the survey plat. On this lot, the house faces east, where its formal front gate opens to Second East Street. A secondary side yard gate is placed along Second South Street north of the home, where extended family and informal guests were expected to arrive. Formalities of protocol and etiquette were observed more often in Mormon towns than in the rest of the western United States because so many Mormon converts had been raised in England and other European countries where such practices thrived.

Orchards, gardens and vineyards were placed nearer the house than were barns, corrals and pastures since it was necessary to keep the animals from eating the produce. Here the barnyard is located behind the barn in order to screen tool and equipment clutter from public view. The pastures are placed near the barn, corral and sheds providing convenient access for the animals.

The location of the privy is typical. Not so close that odors would be a problem, but close enough to shorten the time to get there. The chicken coop and granary functioned in some ways like today's refrigerator or pantry. The food they housed had to be conveniently and frequently accessed. The clothesline, yesterday's laundry room, had to be placed where the sun shone most of the day, but not be too visible from the street and neighbors prying eyes. After all, you were drying "unmentionables". The lawn beneath the clothesline was seen as essential in minimizing the opportunity for dirt and dust to contaminate the washed garments. The street trees provided shade making for a cooler trip to visit one's neighbors.



Boys Reading under a Shade Tree, Library of Congress, 1939

Reading beneath the pleasant shade of a tree had long been a popular pursuit before St. George was colonized. Sir Isaac Newton might never have discovered gravity if the apple hadn't struck him on the head. Alice's adventure to Wonderland couldn't have begun unless she had been sitting under the shade tree on the river bank where she became bored with her sister's book that had no pictures in it.

Wallace Stegner observed in his book *Mormon County* (1942) that:

"Hence the curious anomaly of the Mormon village: isolated, stuck off in the lost corners of plateaus and deserts, sometimes a hundred miles or more from a railroad, Mormon towns often contain their quota of world travelers. Their culture is a curious mixture of provincialism, parochialism, and cosmopolitanism."

Perhaps those who settled these isolated villages had learned the lesson that Henry David Thoreau taught in his book *Walden: or, Life in the Woods* (1854) about the transcendental and real value of hard physical work:

"For more than five years I maintained myself thus solely by the labor of my hands, and I found that by working about six weeks in a year, I could meet all the expenses of living. The whole of my winters, as well as most of my summers, I had free and clear for study. I have thoroughly tried school keeping, and found that my expenses were in proportion, or rather out of proportion, to my income, for I was obliged to dress and train, not to say think and believe, accordingly, and I lost my time into the bargain. As I did not teach for the good of my fellow-men, but simply for a livelihood, this was a failure. I have tried trade; but I found that it would take ten years to get under way in that, and that then I should probably be on my way to the devil."



Front Gate

The white picket fence was a trusted but mostly symbolic barrier against intrusions whether social or legal. It claimed what was yours and delineated what you cared less about. The flowers would necessarily have been grown on the inside of the fence out of the reach of livestock which were permitted to graze along the verges in the early years.

The front gate was where you received callers and greeted passersby. The gate's latch allowed invited passage but tacitly forbid trespassing by outsiders. Callers were met at the gate when they arrived and escorted to the gate when they departed. Other news was by "post" requiring household members to make frequent trips to the post office in the center of town. The mail box had to wait for "mail delivery service" which came much later. A great improvement in communications occurred when the telegraph line was extended to Saint George from Salt Lake City in the 1870's. But, household members still had to make the trip to the telegraph office to receive the messages.

The stone pathway from the street to the house was used almost exclusively by guests, since the family path away from home and back was more often than not via the barn and corrals, where the horses were kept along with the buggy, the wagon, the harnesses, and the saddles. A guest's horse may have been tied to the gate post or just hobbled alongside the road.

Seating on the front porch was used more frequently during the long summer days to keep track of the comings and goings of the neighbors, and to escape the heat radiated into the house by the thick adobe walls long after dusk. The cooling breezes coming off the irrigated and shaded lawns were the only "air conditioning" available until the 1950's.

*Elizabeth Wood Kane's
Journal, Tanner Trust,
1872-1873*

During the fall and winter of 1872-1873, Elizabeth Kane, the wife of Thomas L. Kane, an influential non-Mormon Civil War hero, who crusaded against Mormon persecution, kept a journal of her two month stay in Saint George. Her detailed account provides a unique *Gentile* insight in life in a Mormon village.

She frequently left her lodgings in Erastus Snow's *Big House*, the 1873 equivalent of a hotel, where most of the other *guests* were engaged in the construction of the Temple at the edge of town, with her two sons aged nine and eleven. Elizabeth was impressed with the dignified homes, tree lined streets, orchards, gardens and social life she encountered. On a visit to the home of Lucy Young (Brigham's wife) she noted:

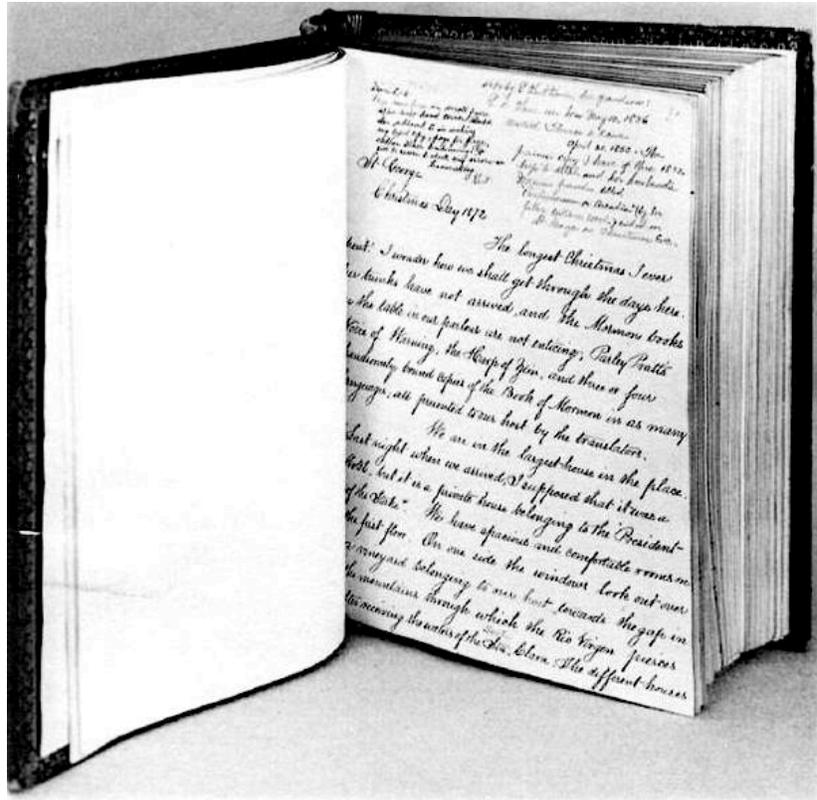
"The gardener had flooded her little grass plot: he meant to let the water lie on it twenty minutes. Then he had set out a new strawberry bed, of dry runners planted in ridges; and when he drew out the "gate" the water trickled down the tiny channels successively."

Later she chatted with Lucy about her plans for improving the garden:

"She invited us to come and look at her grape arbour. One long trellis runs back some distance from the house, and she had several vine-cuttings in a bed ready to set out. She means to have a 'pleached allee' all round the lot. It is under her arbour she says that she sleeps at night in the summer. I asked her if she was not afraid. 'Not the least' she said gaily, 'she was sure God would take care of her'."

Elizabeth wondered if the efforts in settling the desert would not have been familiar to King David of the Bible:

"The Mormons have redeemed these little fertile oases from the desert of a country resembling Palestine geologically, chemically one might say, and topographically. And if these thrifty settlers should be driven off by the shiftless lazy horde who generally settle first on the rich soil of the West, men who expect to reap harvests without labor, these places will soon fall back into desert again. I do not suppose now, as I used to do at home, that Palestine was once a country wooded and green as Pennsylvania. It must have been like this land."





Side Gate

The side gate was for the expected visitor. Extended family, neighbors and neighbors' children came in and left this way. Breaching the gate with a "holler" was the norm. Church visitors and courting boys weren't allowed in here as their errands were more formal. This was the way that family members came and went on their walks around the neighborhood.

The large shade tree located on this northerly side of the home is not accidental. This side yard was often cooler during the day and into the evening than other locations near the house. It was where outdoor activities and work were performed. Beneath the shade tree any task was easier.

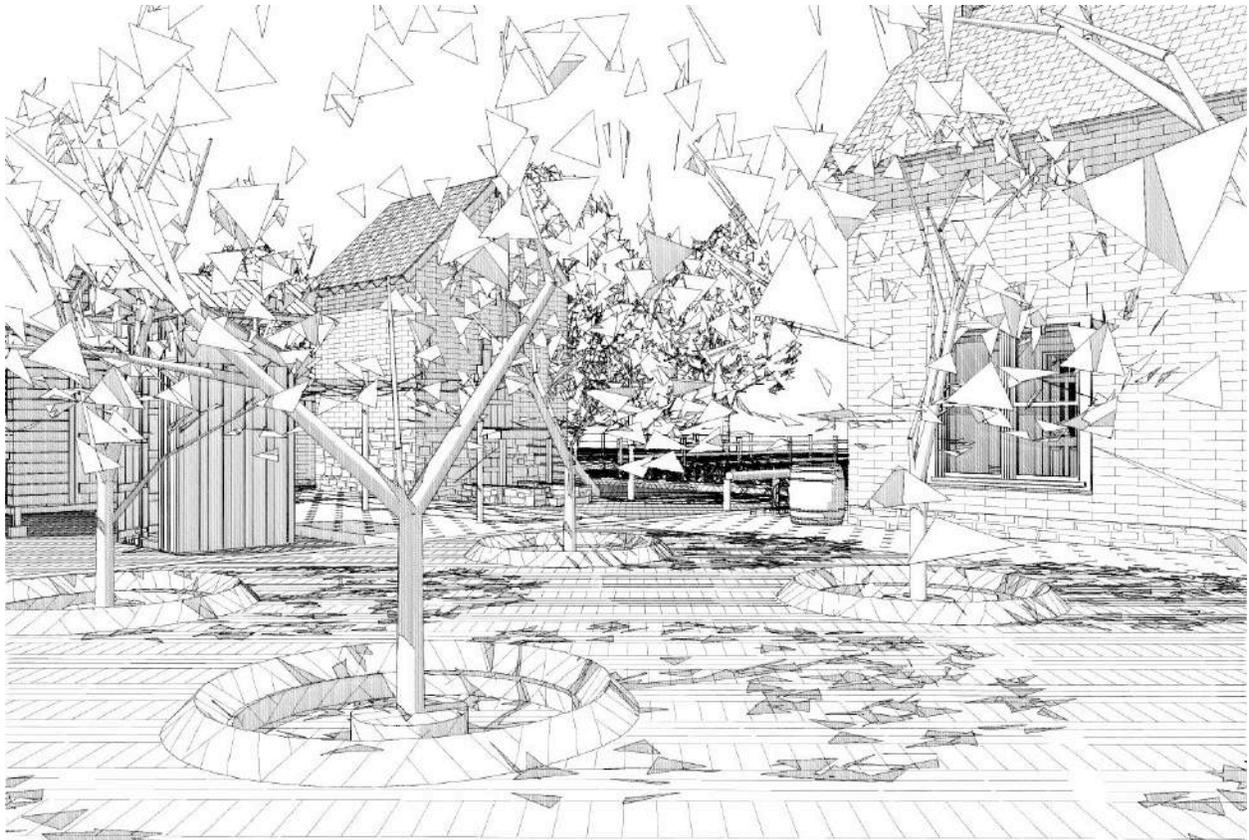
While paved paths led from this gate to both the front and back porches, it was to the back porch that most traffic gravitated. Gossip could be exchanged or a cup of sugar borrowed. Observations about stray dogs, impending storms or new babies were always welcome here. Over the years, a variety of flowers and kitchen herbs would have been grown along the this path where they could be appreciated, cared for and given as cuttings to friends.

The young boys carried the buckets of drinking water from the ditch through this gate day in and day out, summer and winter. It was through this gate that the children went to and came home from school each day.

In St. George, clean potable water was finally piped to each lot in 1912, eliminating the public health problems of ditch delivered drinking water. At first it came in wooden pipes and later in steel pipes. Water spigots were initially located on porches. When time and money allowed, the "water" porch was remodeled into an indoor kitchen or bath.



Woman Filling Bucket at Porch Spigot, Library of Congress, 1940



The Orchard

Orchards of fruit trees were carefully planned and cared for by almost every family in Saint George. Apricots, peaches, and pomegranates seemed to have been the favorite fruits, although cherries, apples, plums and figs were also grown. A variety of nuts including almonds and pecans was also grown.

Orchards were often planted because, once established, it was believed that they could survive mild droughts if they were extensively cultivated. The pioneers knew that cultivation (turning over of the earth surface) after rain or irrigation could inhibit the capillary action of the water upward in the soil. They thought that if they cultivated frequently enough water would be preserved below the soil surface for the trees to use during a drought. While this was only partially true, the pioneer settlers often located their orchards at the bottom end their irrigation ditches, allowing the orchards to receive only what water was left during dry periods.

The most common method of irrigating orchard trees was to make a furrow and ring basin around the tree with a higher ring of soil near the tree's trunk. This method maximized the water in the tree's root zone and concentrated water under the shade canopy where it would evaporate more slowly. The space between the trees was sometimes planted with other crops including squash and pumpkins whose vines shaded the ground and decreased soil and air temperatures in the orchard.

Nowadays, a variety of mulch or ground cover crops are planted between the orchard trees. Clover, alfalfa and natural grass turf are used to decrease soil and air temperatures in the orchard reducing the annual water used significantly. So the pioneers knew a thing or two.

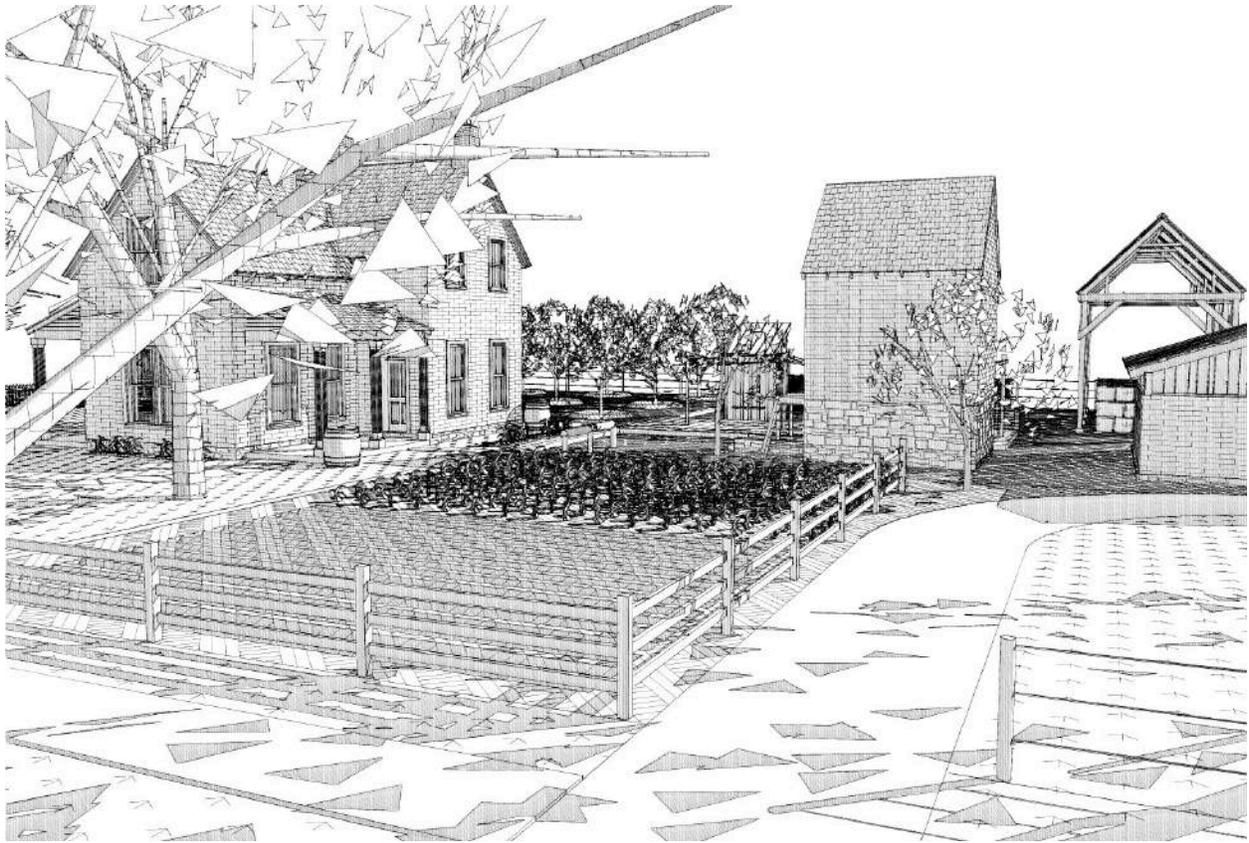
Boy Picking Strawberries, Library of Congress, 1940

There might have been an unwritten rule about girl's chores being inside the house and boy's chores outside in many St. George families. But in any case, everyone had work to do, every day.

Young children attended *grammar* or *common* schools a few blocks from home. Many of these were *one room school houses* where children of all grades learned from a single teacher. Many of the subjects taught had practical value at home and on the farm. After statehood, boys and girls had separate entrances and classrooms accommodated age sorted grades.



Girl Sweeping Floor, Library of Congress, 1940



The Vegetable Garden

Pioneer households relied on their gardens, vineyards and orchards for much of their food. A large variety of crops were grown including peas, beans, corn, lettuce, spinach, cabbage, cauliflower, broccoli, onions, asparagus, tomatoes, peppers, mustard, carrots, beets, turnips, radishes, cucumbers, potatoes, squash and pumpkins. There was always work to do irrigating, planting, weeding, thinning, pruning, fertilizing, harvesting, storing, and preserving one crop or another throughout the year. The children helped with all these chores.

The hand tools used for these chores filled a small, gardening shed. There were shovels, hoes, brooms and rakes of many shapes and sizes. There were sickles, scythes, axes, hatchets and knives along with metal files and stones for sharpening. There were saws and shears of many sizes and shapes. Lots of hammers, sledges and wedges. Spikes, screws and nails. Ropes, string and bailing wire. Chains and locks. Baskets, hampers and pails. Crates, cradles and boxes. Step stools, work benches and ladders.

All these tools were kept in their particular places and used only in proper ways. A good portion of childhood was spent in learning each of these chores. This included memorizing the time of year, day of week and hour of day when each task was to be accomplished.

Neglecting one's chores had inescapable consequences. The plants wilted without water. Undersized fruits were the result of the plants competing with weeds. In many ways, the vegetable garden was the centerpiece of family life. The daily and seasonal rhythms of scarcity and plenty were visible in the garden's growth.



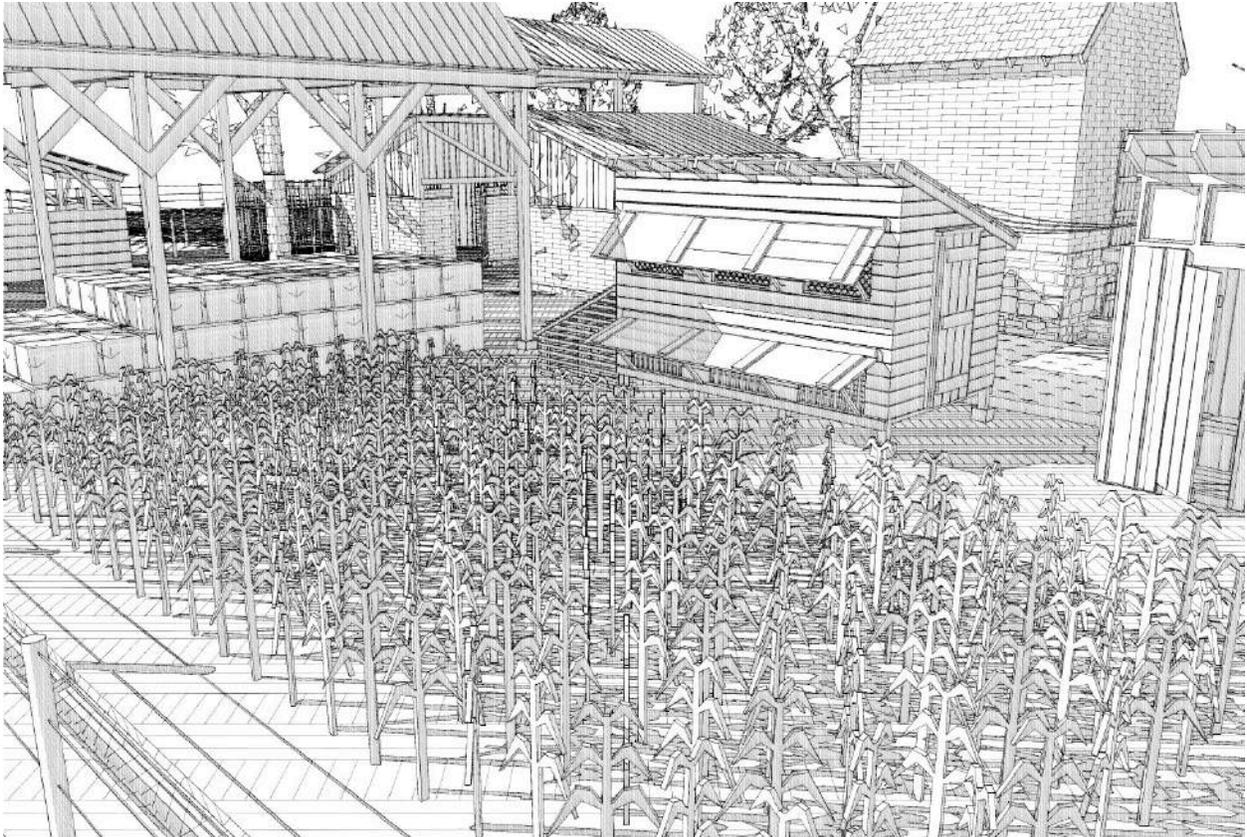
Little Girl with Piglets, Library of Congress, 1940

Families had fairly intimate relationships with their farm animals. The hogs and cattle that were slaughtered for food, often had names. Dogs and cats were expected to do their work to earn their keep.

When a horse or cow got loose and feasted on garden or field crops, there were consequences, which were magnified if it was a neighbor's garden or field. Children, more often than not, were charged with keeping farm animals where they belonged.



Furrow Irrigation, Library of Congress, 1940



The Corn Patch

Corn was planted by the pioneers in small patches on town lots, but it was also grown in the larger fields some distance from town. The pioneers were not the first to grow corn in Dixie.

The Indian's "three sisters" method of cultivation was to plant corn, beans and squash in small mounds (about two feet in diameter) spaced ten feet apart in flood irrigated fields. The Indians used wooden planting sticks to make small holes into which kernels of seed corn, beans or squash were planted. Water was brought to the field in a ditch from a nearby stream when it was plentiful. A clay lined basket was used to carry some additional water during dry periods to these mounds. The "three sisters" helped each other grow. The corn stalks provided poles for the beans to grow up. The large squash leaves shaded the ground reducing the temperature and evaporation of water. Beans fix nitrogen in the soil and corn depletes nitrogen from the soil.

The Mormon pioneers planted corn in furrowed rows to which water could be easily channeled from irrigation ditches. The height of the cornstalk was a good indication of the amount of water that was delivered to each plant. Boys and girls both worked to irrigate and weed the family corn patch.

Generally, corn was used as feed for livestock. Wheat flour was preferred to corn meal in most baked goods, but, hot, buttered "corn on the cob" from the family garden was a summertime staple of Saint George's best cooks and was often the choice for family and community gatherings.



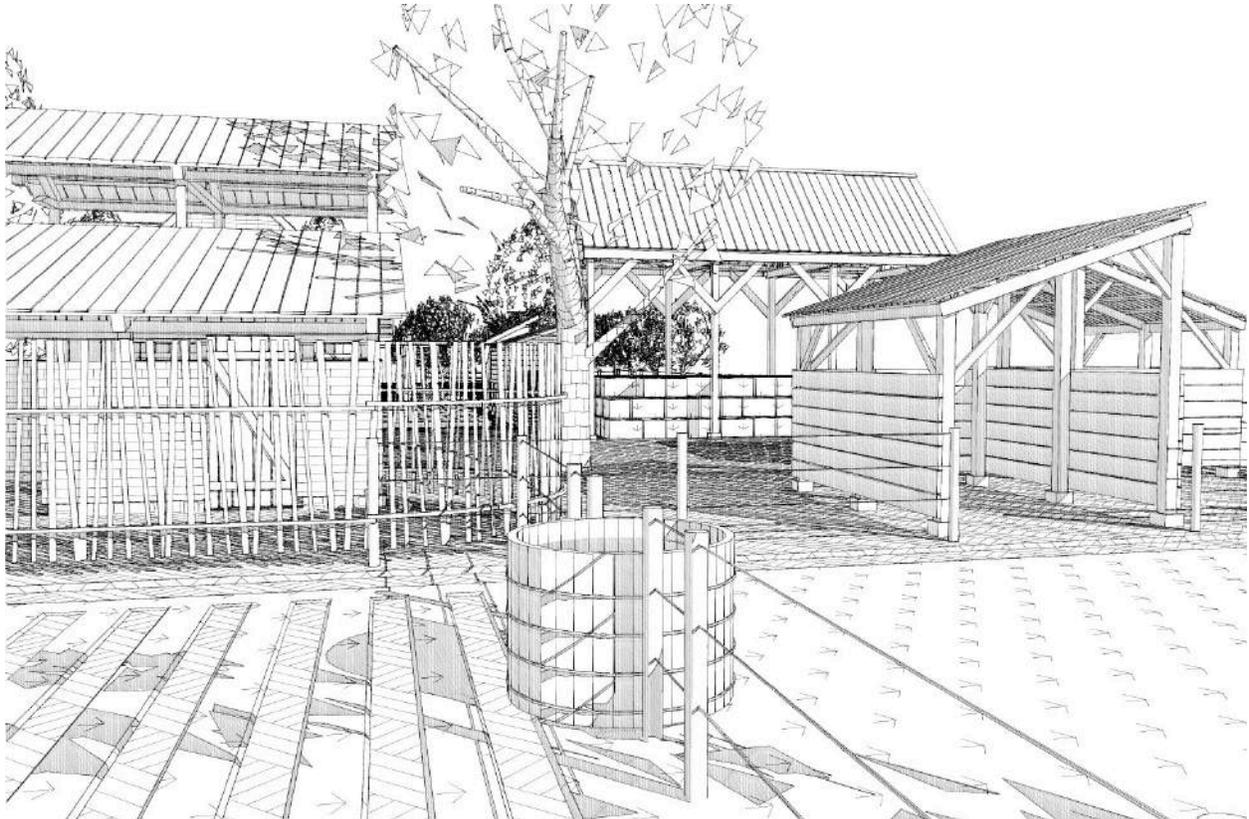
Boy Hoeing near Corn and Tomatoes, Library of Congress, 1940

The fact that water could be conserved by cultivating the soil was commonly understood by our pioneer ancestors. As soon as practical after any rainfall or irrigation turn, the damp soil was turned over (cultivated) so that capillary action in the soil would not convey water trapped in the earth to the soil surface where it would evaporate.

Detailed scientific records tracking how much moisture remained at various depths below the cultivated soil surface were kept at the Southern Utah Experimental Farm (later the Southern Utah Experimental Station) in Washington Fields near Saint George by professors from the Utah Agricultural College (Logan) including John A. Widtsoe. Later, Widtsoe became president of the Agricultural College and an apostle in the Mormon Church.

Widtsoe's scientific investigations led him to recommend dry-farming wheat and corn in some Utah locations where winter soil moisture content was sufficient to support modest crop yields without the need for irrigation. For two years in the early 1920's, Widtsoe served on a blue ribbon committee that reorganized the Reclamation Service into the Bureau of Reclamation.

Efficient irrigation methods and practices were promulgated and publicized in government bulletins and in national magazines including *The Irrigation Age*, *The Juvenile Instructor*, and *Scribner's Magazine*.



The Water Tank

Water was needed on each town lot for drinking, cooking, cleaning, bathing, irrigating, and livestock watering. Where horses, cows, pigs, goats, and sheep got water could be complicated.

Of course there were ditches which conveyed water to each town lot, but in Saint George there was also the “drinking hour” when all the families dipped water from the ditches for household consumption. The pioneers made every effort to keep livestock away from the town ditches during and before this short period. Generally this meant that the livestock had to be in a corral, a fenced pasture or a pen.

The earliest corrals were rude concoctions of brush and twigs (or wire) with a few cedar posts that anchored them in place. Later livestock fencing was accomplished with barbed wire. Since it was essential to mend these fences, some of the oldest remaining remnants from the pioneer era can be corrals and pens.

Sometimes watering “tanks” were dug down into the ground where they could be filled by diverting water from the ditch. Larger versions of these became stock (watering) ponds. Alternatively, a branch ditch could be made to go through the corral or pen enclosure. The problem with the ditch solution was that it would only have water flowing at limited times determined by the family’s water turn. So, water for livestock was often stored in large wooden tanks which were filled with buckets from the ditch by the youngest boys. The water tanks were often located on a fence line where animals kept in both pastures could drink. Later these tanks could be filled with a hand pump from a shallow well and then, after 1910, an electric pump.



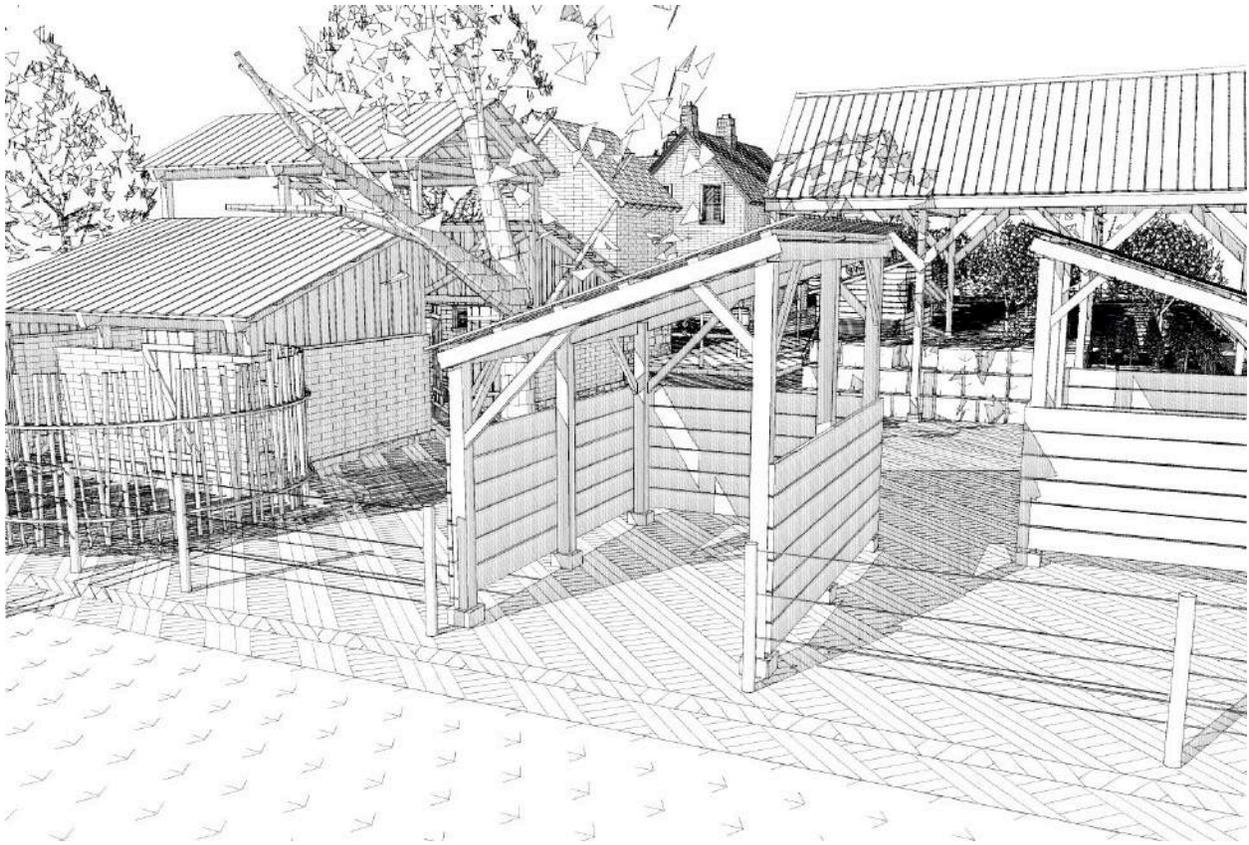
Horse Drinking from Trough, Public Domain, 2007

The amount of water required by livestock varies with the temperature. During the summer's heat a horse needed to drink more than ten gallons a day. Hauling that amount of water by hand to a tank or trough was hard work, consequently there was a preference to allow the animals to drink water from the ditch, despite its high sediment content.

Slightly elevated watering troughs and tanks, into which the livestock could not go with their feet, were considered an improvement over ponds and ditches, But watering troughs still collected decomposing vegetable matter from the grass and saliva that dropped from the animals mouths while they were drinking, making frequent cleaning and refilling necessary. Others thought that the stagnant water in public troughs were thought to be a source of disease for horses. They argued for the right to water their horse at the flowing ditch.

At the time of settlement, Saint George residents were not unaware of the dilemma posed by livestock watering practices and public health. The "drinking hour" ordinance, however ineffectual, was an attempt to address the problem. One unique challenge for Saint George was the presence of a tannery/livery stable at the west end of Diagonal Street at the top end of the main ditch which was fed from West Spring. This location insured the infiltration of harmful waste into most of the town's water supply.

By the 1890's, people began to gain some understanding of the germ theory of disease, and the ditch water was boiled before it was used for drinking, cooking or doing dishes. School children were taught not to drink directly from the ditch by teachers, even when it flowed cold and clear. These *smarty pants* children, then taught there parents why it was better not to quench their thirst.



The Cow Shed

Every family needed a milk cow, and that cow needed to be milked morning and evening. Since milk didn't keep, it was served with every meal, and a family's mealtimes were often scheduled to be immediately after the cow was milked. Consequently, having a glass of fresh warm milk was common. Cold milk was a rare luxury in the days before refrigeration. (After the invention of pasteurization, homogenization and refrigeration, milk was produced on a "dairy" farm at the edge of town and delivered by the milkman to your door.)

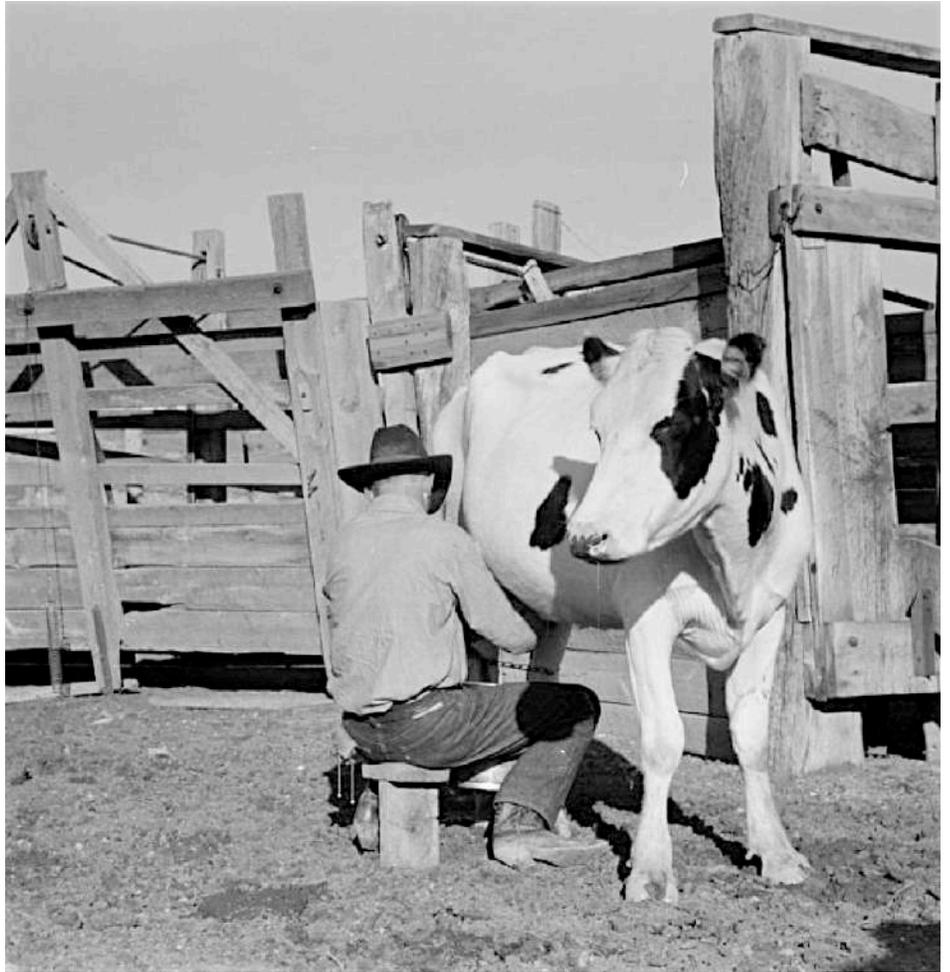
Most families had a single milk cow that they kept in a small pasture enclosure on their own lot. The small size of the pasture meant that it would only have grass for grazing during a short period of the year. Milk cows were driven out to the fields to graze and back home daily in small herds composed of cows from a number of families and tended by one or more boys on foot or horseback. During the summer's heat these herds were combined and driven to high elevation pastures at the foot of the Pine Valley Mountains where water and feed were plentiful and kept there for weeks at a time. During this vacation the milk was transported by wagon back to town. Preserving green, undried lucerne in an air-tight silo was found to be a nutritious year round food for dairy cows in the late 19th century. Silage and silos gradually replaced the seasonal herding of milk cows.

Much of the milk was made into cheese and butter. The best cows were judged to be those that produced the most butterfat in their milk. Certain breeds were prized above others including the Brown Swiss, the Jersey, the Guernsey and the Holstein.

*Man Milking Holstein,
Library of Congress, 1940*

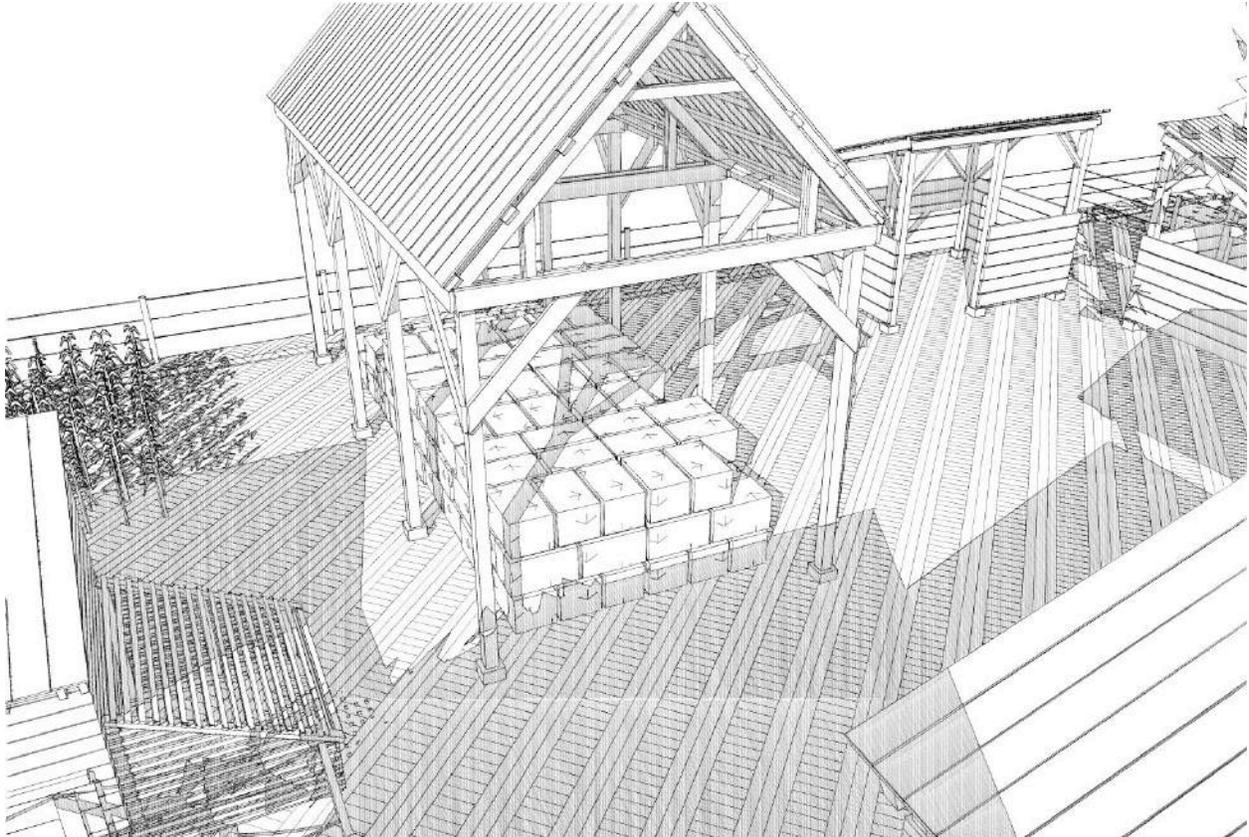
The harsh St. George sun made cow sheds a necessity for much of the year. Cows that could remain in the shade were better milk producers. Milking could also be done more comfortably in the shed out of the sun or the rain. Milk pails and milk stools could also be stored in the cow shed.

Some family's preferred goat's milk to cow's milk. It was said that goats ate less and were more efficient at producing milk than cows. A goat can produce milk for almost twice as many years as a cow. But, a goat produces a much smaller quantity of



milk each day compared to a cow, so more time was spent milking goats. A herd of goats also seemed to require more work because you had about five times more animals for the same quantity of milk.

*Men with Cows
Library of
Congress, 1940*



The Hay Barn

The most common crop grown for livestock feed in Southern Utah was alfalfa, which was most often called *lucerne* by the pioneers, who brought that name, and the plant with them from the eastern United States. During the pioneer era *lucerne* would have been cut with a scythe, dried in the field and gathered in loose piles on a horse drawn haywagon. In the early 20th century, mechanized hay mowing and hay baling became common, simplifying the harvesting, transportation and storage of alfalfa.

Hay should be stored under a roof for protection from water which can lead to spoilage or mold growth. The mild climate and infrequent rain of Southern Utah allowed hay barns to be built without walls. Cut hay which is not completely dry produces heat from respiration. Compacted hay bales can spontaneously combust if their temperatures exceed 140° F. Hay bales with temperatures over 120° F shouldn't be placed in any enclosed structure. For this reason, enclosed hay barns became much less common after 1910.

Hay was transported by hand from the hay barn to each horse stall, cow shed, and goat pen with a large pitchfork and replenished as needed each day. Locating the hay barn in close proximity to the horse barn, sheds and corrals reduced the number of steps needed to feed the animals.

Equipped with ropes and pulleys for raising the heavy hay bales, these barns provided a shady place for children to play after finishing their chores. Swinging on a hay rope, landing on a soft pile of hay or looking for a needle in a haystack were charming pastimes.

Boys helped care for the family's livestock at an early age and this included taking care of hay, alfalfa and other feed. Since the hay barns weren't enclosed, the hungry animals had to be kept inside corrals, fenced pastures or tethered. Keeping the gates closed, the fences mended and the lead ropes tied with secure knots was also boy's work.

Placing straw on the dirt floor kept the stall dry and the animals healthy. The close proximity of stables to the family home necessitated frequent cleaning of stalls including regular removal of refuse manure to minimize offensive odors. Manure from all the livestock was collected and dried for use as fertilizer.



Boy Pitching Hay, Library of Congress, 1940



The Barn and the Old Corral

It would have been rare for a family to own fewer than two horses. A team of horses was needed to pull any wagon large enough to transport crops from the field; and the same team would have been used to plow the fields. Larger families found the need for more horses especially as the boys grew.

The horses worked in the fields during the day with the men and older boys, then returned home each evening to their stalls in the barn. The wagons, wagon wheels, carriages, buggies, packs, saddlebags, harnesses, horse collars, cinches, blankets, bridles and saddles were stored in the barn, often in unused horse stalls. The barn could also be crowded by other farm implements: Plows, shovels, hoes, scythes, sickles, ladders, hammers, saws, shears, axes, tongs, rakes, pitchforks, branding irons, wire cutters, barbed wire, baling wire, and ropes.

The horse stalls were connected with an outdoor corral which quite often could be one of the oldest structures on the town lot, since it was often built before the barn. Barns and granaries were commonly built before main houses were started.

Barns were built of all kinds of materials. During the initial settlement period adobe was the most available material. Wood, from the distant mountains, became available after the roads were better. The barn depicted here has adobe brick walls on stone foundations upon which the wooden roof is completed at a later time.

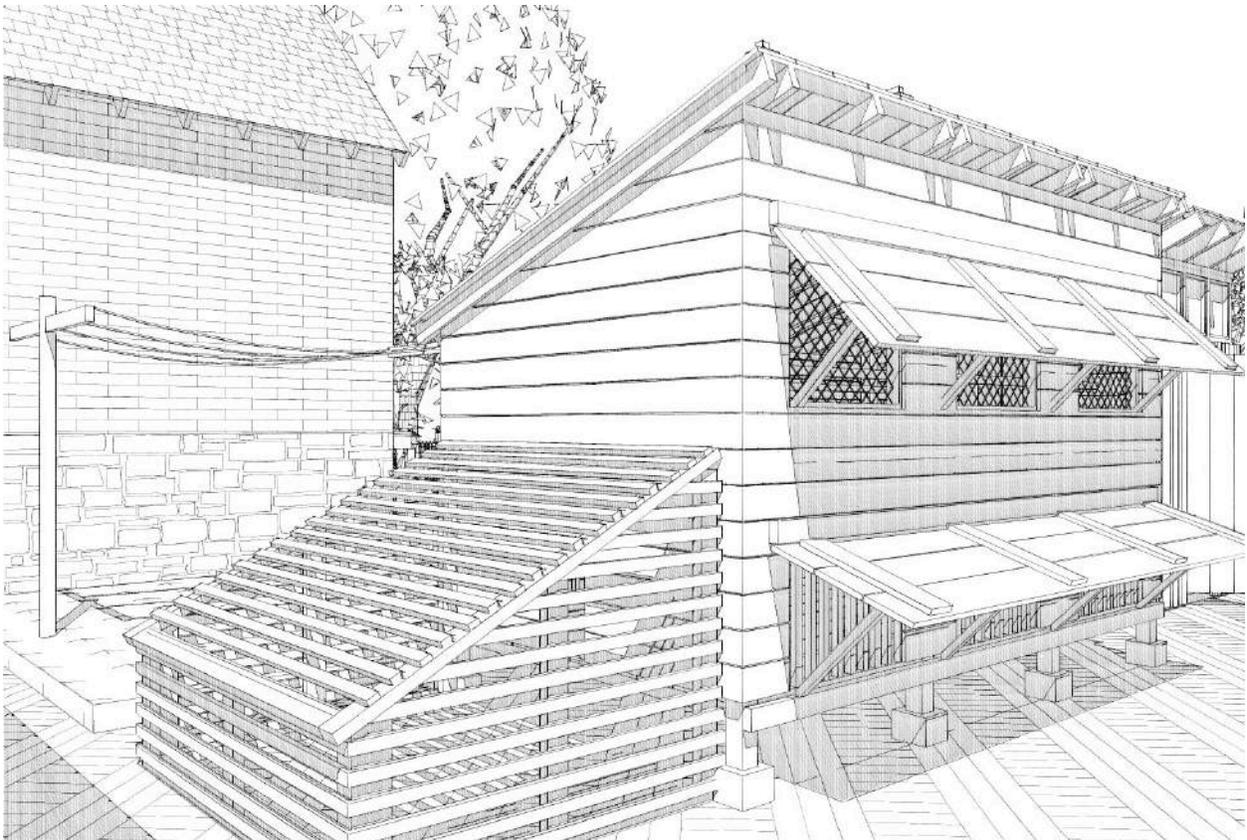
This barn serves as a kind of gatehouse to the barnyard, keeping the animals in and the guests out. The large tree at the western edge of the barnyard provides a shady spot for a numerous variety of family farm chores. Not shown is the manure pile which accrued from cleaning the stalls, sheds and pens on a regular basis but was depleted by the fertilization of the gardens, pastures, yards, vineyards and orchards.



Branding a Calf, Library of Congress, 1940

The original Saint George settlers owned a town lot and a small field at the edge of town. Farming and ditch repairs kept them busy and they didn't have time to tend cattle, but they needed beef in their meager diets. Initially, small herds of cattle, contributed by the entire town, were driven to the higher pastures surrounding town by teenage boys. But, as work on the Tabernacle and later the Temple required more and more labor (and more meat), the Mormon leadership organized cooperative cattle herds to be grazed in Upper Kanab, the Kolob Plateau, the Arizona Strip, Bull Valley (near Hebron) and Clover Valley, Nevada. By 1870, the Canaan Cooperative Stock Company headquartered at Pipe Spring, Arizona had over 500 head of cattle.

We need to remember that outside the Mormon village this was still frontier life, with its share of violence and unpredictability. Nearly every family had a handgun, shotgun, or rifle. These were needed for protection and used for hunting which wasn't a sport but a necessity.



The Chicken Coop or Hen House

Every family had a few chickens. Chicken feed was easy to come by and eggs were an essential ingredient of most meals. The most common meat dish during pioneer times was chicken, followed by lamb, pork, and beef. Wild game and venison did not account for much of the pioneers' diet, as the Indian's hunting rights were largely respected by the Mormons.

Raising chickens wasn't difficult but a well built chicken coop made the task easy. Keeping the chickens safe from predators including birds of prey, foxes and coyotes was the major preoccupation and excuse for building the hen house. But it was also thought, that a well ventilated, clean nesting place would increase the number of eggs produced. Devices to moderate extremes of temperature during summer and winter were incorporated into the best designs.

A coop of the size shown above would have accommodated two dozen nesting chickens. With family sizes hovering around ten or more in Saint George during the 19th century having a couple dozen chickens for the family's use would not have seemed extravagant. The eggs would have been collected daily during the entire year. The position of the hen house not too far from the main house shortened the path for wives and daughters.

The taller side of most chicken coops faced south maximizing the sun's warming rays during the winter yet minimizing the enclosed volume to be heated. Even in Saint George more chickens froze to death than succumbed to summer overheating. The slatted enclosure would have provided a sunny and safe scratch yard for the chicks. During many instances throughout the year, the chickens would have been let out of the coop to scavenge around the yard.



Feeding the Chickens, Library of Congress, 1940

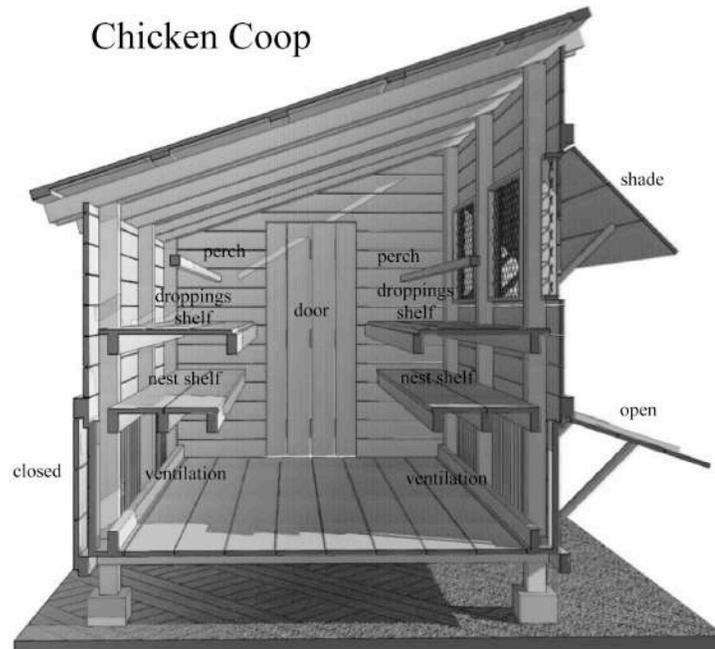
Families that kept quite a few chickens often traded the eggs for other staples. It is hard to overestimate the extent to which Saint George residents managed to get by with very little cash money. A few entries from Levi Savage's 1891 journal provide quite an insight.

"Feb. 18, 1891 Wednesday. It is damp to day. I cut up the pigs, the sow weighed 153 lbs and the barron weighed 170 lbs. Riley (a son) prepared the wagon to go to St. George tomorrow.

Feb. 19, 1891 Thursday. I intended to have gone to St. George to day, but stoped because of a snow storm and deferred going until tomorrow. I got 200 lbs flour and 102 lbs potatoes of Brother James Jackson to apply on his daughter Adelaide's board bill; also 100 lbs potatoes of Sister Duffin to apply on her son Hesakiah's board bill.

Feb. 21, 1891 Saturday. At the Tithing Office, I exchanged 125 lbs beans for 100 lbs lucern seeds; also paid William Snow on house rent 200 lbs flour at \$3.75 per cwt also \$3.00 cash on house rent being 100 cwt lbs flour paid to Sister Wooderd; also paid Erastus B. Snow \$4.90 on Acadamy tuition.

Mar. 4, 1891. Wednesday. I pruned some of the grape vines on the bowery. Riley loaded the wagon with wood for St. George; after noon, Riley and I went to the co-op store and he bought a pare of over alls (75cts) and a can of wagon grees; had it booked; also got two Sillaloid hair pins (20cts) and paid for them. Then we got J William's team hitched on with ours and took a load of wood to the top of the Grape vine Hill. "



Chicken coops were generally raised off the ground in Saint George in order to provide a shaded air space directly below the floor planks which had gaps sufficiently wide to allow the dried droppings to fall thru the cracks when the coop was cleaned. The accumulation of chicken manure below was removed annually and either sold or used to fertilize the family gardens and orchards.

Three large operable doors (two on the south and one on the north) were opened and closed throughout the year to increase or decrease ventilation as well as provide direct and indirect sunlight into the interior. The upper shade on the south would have been propped up to allow direct sunlight into the interior during most winter days and closed at night. Dropping shelves were located above nesting shelves on both sides of the coop. The precise height between these shelves were matched to the chickens' breed. Perches were located above the droppings shelves recognizing that chickens elongate their torsos when they defecate thus encouraging behavior consistent with cleaner nesting shelves. There is a door for entry by the girls who collected the eggs at one end of the chicken coop. During the pioneer era it would have been rare to find egg box access doors from the exterior of the chicken coop which became desirable when those picking up the eggs didn't want the possibility of being hen pecked. Pioneer women and girls weren't that prissy.

Like most of the outbuildings, the chicken coop was built of wood. Once the need for raising chickens was supplanted by the availability of inexpensive eggs which could be delivered to the house or bought at the store, the coop's lumber was often recycled for other purposes including repairs to fences and corrals. Occasionally, chicken coops were hauled off on a wagon completely intact to more rural locations where chickens were still raised, when the increasing urbanity of Saint George encouraged residents to embrace store-bought convenience after 1910.



Chicken Coop with Chicken Wire and Outhouse, Library of Congress, 1940

Every family had community obligations in addition to their household chores. A few more entries from Levi Savage's 1891 journal show how busy life could be.

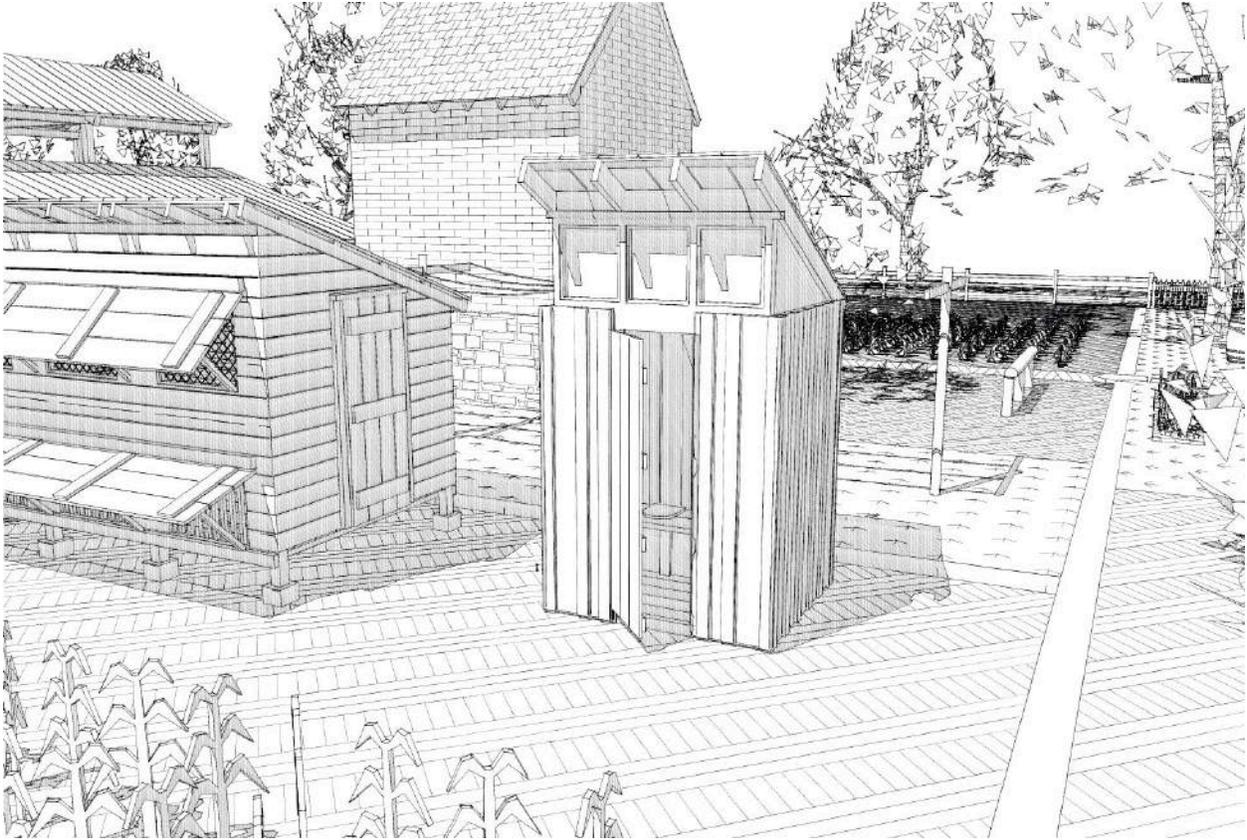
"Mar. 10, 1891. Tuesday. About 10 o'clock Sister Crosby continued her journey with Brother Wilson D. Pace. Riley took our two more loads of manure. I wrote copies of instructions from the First Council of Seventies and sent them to the three presidents of the 9th Quorum up the river. At the co-op store, Aug Slack ask me to sign the water cooperation constitution. John Batty read the article, but did not sign it.

Mar. 12, 1891. Thursday. I worked about home. Riley plowed some. Pres AE Dodge showed me a telegram he had just got from Pres Gates saying it was impossible for any of the council to meet us this conference.

Mar. 13, 1891. Friday. Riley hauled some timber over to Ham Wallis' place and repaired the fence. Afternoon, Riley and I sowed 10 rows of black seed onions of the large sort, in the evening, Riley attended the young men's meeting.

Apr. 23, 1891. Thursday. I slacked lime, made the mortar; and Willie (a son) plastered a patch in the ceiling that had fell in the front room; the women folks done some white washing with the help of Willie and Riley. As I have to show some respect to the anti-poligamie law, by not associating with my plural wives, I got the privelege of Regular Naegle to sleep in her lumber house. I hope to live in the flesh to see the day that the Saints will have the privilege to worship God according to the dictates of their own conscience. Today, Wm. B bought August Coin's bees for \$2 worth of this seasons fresh fruit when it grows.

May 1, 1891. Friday. The young folks had a picnic at the mouth of Ash Creek. In the afternoon, the small children had a dance and in the evening the young folks also had a dance. There were a number at the dance from other settlements. Martain McAlister and Miss Rodgers put up with us during the past time."



The Privy

An outhouse or privy (shortened from privacy) was a real necessity until water was conveyed to each house in pipes rather than in ditches which didn't happen in Saint George until 1912. That was the year that the "drinking hour" ended. At that time the city charged each residence six dollars a year for water, if they had one tap. For each additional tap, fifty cents was charged. If you were fortunate enough to have an indoor water closet, you paid another dollar and a half. The piped water wasn't entirely reliable since the pipes were made out of wood caulked with pitch from the inside. Cast iron pipes didn't come along until the late 1920's. And then the depression hit everybody's pocketbook. Consequently, privies were a way of life in Saint George in many homes until the Second World War.

Privies could be built in a number of different ways. The most costly and permanent method was over a sealed underground pit (sometimes called a cesspool). Once the capacity limit was reached, the outhouse structure attached to the top of the pit was removed (or demolished) and the waste was either carted away or, more often, just sealed up in place.

Over the years a variety of regulations regarding the design and maintenance of sanitary privies was enacted in many places. Most regulations dealt with sealing the waste collection pit or the waste container in a manner that would prevent flies from gaining access to the excrement. Proper ventilation of both the privy and the waste container was also codified.

In the early 19th century, contagious diseases regularly swept through urban areas. The prevailing explanation for the spreading of diseases was the miasmatic theory, which held that disease was caused by sewer gas, garbage fumes, wet or swampy soils, insufficient ventilation and poor sanitation. The scientific idea that micro-organisms present in water or air-borne

bacteria carried disease was only beginning to be understood. Remedies included drainage of low lying areas containing stagnant water, quarantine of the sick, the regulation of building construction (especially ventilation and daylight standards), prohibiting pollution of drinking water, and mostly avoidance of “foul air”.

UTAH TERRITORY.

(From DR. W. F. ANDERSON, Salt Lake City, Utah.)

SALT LAKE CITY, February, 1876.

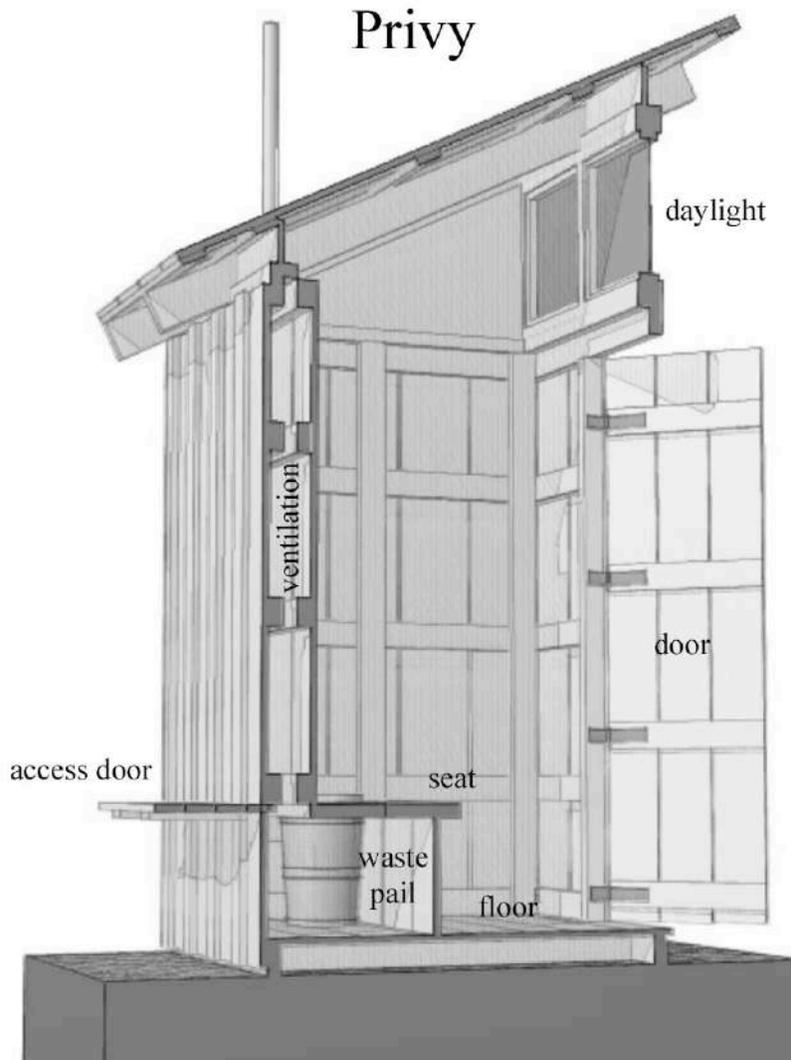
Our territorial Solons have passed no law relating to Public Hygiene. Utah is in a primitive condition in this respect, unless something should be done by the present Legislature, now in session, which I think improbable. The irrigation of land in the summer months is practised generally by the farming community ; but the atmosphere is so very dry that no malarial influence is observed therefrom. In the southern portion of the Territory, where the rivers and creeks are not under so thorough control as here, there are immense overflows in the spring and summer months, and fever and ague prevail.

A coalition of medical doctors, scientists, engineers, civic leaders and religious leaders struggled for decades to establish public health standards and regulations. Originally, *water closets* were thought to be inferior to *earth closets* (composting toilets) because the *earth closets* didn't exude “sewer gas”. Goose neck waste traps and plumbing vents through the roof were necessary to alleviate “sewer gas” odors and hazards.



Water Closet, Handbook for House Sanitation, Denton, 1882

Over time, indoor plumbing replaced the privy. At first, the sewage was piped to a cesspool or a septic tank located on the town lot and maintained by the homeowner. Only later did the city build a sanitary sewer system which transported the wastewater to the a remotely located sewage treatment plant.



Section thru Privy

In Saint George, most privies were built without a permanent cesspool below them. Instead a waste pail was placed in a concealed compartment beneath the privy seat. That compartment was ventilated thru the roof to minimize odors inside the privy and provided with an access door where the waste pail could be frequently emptied and cleaned. Seat covers were made to be close fitting to exclude flies from the waste compartment when the privy was not in use. Most privies had two holes and two waste pails. Use was rotated to minimize maintenance.

Waste pails were emptied regularly into the manure pile. Sand rather than water was used to clean the pails with two or three inches of dry sand left at the bottom of the cleaned waste pail.

The manure pile could be covered with a canvas tarp (waterproofed with animal fat) to dry the pile or contain odors if necessary. Dried manure was used to fertilize crops both on the town lot and in the fields farther away. Around the lot, a small wheelbarrow was used to transport this fertilizer which made everything grow faster and larger.



Men at Privy, Library of Congress, 1940



The Beehive

Deseret, “reformed Egyptian” for honeybee according to Brigham Young, was proposed as the state’s name before Utah (land of the Ute Indians) was adopted by Congress.

A beehive (or apiary) was more than just a symbol of industry and hard work to most pioneer families. Bees were needed to pollenate fruit blossoms, lucerne and clover blossoms, and most of the vegetables found in the family’s garden. Honey from the hive was the most affordable sweetener known in Southern Utah, even when sugar cane was a popular crop.

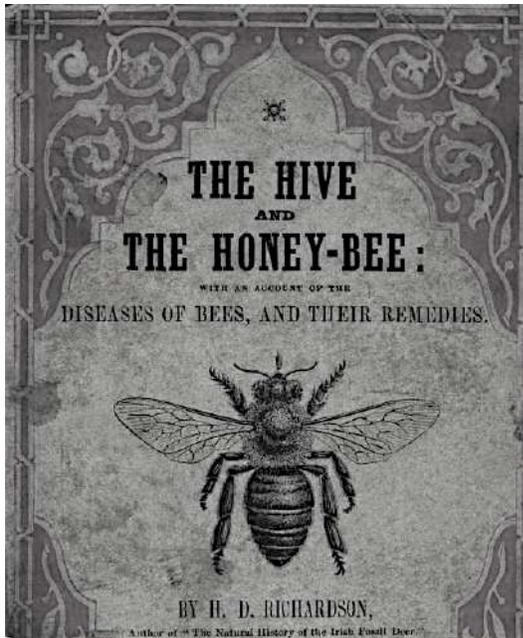
Sorghum, called sugar cane by the Cotton Mission settlers, was grown in Washington County’s mild climate, with the expectation of extracting the plants sweet juices in small local molasses mills, for export to more northerly Utah settlements, despite the fact that sorghum was also being grown in quantity in northern Utah’s Cache Valley.

As much as 100 gallons of molasses could be produced from an acre of sorghum cane. But the costs of planting, irrigating, harvesting, milling and transporting sorghum didn’t make “sugar cane” a profitable venture. Molasses took the place of sugar until the turn of the century largely because it could be stored in barrels for winter use. After the late 1880’s sugar could be made profitably from sugar beets in Utah and Idaho and molasses production was only needed to supply distilleries providing whiskey and rum to Gentiles.

The science of the honey-bee and its hive expanded rapidly during the 1840’s. It is doubtful if the primitive beehives made from coils of straw rope, like that depicted on the Utah seal and flag, were ever used by Saint George’s early settlers since modern methods utilizing removable wood drawers were common by the 1860’s. Still, Mormons often compared themselves to cooperative, industrious communities of bees in speeches and in popular songs.



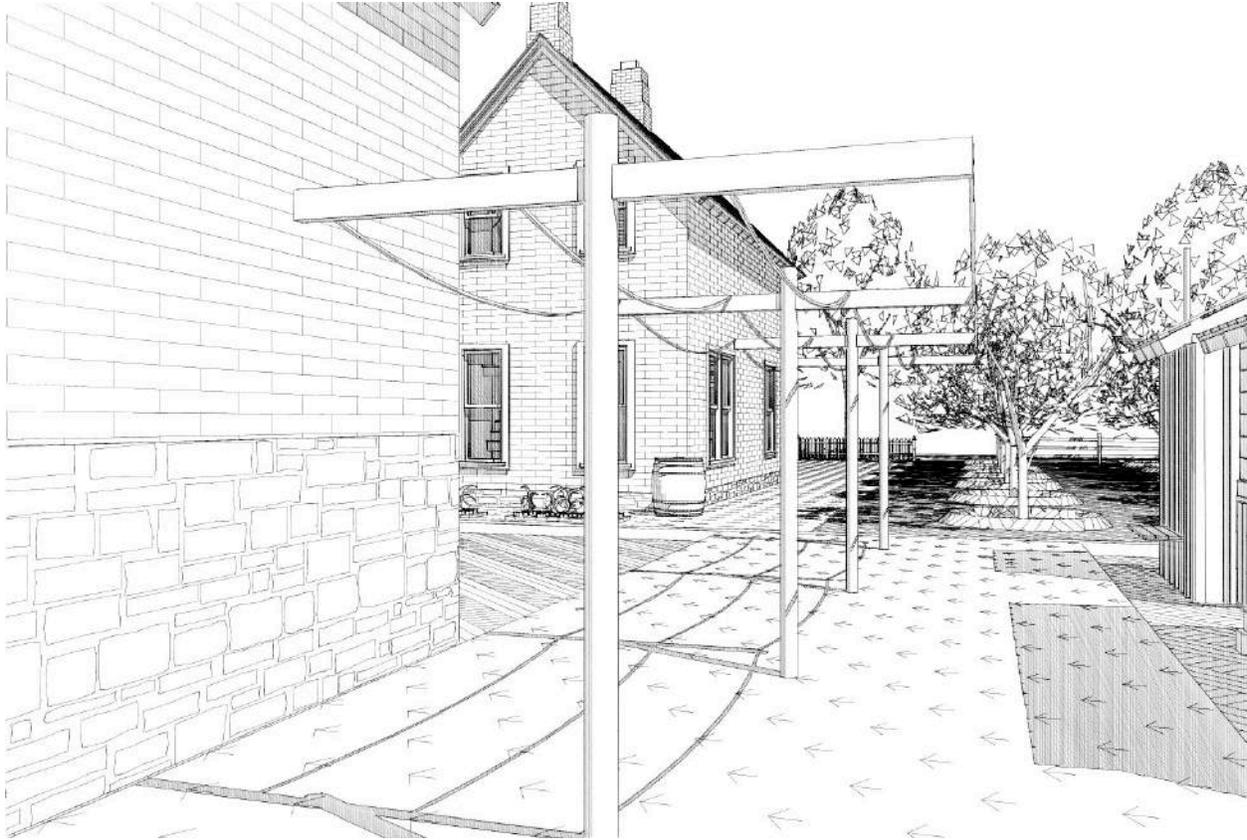
Beekeeper and Hives, Library of Congress, 1942



The Hive and the Honey-Bee, Richardson, 1847

BEES are small, peculiar people,
Fond of clinging to their hive;
Each one tries to be industrious,
While they cannot help but thrive.
They are true co-operatives,
Working till their labor's o'er;
Then they put their means together,
And uphold a common store.

Refrain from the Beehive Songster, 1868



The Clothesline

Washing clothes was an outdoor activity confined to the back porch before the 20th century. Hot water was provided from kettles which were placed on a coal stove whose smoke was carried up the chimney as far away from the clothesline as practical. The direction of prevailing winds were accounted for so that soot wouldn't settle on freshly laundered items.

Placing the clothesline on the lee side of the granary may have also sheltered the wash from wind blown dirt and dust. An otherwise unnecessary patch of grass beneath the clothesline reduced the possibility of mud stains which came from the employment of the youngest (and shortest) girls as laundresses.

Soap was made in large vats where lard (animal fat) was stirred into wood ashes (which contained lye). This basic soap was capable of cleaning ordinary dirt from skin and clothes. More gentle soaps for bathing or washing delicate fabrics might have been purchased from peddlers until the late 1880's when they were branded, promoted and stocked in general stores. Crushed rose petals or lilac blossoms could be added to laundry water to impart a pleasant scent.

The wash was done regularly according to the cycle of the water turn and was begun early enough to allow plenty of daylight for clothes drying. For a big family, this might mean that the washing was done promptly at the crack of dawn and that during the winter extra hot water would have been used to prevent the clothes freezing before they were placed on the line.

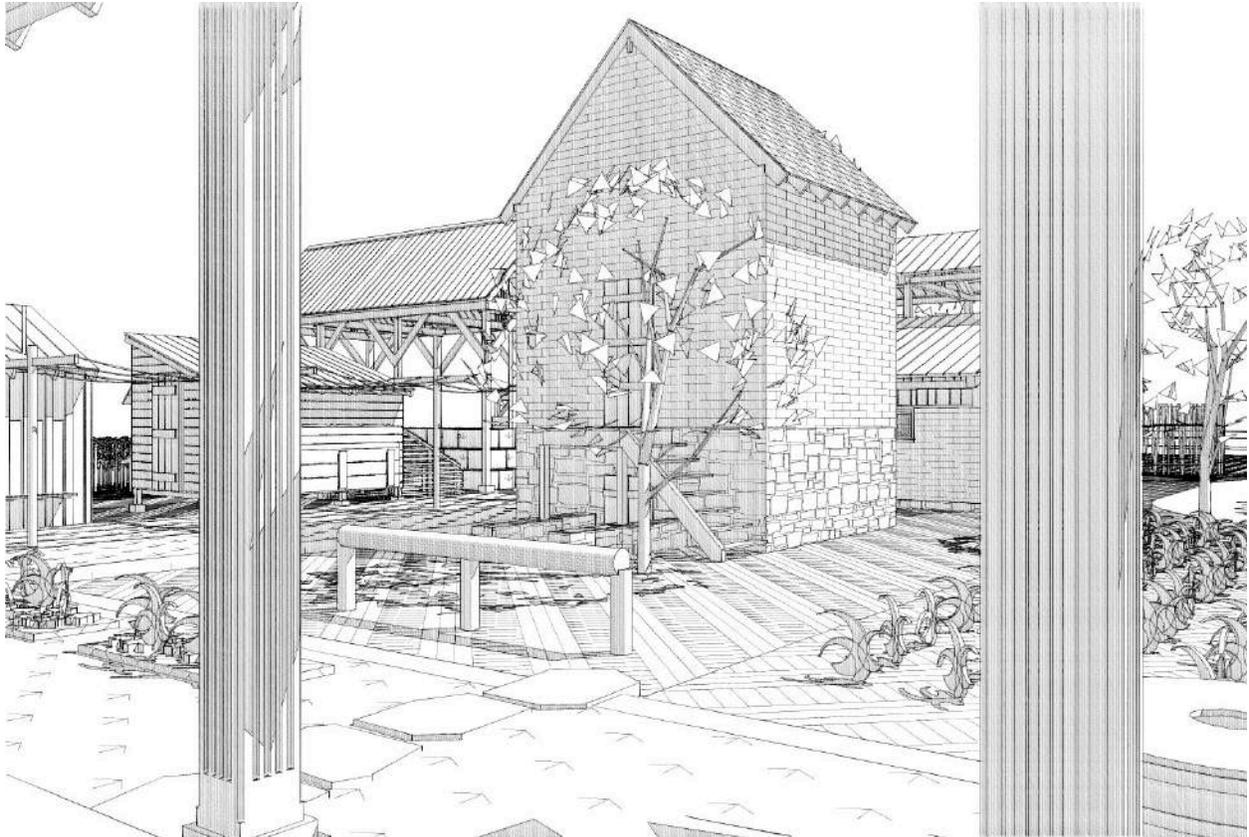
There was also a certain propriety associated with both the location of the clothesline and the location of certain unmentionable items placed on it. The location behind the granary would have provided a substantial barrier to prying eyes.



When doing laundry was mostly an outdoor activity, laundry tubs could be relocated from warm, sunny southerly exposures in winter to cool, shady northerly porches during the summer's heat. Porches were enclosed to accommodate indoor plumbing and specialized equipment not only fixing their locations, but often trapping kitchens or other rooms behind them and isolated from fresh air or sunshine.

Doing laundry with *washing machines* that consisted of hand cranked rollers (wringers) that squeezed excess water out of soaked garments, hanging the wash on the line, taking it down, and then properly folding and pressing (ironing) each individual piece was time consuming and physically exhausting work. Even small innovations in this process could result in dramatic time saving for women.





The Granary

Saint George granaries were typically small two story structures. The upper room (called the storeroom) housed sacks of grain, flour and other dry goods in quantities sufficient for the family's needs. These stores were replenished after harvest time each year. The granary's lower room (called the cold cellar), with its thick masonry walls and ceiling insulated with stacked grain sacks, could be kept quite cool during the summer months if blocks of ice packed in sawdust and wrapped with burlap were stored there.

Temperatures in this cold cellar could be maintained between 35°F and 45°F, low enough to preserve fresh meat, perishable vegetables and keep milk sweet. During the summer, care was taken to make trips to the cold cellar only in the early morning hours when outdoor temperatures were moderate. The thick door would only remain open for a brief time and was kept tightly shut throughout the day.

A number of different fruits and vegetables were dried in the sun allowing them to be preserved for winter consumption. After the turn of the century, picnics could boast about home-brewed root beer and hand-cranked ice cream topped with bottled fruit preserved in the cold cellar. Items that a family might need that weren't stored in the granary might have been available at the local Zion's Cooperative Mercantile store where almost every man in town was initially a shareholder. But the household granaries didn't have much competition until the 1920's when general stores began to stock canned goods trucked from northern Utah and California along the recently improved Arrowhead Trail, which later became US Highway 91.



Woman and Bottled Fruit, Library of Congress, 1940



Children on Cellar Stairs, Library of Congress, 1940

I can remember descending the steep, creaky stairs to the *fruit cellar* at my grandma's house. It was cool there year round. Once Grandma found the switch for the single bare light bulb, the shelves full of bottled peaches, pears, apples, cherries, grapes, raspberries, strawberries, rhubarb and pickles presented quite a scene. Each bottle was labeled with the year, the day, the variety of fruit, and the full name whoever supervised the bottling, almost always *Rosa B. Kohler*, but there were exceptions.

For a nine year old boy, it was like having a candy store in the basement. I was tremendously fond of her raspberry *jam* which grandma always reminded me wasn't *jam*... wasn't *jelly*... but should properly be called *preserve* since she took pains to keep the whole fruit intact.



Masonry Homes and Well Kept Gardens

Joseph Smith, the First Mormon Prophet, had added a small note to the original 1833 *Plat of Zion* stating

“no one lot in this City is to contain more than one house and that to be built twenty five feet back from the street leaving a small yard in front to be planted in a grove according to the taste of the builder, the rest of the lot for gardens &c, all the houses to be built of brick and stone.”

Plain masonry homes and well kept gardens were expected in Mormon towns, but from the earliest days there were opportunities for each town lot owner to display his *good taste*. The flower beds near the front fences and close to the house’s porch expressed the aspirations for civility and beauty that came with being a part of Zion. Lace window curtains, refined carpentry details and musical instruments played their roles in individual expression as well. Neatness and cleanliness were highly valued, as were thrift and industriousness.

Each family’s own industry filled most of their needs. Initially, some other items or goods could be obtained at Bishop’s storehouse. With the passage of time, the need for household goods and home appliances increased.

In 1868, following a successful trial in Brigham City, the *Zion’s Cooperative Mercantile Institution (ZCMI)* was founded in Salt Lake City with the objective of keeping Mormon money in Mormon hands. Branches were set up in most Utah towns with the prominent church leaders typically serving as managers. Mormon women were the most likely consumers of Eastern goods and consequentially were seen as the weak link in Mormon self-sufficiency. Tithing store accounts showed wives and daughters purchased imported spices, ribbons, lace and fine fabrics.



Mademoiselle Demorest's Clothing Pattern Advertisement, 1882

ZCMI was originally heralded as a precursor of the United Order, where common ownership of farms, businesses and land was possible. But these co-op stores subtly promoted



Chadborn and Coldwell Mower Advertisement, 1889

Mormon acquisition of goods that couldn't be homemade, brought small towns closer to the outside world.

Pear's Soap Advertisement, 1890

By 1884, Saint George had a physician, a dentist, five stores (one, the Saint George branch of the *Zion's Cooperative Mercantile Institution*), three watchmakers, three shoemakers, three blacksmiths, two dressmakers, one attorney and a photographer. Some goods not available locally could be purchased through the mail, but others required a week long trip to stores and merchants in Salt Lake City.



The House and Front Lawn

The family home, itself, represented only a portion of the investment required to earn a living in Southern Utah. Its construction was often undertaken by stages. There are some clues which indicate numerous stages of partial completion for the Arthur Miles house.

Charles Smith lived on the corner of First West and Third South. Charles Smith had two wives during the mid-1870s. It's possible that the first portion of the house might have been a single block built to house his second wife. (It would have consisted of the wing to the right in this picture which has a slightly lower eave height.) The southerly wing of the house was probably added when the family size required it. Charles Smith was a watchmaker and installed the clock in the Tabernacle's steeple during 1873. He was a member of the Saint George stake high council when the Temple was dedicated in 1877.

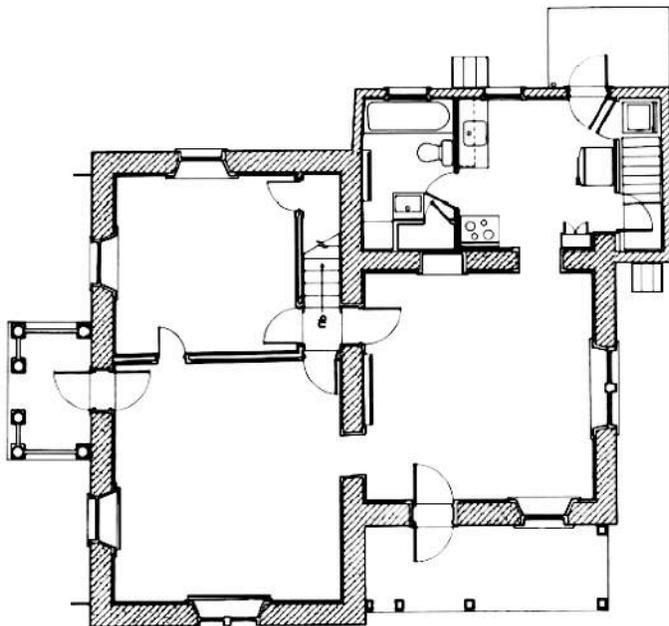
Yet, when a map recalling the original owners of the Saint George's plat was made more than fifty years later by mayor Albert E. Miller (see pg. 2 above), Charles M. Smith is shown as the owner. But, Charles M. Smith was only 16 in 1876 when the plaque out front states the house was constructed. Note that he had an older brother, Heber C. Smith, who married at age 38 in 1894. In 1876, he was 23 and may have constructed the first portion of the house as a bachelor's home.

When the first legal ownership records were made in 1875, the owner is listed as John G. Smith. There is an 1870 census record of John Glover Smith (married to Susanna Down) living in a house valued at \$500 in Saint George. He was a member of the Mormon Battalion, led an emigrant company across the plains in 1851, and was the first bishop of Smithfield, Utah.



Old John Pierce House, St. George, Bob Jones, Utah Artists Project

The photo above of the John Pierce House illustrates how the first portion of the Arthur Miles house may have looked during the 1870's before the southerly wing was added. John Pierce was an early St. George butcher and this home is built of plastered adobe brick similar to the north block of the Arthur Miles house.



It was not uncommon to enlarge houses in increments. Porches where laundry activities occurred could be enclosed to accommodate indoor plumbing as depicted in the adjacent plan. The Arthur Miles house probably had a kitchen/bathroom addition made where an outdoor porch had previously existed on the northwest corner as shown here, but in the absence of hard evidence or documentation this possible construction history of the Miles house must be recognized as mostly conjecture.



The House, The Granary and The Barn

The first house built here probably had a different granary than the one presently on site. The present granary's cellar is built with lava rock while the house's foundation is sandstone. It was more than a decade after settlement when basalt (sometimes called lava rock) became common for foundations. Black lava was harder and less affected by water and frost than native sandstone. Comparing the Tabernacle's sandstone basement with the Temple's basalt foundations clearly draws this distinction. (The Tabernacle basement was begun in 1863 and the Temple was started after 1872.)

The house was built with walls of buff adobes (3 wythes thick) which could have been made by the owner on site. The one-foot thick adobe walls were well matched with the hot, dry summers and mild winters found in St. George. This was understood by the pioneers.

They knew that the mass of the walls slowed heat flow through the wall and meant that the day's hottest temperatures would move slowly into the interior arriving hours later. By then, windows were opened, letting in the cool night air to counteract the summer heat. Correspondingly, the coldest winter night temperatures would seep into the interior during the day when the sun's warming rays came through the large glass windows.

The house had a very characteristic "T" floorplan with story and a half eave heights. This maximized the usable floor space while minimizing the volume that needed to be heated or cooled. High lower story ceilings let the summer heat rise above the level inhabited by occupants and during the day the well ventilated (and unoccupied) upper floor prevented transmission of the sun's heat to the lower floor. Fireplace chimneys pulled hot air up and out.

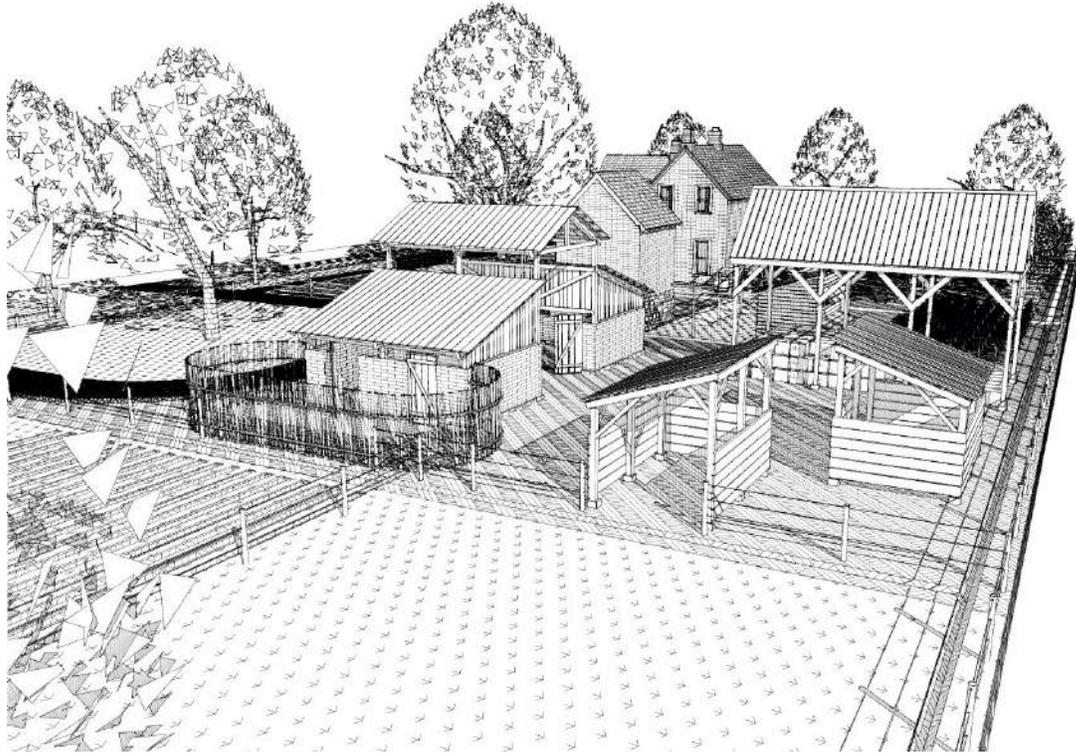


Annotated Photograph of Joseph E. Johnson Home, Dixie State University, 1880

Each lot owner devised his own arrangement of gardens, outbuildings and fences. Joseph Ellis Johnson was a pioneer pomologist (fruit cultivator), beekeeper and publisher of the *Our Dixie Times* (1868-1869), *Utah Pomologist and Gardener* (1870 - 1878), *Rio Virgen Times* (1870), *Silver Reef Echo* (1876) and *Silver Reef Miner* (1878). His hot house shed sustained seedlings of new varieties of grapes, peaches, apricots, pomegranates, strawberries and even oranges. Hardly any of his lot on the corner of First North and Main streets was left uncultivated

In 1867, Joseph E. Johnson donated a small parcel of his land for the construction of a Gardeners' Club. The club staged displays of fruits, vegetables and other agricultural products giving ribbons to winners. The small building also housed receptions, meetings and fairs. Johnson was among the first to advocate raising grapes to be sold as raisins rather than wine, which cost more to produce when the expense of barrels, casks and storage were counted. His scientific approach to horticulture allowed him to produce strawberries and grapes from April through Christmas each year. He imported 130 Angora goats to Saint George in 1872, to produce both milk and fine wool. He advocated planting mignonette (reseda), an extremely fragrant flowering annual grass native to Spain for bee forage, a source of yellow dye and for perfume making. Johnson also served as superintendent of public schools during the 1870s.





The Back Lot and Pastures

In 1891, the Territory of Utah had a delegation at the first Irrigation Congress which was held in Salt Lake City. Statistics were presented that demonstrated the typical investment of a Utah farm family. Forty acres of fields with water rights could be purchased for \$40 per acre (\$1600), cleared (\$150), fenced (\$140) and watered (\$80 a year). A complete dwelling house (\$600), stables, barns and sheds (\$260), 100 shade trees and 200 fruit trees (\$45), and seed (\$60 a year) brought the total investment to under \$3000. Earnings purportedly averaged about \$1500 each year (an annual profit of 50%). Profit sufficient to support a wife and five children could be generated from an acre and an quarter by raising carrots, table beets, onions, potatoes and gooseberries (\$3500 per year). An acre of strawberries would yield a profit of \$1500 per year. Too good to be true yet very persuasive. Just add water and hard work.

This unabashed boosterism was widely acclaimed in *Irrigation Age* and other magazines, which hailed Mormon cooperation in undertaking irrigation improvements that made reclaiming arid Western wastelands a profitable venture, which could, and should, be emulated. In the years between the first Irrigation Congress (1891) until it became the International Irrigation Congress (1916), Mormon irrigation and colonization practices became the principle exemplars for a national movement which led to the formation of the United States Bureau of Reclamation and the enactment of Colorado River Compact.

The small size of family farms (25 acres in the 1890s) coupled with large family sizes (due, in part, to widely practiced polygamy) magnified the harsh reality of life in Utah's Dixie where there was little irrigated land. During frequent drought periods little water reached crops. Even worse, heavy torrential rains washed out diversion dams and canals so that not a drop of water was available until repairs, which could take weeks, were completed.



Harvested Melons, Library of Congress, 1940

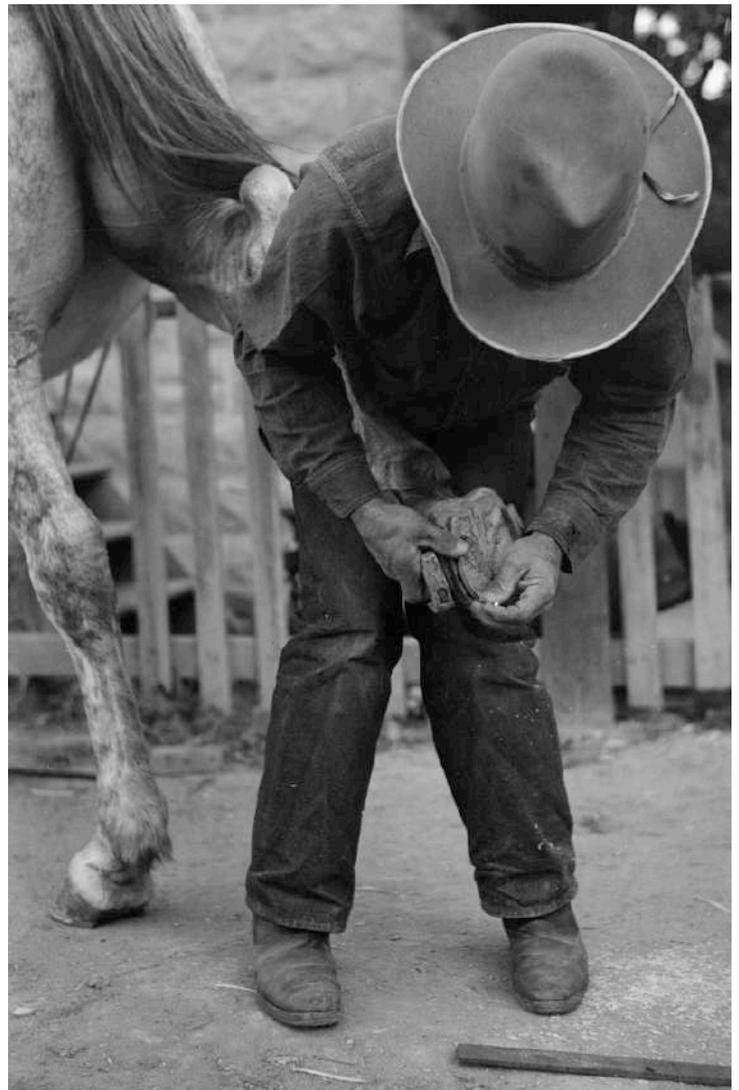
There was a transition from the self-reliant early days when most of what was grown on the farm was traded and consumed locally, toward growing commercial crops to be exported to market. Goods hauled by wagon to mining camps, became trucks full of produce bound for California.

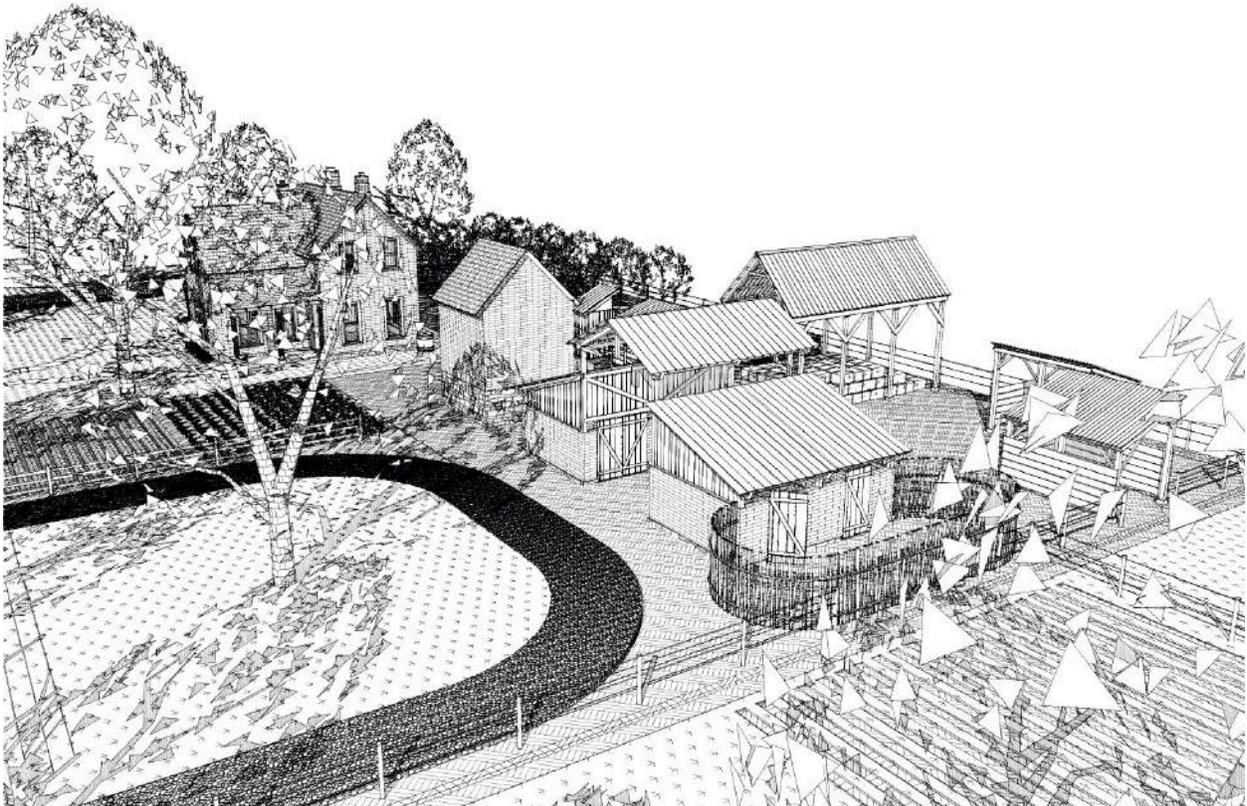
Shoeing a Horse, Library of Congress, 1940

Most folks shod their own horses. The blacksmith was needed for more complicated items like wagon wheel rims, ploughs and harnesses. The rugged terrain surrounding St. George encouraged many to keep a spare horseshoe in their saddlebag.

Not much work could be done without a horse, or better yet, a team of horses. But horses couldn't work without feed. Lucerne (alfalfa) became a crop needed in every household. Six or seven cuttings could be taken from the fields where it was grown.

As horses were replaced by automobiles, young men had to become adept at ordinary car repairs. Increasing travel on the Arrowhead Trail after 1917, created the need for repair and service stations in St. George.





The Town Lot as a Landscape Artifact

The collection of buildings on a town lot forms a miniature village. Throughout the day and throughout the year numerous activities needed to occur in each outbuilding and fenced enclosure. Only by successful completion of all these tasks could a living be earned.

The surplus accumulated by any one family was most often invested in the needs of the next generation; first through schooling, then by acquiring farm fields, town lots and irrigation shares for one's children. Led the pioneers to undertake truly heroic tasks like the construction of the Washington Fields Dam, the Hurricane Canal, the Santa Clara Bench Canal and the Enterprise Dam. These projects and many others would put more land under ditch (and under God) in order to truly redeem (reclaim) the land (desert) and make it blossom as a rose.

Even before the land on nearby benches and valleys could be annexed for settlement, the Mormon pioneers established colonies across the Colorado River in Utah, along the Little Colorado and the Salt Rivers in Arizona, and all the way into northern Mexico.

All these Mormon towns depended upon the success of each individual family in fulfilling their responsibilities to each other on their own town lot as much as it did on the collective success of the whole community in developing dams, canals, networks of ditches, town plats, governments, and meetinghouses. Following *Plat of Zion* principles they lived in small towns surrounded by farms and ranches. This arrangement facilitated, even necessitated, meeting together for education, worship, dancing and governing.

The most lasting contributions from the settlement period may not have been the physical improvements made to the land, but the individual accountability within the family-supported, community-oriented way of life that was required from everyone.



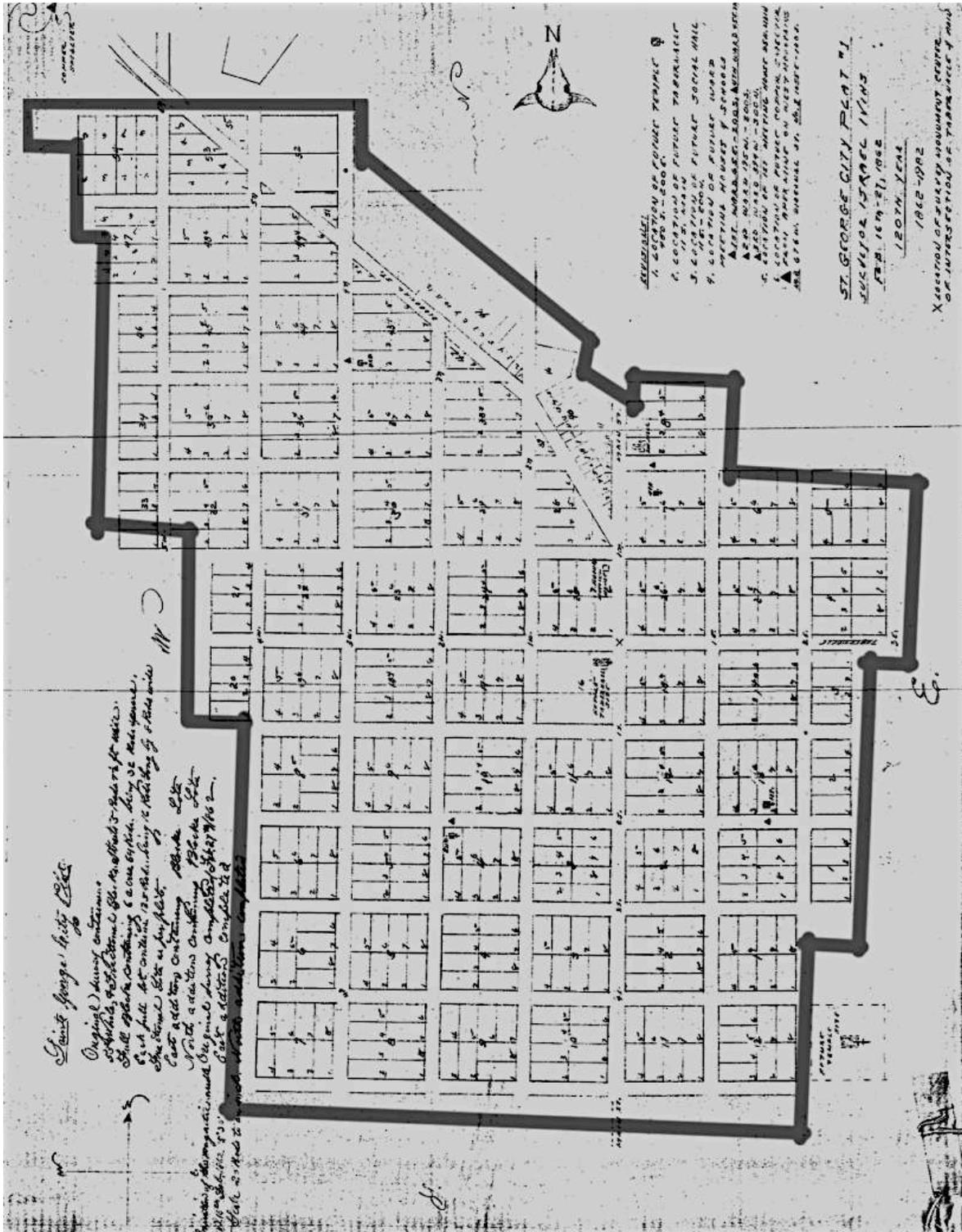
Sunday Services, Mendon Ward, Utah, 1940

The physical size of Mormon meeting houses was never very large and with the exception of the Saint\ George Tabernacle not very ornate. Until Utah became a State in 1896, and even for a short time thereafter, most meeting houses (or ward houses) served as both churches and schools. One of the conditions of statehood was that separate schools would be built with public tax funds and that all public school teachers would demonstrate their qualifications by passing stringent examinations.

The value and beauty of the collective life being lived in Mormon towns was being heralded by outside observers many years before Utah became a state. Elwood Mead, a prominent water engineer for whom Lake Mead is named, had this to say in 1896:

“Heretofore one of the evils of the irrigated home has been its isolation. The Anglo-Saxon thirst for land, and the opportunity which the desert-land act gave to gratify it, resulted at first in a wide separation between homes, and in a loss to the pioneer of the advantages of schools, churches, and social life. Where farmers live in villages, their families enjoy ready access to schools, churches, libraries, and entertainments. The agricultural society of the future in the Western valleys will realize a happy combination of town and country life -- the independence which springs from the proprietorship of the soil and the satisfaction of the social instinct which comes only with community association. Irrigation is much more than an affair of ditches and acres. It not only makes civilization possible where men could not live without it, but it shapes that civilization after its own peculiar design. Its underlying influence is that which makes for democracy and individual independence.”

The Town Lot and the Town Plat



This is the oldest plat map of Saint George that I know of. It was drawn by Israel Ivins, between February 16th and 27th in 1868. Ivins' cursive hand writing appears in the southwest corner of the map. His notes indicate a number of expansions of the town plat between 1862 (original settlement plat) and 1868. In the northeast corner, one of the original members of the Washington County Historical Society, you see Scott Prisbey's 1982 annotations. Prisbey's annotations include a stylized skull north arrow, and graphics showing the location of the Tabernacle and Future Temple sites. (The announcement of the Temple and its site were made three years later in 1871 by Brigham Young.) In the northwest corner of the map is an annotation indicating the location of a copper smelter which was built in 1901 by Utah and Eastern Copper Company.

One of the most surprising features of this map is the kink in Diagonal Street between First West and Main Streets that is no longer there. An explanation is quite simple. Diagonal Street was laid out to convey water from West Spring (or Watercress Spring located off the northwest corner of the map) to the town. The present straightened alignment that replaced the kink now goes uphill before it reaches Main Street. The prior alignment was necessary to insure the downhill flow of the irrigation ditch along old Diagonal Street.

In Saint George, water for the town plat and its lots came from perennial springs. The Virgin Field located to the south and east of the town plat was where the family farms were located. Upon settlement in 1862, water was conveyed to the Virgin Field(s) by ditch from the Virgin River. Later additional water was brought from the Santa Clara River via the Santa Clara Seep ditch which originated in the town of Santa Clara a few miles west of Saint George. This *seep* ditch collected water at the lower end of the irrigated fields and farms of Santa Clara which would otherwise have *seeped* back into the river channel.

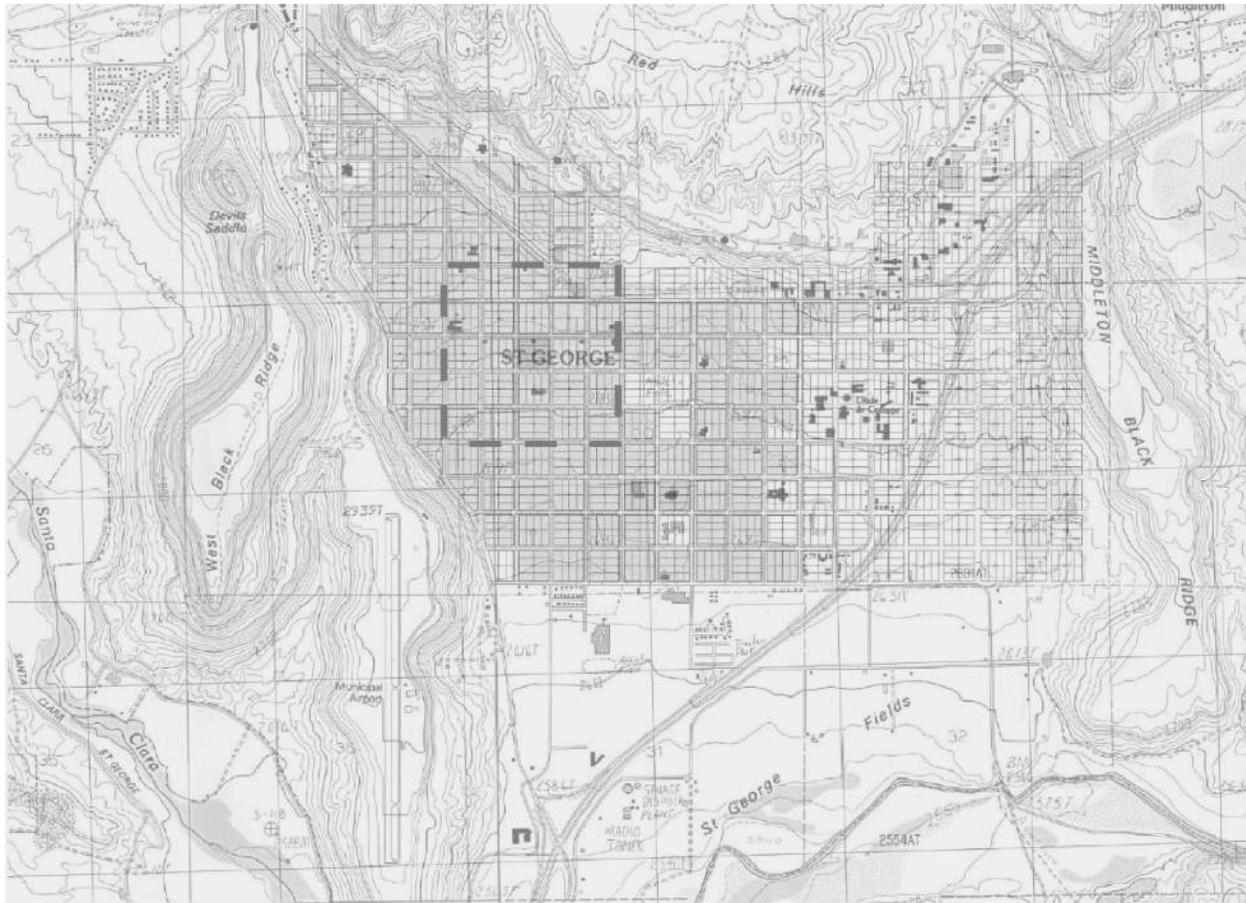
The irrigated farmland (or fields) and the town had a symbiotic relationship; neither could exist without the other. Unlike other American agriculturists, Mormons did not build their houses, barns or granaries on their farmland. Their *Plat of Zion* principles required their homes and outbuildings to be located on town lots. This arrangement facilitated the cooperative communities they desired. The proximity of the homes to each other allowed for regular meetings for government, education, recreation and worship. Close proximity also allowed for cooperative construction of the town plat and farm field irrigation ditch systems. The proximity of the barns, corrals and outbuildings may have also posed challenges related to offensive odors and "bad air".

Initially, although each married head of household male owned separate small parcels of farmland ranging from five to twenty acres, the Virgin Field was farmed cooperatively. But, by the mid-1870's individual farms were fenced and farmed primarily by family members although labor, horse teams and farm equipment was traded cooperatively between neighbors.

When the Mormon Indian missionaries first arrived in Santa Clara, seven years before the original settlement of Saint George, they found irrigated farms where the Indians raised corn, beans, melons and squash. One of these was located the confluence of the Santa Clara and Virgin rivers. While the Virgin Field did not encroach on land previously farmed by the Indians, some land under the Santa Clara seep ditch did. In at least a few instances, Mormons purchased "Indian farms" from their Indian owners.

Following from the *Plat of Zion* principles, Mormon towns were planned for occupancy by a maximum number of people. In practice, after the town plat was full, it became necessary to found a new village or town, surrounded by additional irrigated farmland. Many prominent Mormons were “called” on missions to found new colonies in previously remote portions of *Zion*. Saint George was founded by three hundred families who were *called* to the Cotton Mission in October of 1861. Many of those *called* had more comfortable lives in the communities they came from, yet still took on the tremendous effort of founding a new town.

The additions to the initial plat of Saint George noted by surveyor Israel Ivins in 1868 weren't the last to be made. After the completion of the Temple in 1877, John Menzies Macfarlane, a new surveyor, completed additions to the Saint George plat map (now displayed in the Saint George City offices) that more than doubled the size of the town. This optimistic plat anticipated growth that the newly completed Mormon Temple would bring. The growth eventually did come, but the 1877 plat remained incomplete and unoccupied a full one hundred years after it was drawn.



1877 Plat Superimposed over 1986 USGS Map

There were other practical limits to the physical size (number of blocks and number of lots) that could be accomplished with *Plat of Zion* principles. In the arid West, towns couldn't exist without water sources, and the water had to be delivered in canals that might be many miles long. Surveyors scoured the terrain looking for sites for diversion dams along the few perennial streams like the Virgin River. An acceptable site needed to have arable acreage below it that could be reached by a gently sloping canal. The length of the canal and the difficulty of construction across the intervening land could only cost, in man-hours and materials, some fraction of value that the irrigated farmland would have once the canal was complete. Many possible town sites were located, but few were built.

The early canals were great examples of faith, cooperation and hard work. St. George's Virgin Ditch (Jarvis Ditch) stretched more than three miles and ran through a 900 foot long tunnel before delivering muddy, smelly water to over 300 acres southeast of Saint George. The annual cost (or tax) during the first four years of settlement per irrigated acre in the Virgin Field was \$63, at a time when irrigated land in northern Utah could be purchased for \$40 per acre. Most of this cost was in the man-hours contributed by the settlers, but it was still a trying experience to say the least.

Irrigating Furrows with Mud, Brush and Shovel, Library of Congress, 1940

With the ownership of each town lot came obligations like contributing your share of labor to maintain the common ditches, canals and dams, helping to build ward houses and other public buildings, and working to improve streets and roads.

Then there were social obligations as well, like attending church meetings and dances. Women were members of the Relief Society where they accepted charitable responsibilities. Young people became members of either the Young Men's and Young Ladies' Mutual Improvement Societies. After 1878, the younger children were members of Primary Association which taught basic community values and emphasized singing.

Other charitable obligations included paying a tenth of one's annual increase as tithing. These contributions were mostly paid in kind (chicken's, grapes, etc.) to the Bishop's Storehouse, where they were duly noted with a written receipt from the tithing clerk.





Rio Virgen Cattle Ford, Utah State Historical Society, 1903

As an economic unit the self-reliant platted town and its town lots depended not only upon the adjoining irrigated farmland, but also on other hinterlands where livestock could be grazed and timber could be harvested. Livestock ventures including the Canaan Cooperative Stock Company, organized before 1870 and owned by the Mormon church, claimed *herd grounds* on the upper plateaus of southern Utah and northern Arizona for cattle grazing. This cooperative herd provided beef and dairy products for the labor force working on the St. George Tabernacle and Temple. This successful operation was joined by Orderville United Order cooperative herd after 1875, the Mojave Land and Cattle Company (Anthony W. Ivins) and the Kaibab Cattle Company (John W. Young) before 1887. After 1877, sheep were also introduced.

These *resident* Mormon herds had to compete for grazing land with *transient* herds owned by non-Mormon cattle barons like Preston Nutter and Benjamin F. Saunders (Grand Canyon Cattle Company) who trailed cattle and sheep over vast areas searching for “green” pastures. Initially, the rangeland’s scanty water sources were common resources and were not restricted to individual ranch companies. Nutter and Saunders were able to acquire legal ownership of water sources previously in possession of Mormons by filing, surveying and recording claims with the federal government. In 1896, Nutter bought out Anthony Ivins and other small Mormon cattle operations.

Southern Utah and Arizona Strip herds were driven to the nearest, yet quite distant, railhead at Modena, Utah for shipment to eastern markets. With the change in ranch operations from self-sufficiency to commercialism significant overgrazing occurred after 1890 due to intense competition between individual ranch operators, as well as, between cattle and sheep herds. This abuse of public lands led prominent Mormons to advocate reform. Apostles Anthony Ivins (Democrat) and Reed Smoot (Republican) were instrumental in passing laws which created the Forest Service and designating Zion and Bryce Canyon as National Parks. Utah’s Senator Reed Smoot was the sponsor of 1916 legislation that not only created the National Park Service but also required public land users to pay grazing fees and royalties.

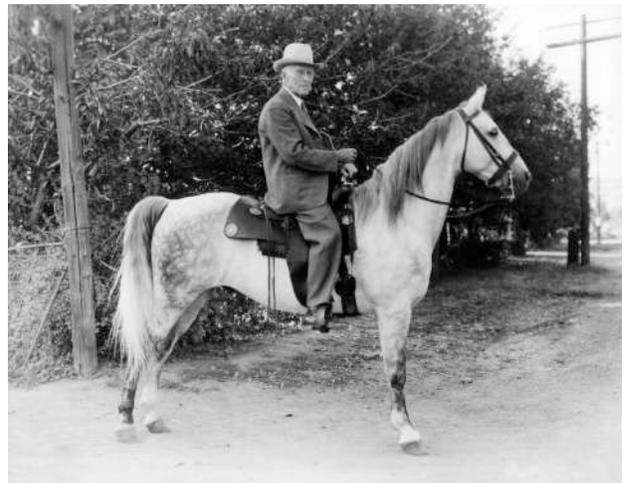


Buffalo Bill Cody's Expedition Camp, Southern Utah University, 1892

John W. Young, one of Brigham Young's sons, and Edwin Woolley, a partner in the successful St. George mercantile firm of Woolley, Lund and Judd concocted a scheme to create a large hunting preserve on the Kaibab Plateau north of the Grand Canyon. While on a church mission to England in about 1890, Young met and invited some English aristocratic sportsmen to visit the West with him. Buffalo Bill Cody who had been touring in England with his Wild West Show was convinced to act as the group's famous guide. The group arrived by train in Flagstaff, Arizona, in 1892, where the expedition began and travelled by wagon to the North Rim of the Grand Canyon. There they met Woolley and the hired wranglers who entertained them in a manner befitting the first tourists to the area with sightseeing, hunting and splendid meals. The flamboyant Cody reported that his *consortium* had \$6 million dollars to purchase between 2 million and 5 million acres of land for a hunting preserve. While no lands were purchased, the hoopla that the expedition received attracted attention. In 1906, Woolley toured much of the same Utah and Arizona landscape with U. S. President Theodore Roosevelt. In 1909, that area was designated Mukuntaweap National Monument, the forerunner of Zion National Park.

Anthony Ivins was one of the local Mormons who served as a wrangler for the 1892 hunting preserve expedition led by Wild Bill Cody, at the time he was the manager of the Kaibab Cattle Company. Anthony, who was quite proficient with a gun, was offered a job in Cody's Wild West Show. He later became known as the *cowboy apostle* and was named to the Cowboy Hall of Fame in 1970.

Anthony W. Ivins, On Horseback, Washington County Historical Society, circa 1920



Historic Energy and Water Conservation Measures

Plat of Zion principles were embedded in pioneer settlement practices. Whether the original square ten acre blocks with twenty half-acre lots (Independence, Missouri, 1833), or the ten acre blocks with eight lots (Great Salt Lake City, Deseret, 1847) or the six and four-tenths acre blocks with eight lots (St. George, Utah, 1862) reason and logic were at work to accomplish objectives we can now recognize as inherently efficient and desirable.

The plat was compact. Travel from neighbor to neighbor was close and convenient along a grid of tree lined streets. Adjacent irrigated farmland was designated and protected for agricultural use. Ecologically sensitive floodplains, wetlands, forested land, and steep hillsides were kept intact outside the town plat. The town lots were large enough to allow meaningful on site food production. Meeting houses, schools and commercial stores were located near the center of the plat facilitating social interaction. The energy expended for travel, movement of goods and services was kept to a minimum as a result of the town's self-reliance principle.

All these features would receive positive commendations in present evaluation systems from groups like the Congress for New Urbanism, the Natural Resources Defense Council, LEED (Leadership in Energy and Environmental Design) for Neighborhood Development and Smart Growth America.



*Sketch of St. George
Showing
Astronomical
Monument Location,
USGS John Wesley
Powell, 1872*



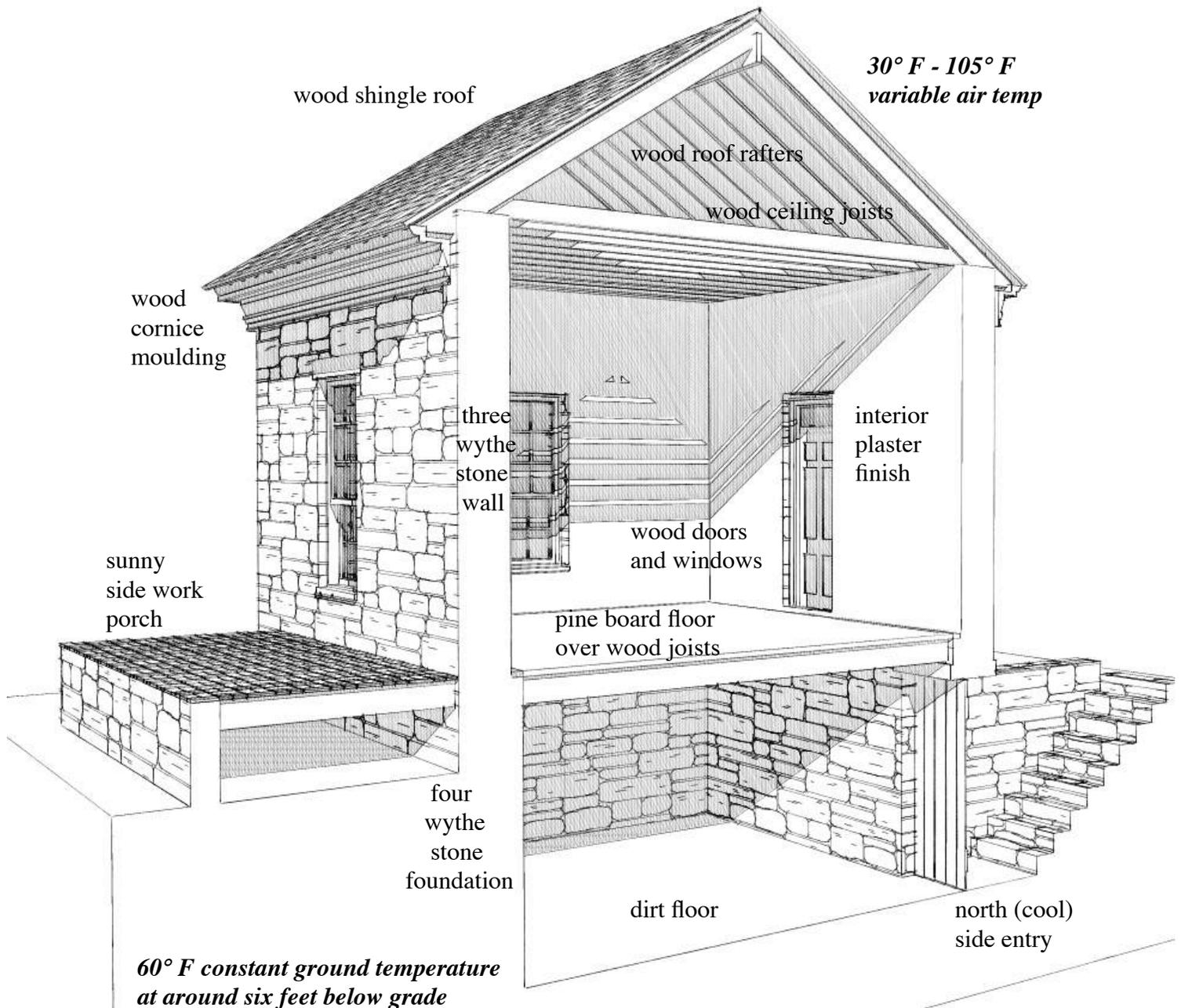
House in Harrisburg, Frederick S. Dellenbuagh, Yale University, 1903

The selection of construction materials made by settlers was pragmatic. Stone was preferred whenever a source of building grade could be procured nearby. Adobe brick was a practical second choice where the distance to stone was too great or where the owners lacked the skills or physical strength to work in stone. Timber for roofs and floors had to be hauled by wagon an increasingly great distance as the nearby forests were depleted.

In the winter of 1873, Elizabeth Wood Kane remarked:

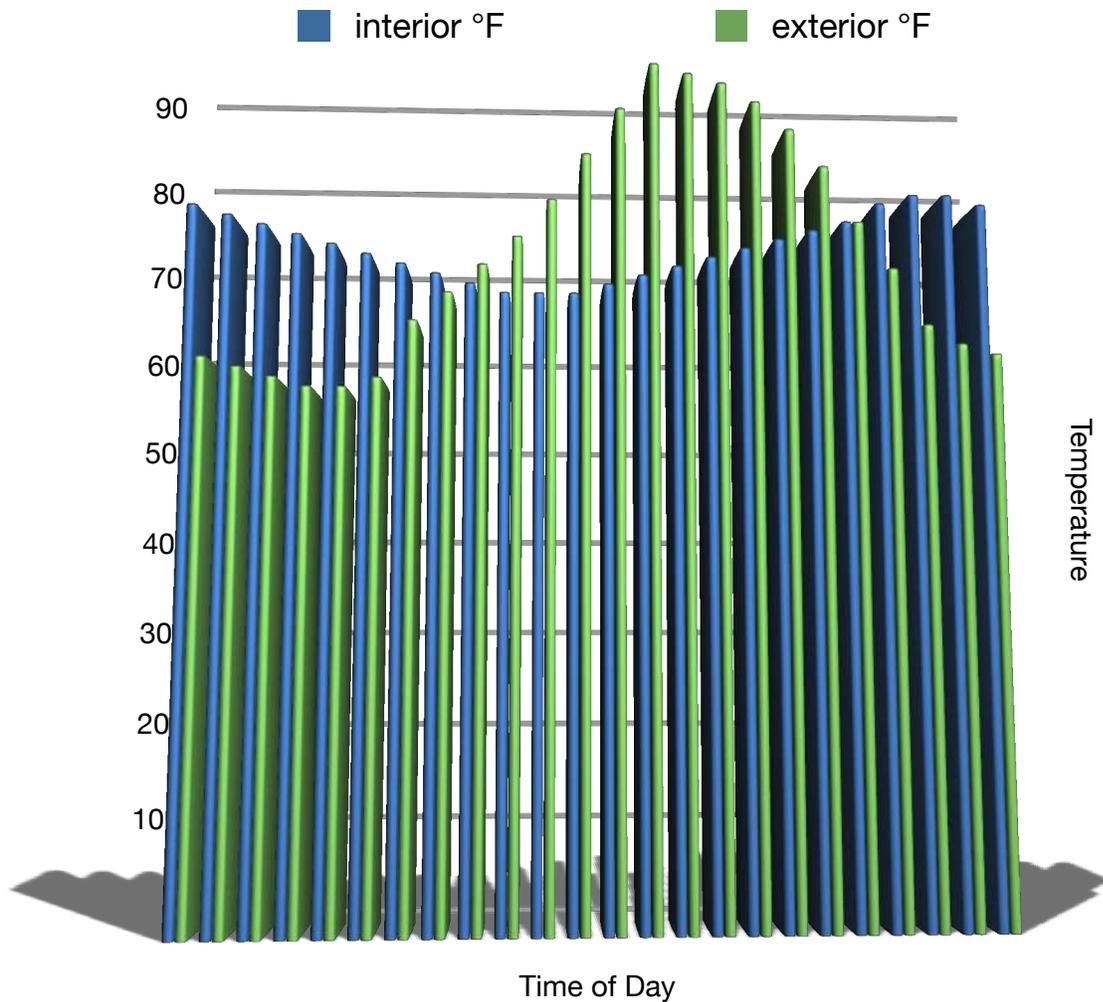
“At one of the Meetings in the Tabernacle addresses were delivered regarding the difficulties of finishing it or beginning the new Temple they wanted to erect. The brethren had given time and labour and the tithing fund had been stretched as far as it would go, but sufficient building material could not be obtained. “Pioche” (a Nevada mining camp) offered higher prices, and “Zion” lacked. An appeal was made from the preachers’ stand to brethren who owned lumber or other building material not to sell it to the Gentiles at their rate, but to put it into Zion’s work at less than half. Elder Johns... when the address was over, he jumped up, and laid his stock at the disposal of the Church!”

The simple, straightforward, even austere design of homes and public buildings was calculated to stretch the available purchased timber and scarce labor as far as it could go. Great care and good craftsmanship were invested to insure longevity of each structure. (A surprising number of these buildings are still in service more than a hundred years later.) The severe *Federal* style sense of design that Mormons brought with them from the upstate New York of the 1830s persisted in Utah well into the 1870s. The rubble left over from the construction of public buildings was gleaned for use in private outbuildings, fences, corrals and rubble stone walls. Nothing was wasted.



It is not widely known that buildings built before 1920, although mostly uninsulated, used ten percent less energy than those built in 1990. The intense interest in energy conservation over the last twenty years has improved today's buildings so that they consume about five percent less energy than average historic buildings.

Saint George's stone homes and granaries were very efficient thermally. Reliance on the average annual temperature of the ground (60° F), which varies only two degrees year round at a depth of six feet, allowed cellars to maintain temperatures where food could be stored with the help of a block of ice. Attics were ventilated and ceilings were high to decrease the summer's heat, and the cool temperatures from the cellar were radiated upward to the main floor. During the short heating season, the home could be kept comfortable with small fireplaces in principle rooms. Correct positioning of architectural elements (porches, cellar stairs) and trees helped.



Thick masonry walls from 12 to 18 inches wide, like those built by early Saint George settlers, have inherent thermal characteristics that keep buildings cooler in the summer and warmer in the winter. The high thermal inertia of these walls reduces the rate at which heat is transferred through the wall. This phenomena created a time lag between the extreme exterior temperature (high or low) and the resulting interior temperature of about eight to nine hours as illustrated in the graph above. Note that temperature swing (difference between high and low) is diminished as well as shifted. These results are for an uninsulated and unshaded 14 inch thick wall.

Operable windows were used for natural ventilation and light. Curtains and drapes were used to significantly modify heat and light gain thru windows. Exterior shutters could be closed during the most severe weather.

The placement of individual rooms within the house plan could be used to take advantage of sun or shade at different times of the day. Kitchens were often located on the cool side of the home where the excess heat they generated would create the least inconvenience. During the hottest months, the little cooking that was done could often be accomplished outdoors. Travel and outings to nearby mountains increased during the hot Saint George summers. Sleeping outdoors during the summer, under a grape arbor, as Lucy Young suggested in 1873, was often an option.



Santa Clara Tithing Granary, Washington County Historical Society, 1998

Mathematical graphs and diagrams are one way to gain an understanding of the energy effectiveness of pioneer architecture. Another way is to experience it yourself.

In 2011, Santa Clara's historic Tithing Granary was carefully rehabilitated. In 2012, it became the home of a restaurant called *Breakfast at Tifiny's* (named after owner Tifiny Rose), which serves breakfast, lunch and gelato. Consequently, you can dine on either the upper or lower level of the restored stone tithing granary. Its cool in the summer, warm in the winter and comfortable the rest of the year.

Covered and uncovered outdoor dining spaces have been added adjacent to the granary as well, allowing dining *al fresco*.

Breakfast at Tifiny's Restaurant, Richard Kohler, 2012

This adaptive reuse was a way to extend the life of this unique historic structure, while adding character and charm to the restaurant. The adage "the greenest building is the one that already exists" applies perfectly in this case.

At the rear of the restaurant, a sizable garden plot is still being farmed by descendants of the original swiss settlers. Some of the produce on the menu is actually grown in Santa Clara. The street front dining area is sheltered by one of the eighty year old sycamore trees that still line Santa Clara's main street.

Shade trees, orchards, gardens and traditional landscaping can reduce the ambient temperatures near historic buildings by 5° F to 10° F . Preserving the landscape settings around historic structures has energy benefits and is sometimes as significant as preserving the structure itself.





Rockville's Tree-Lined Main Street with Stone Irrigation Ditches, Library of Congress, 1940

5. To provide for the protection of shade trees, monuments, and other public property in such towns.

6. To license, tax and regulate the manufacturing, vending or giving away of spirituous, vinous or fermented liquors; and to license and regulate hotel or tavern keepers, eating houses and restaurants, merchants, grocers and peddlers.

7. To license all exhibitions of showmen, concerts, theatricals, circuses or other traveling shows, public dances or amusements, or to suppress any of the foregoing which are indecent.

Tree-lined streets were so important to early Utahns that protecting shade trees was made part of all municipal charters granted by the Territory of Utah as shown in this excerpt from in the 1882 charter of Toquerville.

True, the shade trees made it

bearable to walk a few blocks to visit with a neighbor even during summer's heat, but in *Mormon Country* (1942) author Wallace Stegner thought that it was more than that:

"Perhaps it is even more nonsensical to speculate that the straight, tall verticality of the Mormon trees appealed obscurely to the rigid sense of order of the settlers, and that a marching row of plumed populars was symbolic, somehow, of the planter's walking with God and his solidarity with his neighbors."



Superintendent's Dwelling, Southern Utah Experiment Farm, Utah State University, 1901

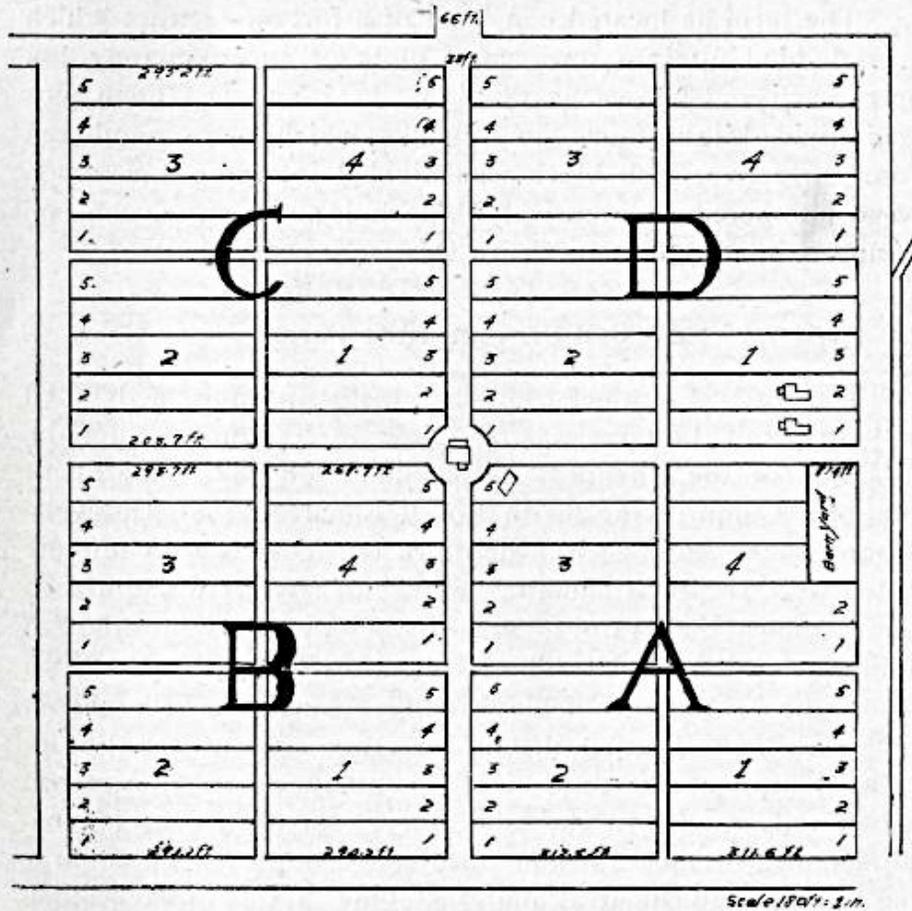
Saint George's gardeners had flood irrigated dormant strawberry patches and lawns in 1873 as observed by Elizabeth Wood Kane and recorded in her journal. Their reasoning was that the water so used would be stored in the soil until it was needed by the plants in the spring. Many scientific investigations of how soil moisture is conserved and how different types of plants could benefit from soil moisture were undertaken by Utah Agricultural College professors and students including a Norwegian immigrant named John A. Widtsoe.

The Agricultural College established the Southern Utah Experiment Farm in Washington Fields outside Saint George in 1899, which was overseen by Thomas Judd of the mercantile firm Woolley, Lund and Judd. The Experiment Farm (later Experimental Station) provided detailed reports in annual Bulletins published by the College that proved invaluable to Dixie's farm families. (It is highly probable that the crop in the right foreground of the photo above is cotton.)

John Andreas Widtsoe became director of the Agriculture Experiment Station in 1900, president of the Agricultural College in 1907, and president of the University of Utah in 1916. In 1921 he became an apostle in the Mormon Church. In 1922, as a member of a federally appointed blue ribbon committee he supervised the reorganization of the Reclamation Service.



Plate 1



sagebrush, (‡) ploughed and mostly leveled, the latter operation requiring an unusual amount of work because of the fact that when water is applied to the soil the land sinks in spots, the depression being from six inches to three feet. After having been thoroughly soaked once and settled, there is no danger of further settling." Since the farm was to be devoted to horticultural purposes, it was planted to grapes, peaches, prunes and other horticultural products and especially to those indigenous to a warm climate.

‡True sage brush (*Artemesia tridentata*) does not occur in this locality. Two-thirds or more of the original "Brush" in this section of Washington field was Giant Salt Brush (*Atriplex canescens*). Small amounts of Rabbit Brush (*Bigelovia sp.*), Greasewood (*Sarcobatus Baileyii*), Sea Blite (*Suaeda Moquinii*), and scattering specimens of *Atriplex lentiformis*, *Artemesia filifolia* and *Hymenocles fasciculata* occurred throughout this area.

Excerpt from Utah State Agricultural College Bulletin, John A. Widtsoe, 1913
Showing the Plan of the 40 acre Southern Utah Experiment Farm

One of Widtsoe's most influential publications was *Principles of Irrigation Practice* (1914). In it he explains in detail the factors that effect the rate at which moisture evaporates from the soil. The principles he discovered remain valid today.



Rockville Orchard with Cultivated Row Crops, Richard Kohler, 2010

“The higher the temperature, the more rapid is the conversion into water vapor.”

Widtsoe recommends providing shade in order to reduce water evaporated (transpired) by 25%. Shade tree lined streets, shade trees near buildings and homes and vines covering walls were strategies employed by the owners of town lots to accomplish that end. Widtsoe also notes the effect of wind on evaporation. The pioneers planted windbreaks of trees, especially Lombardy populars, on fence lines to reduce wind-caused evaporation from crops. Widtsoe also recognized the benefits of lawns, flower gardens and ground covers in reducing temperatures around homes.

“The wetter the soil is at the surface, the more rapidly is water evaporated from it.”

This is the principle that guided gardeners to flood irrigate dormant cropland. Pioneers knew water would seep deep into the soil. To conserve this soil moisture the surface was cultivated (turned over with a hoe or raked) thus interrupting the capillary action which conveyed soil moisture to the surface. Slow, deep watering for longer periods spaced weeks apart was preferred. Today's twenty minute shallow watering cycles three days each week violate this principle.



Santa Clara Commercial Orchard with Natural Turf Grass, Richard Kohler, 2010

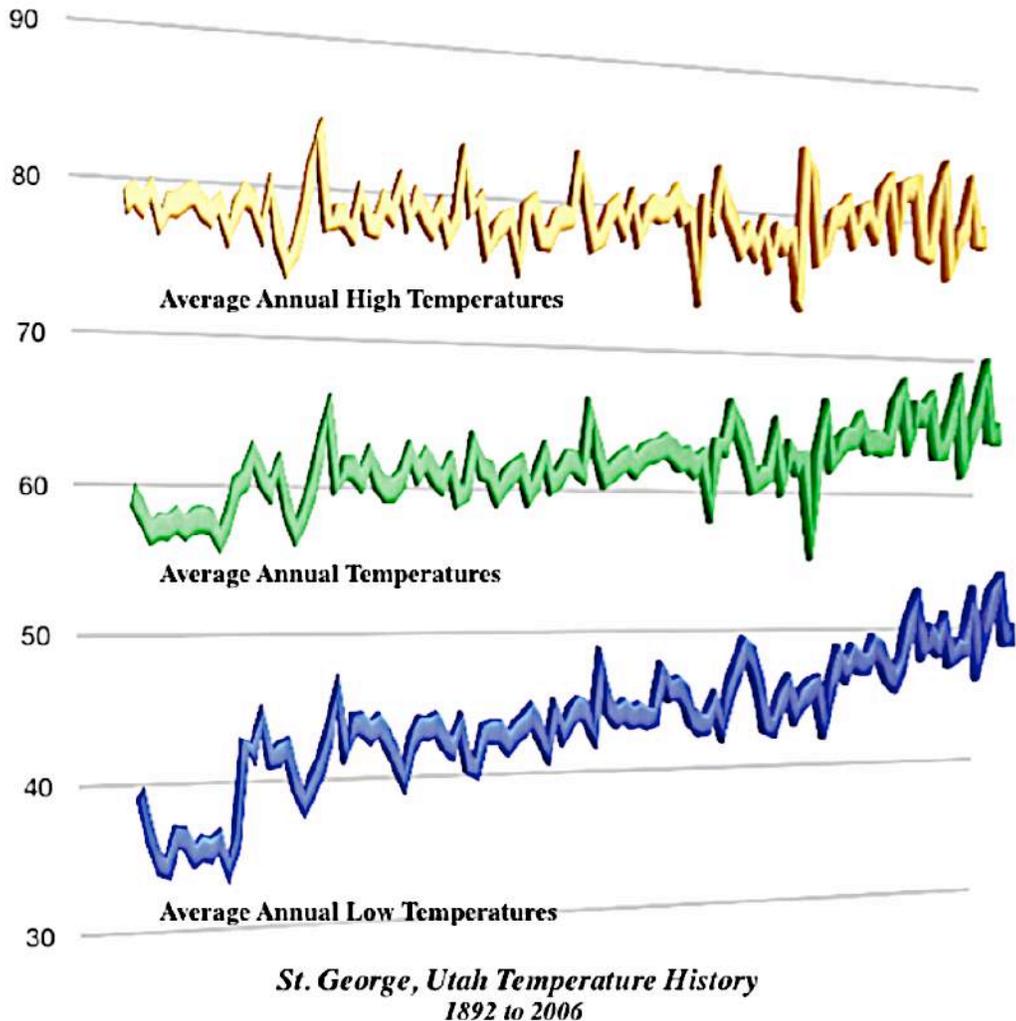
“In Utah work, it was found that, by cultivation, an infertile clay soil lost only 63 percent of the quantity lost by non-cultivated soil.”

Widtsoe’s cultivation only needed to be two or three inches deep, sufficient to break the capillary action connection to the deeper soil. The Experiment Station also evaluated organic mulches two or three inches thick which covered the bare soil and found them to be an acceptable alternative to labor intensive cultivation. Inorganic cover of gravel, cobble rock or sand have the benefit of interrupting capillary action, but their heat retention characteristics tend to increase temperatures at the soil surface reducing their overall water conservation effect.

Widtsoe also cautioned against over-irrigation:

“In arid districts the drainage water, resulting from over-irrigation, frequently accumulates in some lower lying closed basin. At this point the ground water rises higher and higher as excessive irrigation is practiced on higher land, until the water-table is so near the surface that water may be lifted from it to the surface by capillary attraction. When this condition has been reached, continuous evaporation from the soil surface occurs. The soluble matters contained by the water which is left behind increase, first, the concentration of ground water, and secondly, as evaporation goes on, fill the upper layers with soluble salts, often with the formation of alkali crust. Over-irrigation thus becomes one of the chief sources of the dreaded alkali.”

In recent years planners, architects, landscape architects and engineers have become aware of that today's normal urban development patterns tend to increase the ambient air temperature. This phenomenon is termed the *Urban Heat Island Effect*.



NOAA data from
Desert Research Institute, Reno, NV

This temperature history is at least as valuable to the student of history as other types of historical documents. If you only saw the variations in *average* annual temperature which rise slightly over 5° F over this 106 year period, you might reach the conclusion that global warming could be a cause of this increase. But when you examine the nearly imperceptible increase in the average annual *high* temperatures, that tentative conclusion gets discarded. By comparison, we quickly notice that the “warming” trend is most pronounced in the average annual *low* temperatures, which have increased by at least 6° F since the late 1970's.

So, not too much support for global warming, but definite evidence for the *urban heat island effect* where the increased areas of concrete and asphalt caused by urbanization along with the heat exhausted by machines and vehicles is retained by both the manmade and the natural environment and nighttime cooling is diminished.

There is evidence for another possible phenomenon in this unique temperature history. Average annual low temperatures during the first decade in which records were kept are noticeably lower (maybe 5° F lower) than for the extended period that follows. What could explain this?



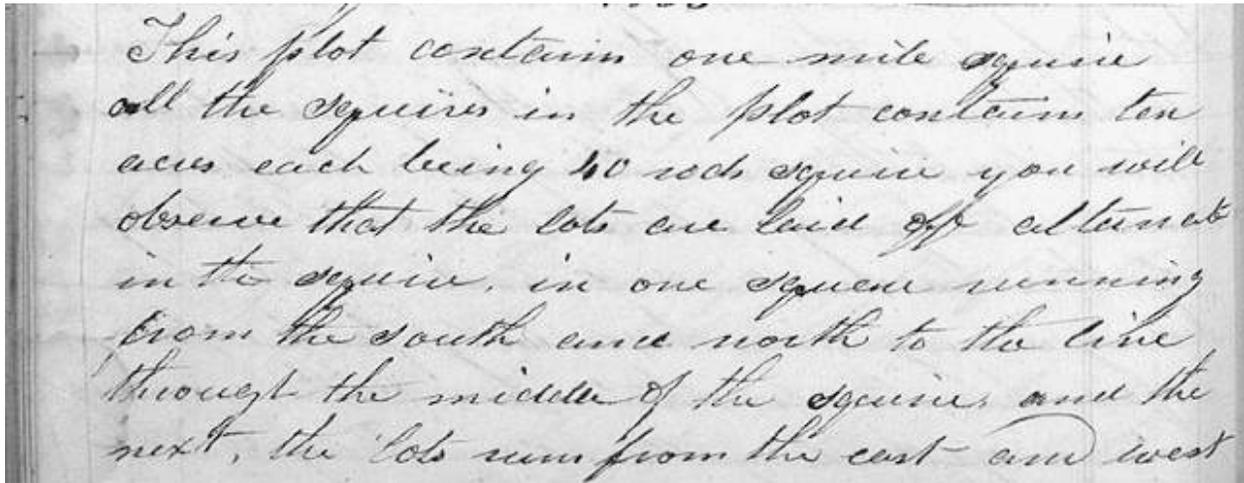
St. George from the Top of the Temple, Dixie State University, 1876

This historic photograph shows the stark contrast between the irrigated town plat of Saint George and the arid desert at its edge. Journals kept by Saint George residents from the settlement period until the turn of the twentieth century frequently comment about the cooling effects of the Mormon village landscape. Science supports the assertion that the evapotranspiration from gardens, crops and trees could modify the ambient air temperature nearby especially during the hot summer months.

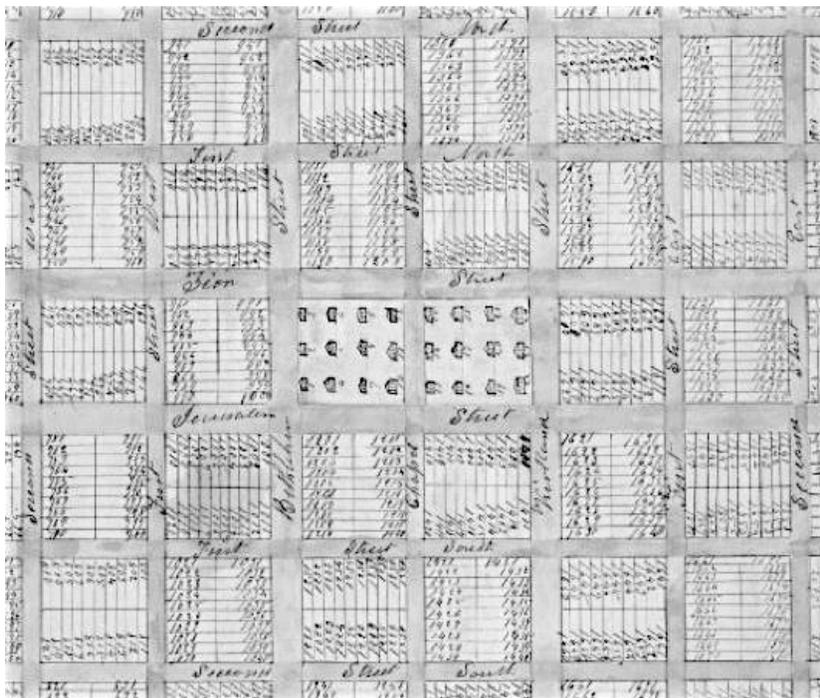
Our working hypothesis then, it that the intensive planting and irrigating of town lots by the early residents of Saint George lowered ambient air temperatures significantly until the first few years of the twentieth century. After that time, we should see a decreasing dependence of St. George households on their town lot gardens, vineyards and orchards, which is in keeping with a transition away from self-reliance and toward increased commercialism noted by many historians.

If we are correct, the agricultural Mormon village landscape, in fact enjoyed lower temperatures during the hottest portions of the year. Perhaps life on these *little pieces of Zion* was more tolerable, even more comfortable, then we might have imagined.

Roots of the Mormon Concept of Zion



“This plot contains one mile square, all the squares in the plot contain ten acres each being forty rods square. You will observe that the lots are laid off alternate in the squares, in one square running from the south and north to the line through the middle of the squares and the next, the lots run from the east and west...”



Central Portion of the Plat of Zion, Joseph Smith Papers, 1833

In June of 1833, Joseph Smith sent a plat of the *City of Zion* that was to be located near Independence, to Latter-day Saints in Missouri. Each 1/2 acre lot was to be 4 perches (66 feet) by 20 perches (330 feet). Streets were to be 8 perches (132 feet) wide. Lots were to contain only one house.

This drawing and Joseph Smith's few handwritten paragraphs describing it, established the *Plat of Zion* principles that

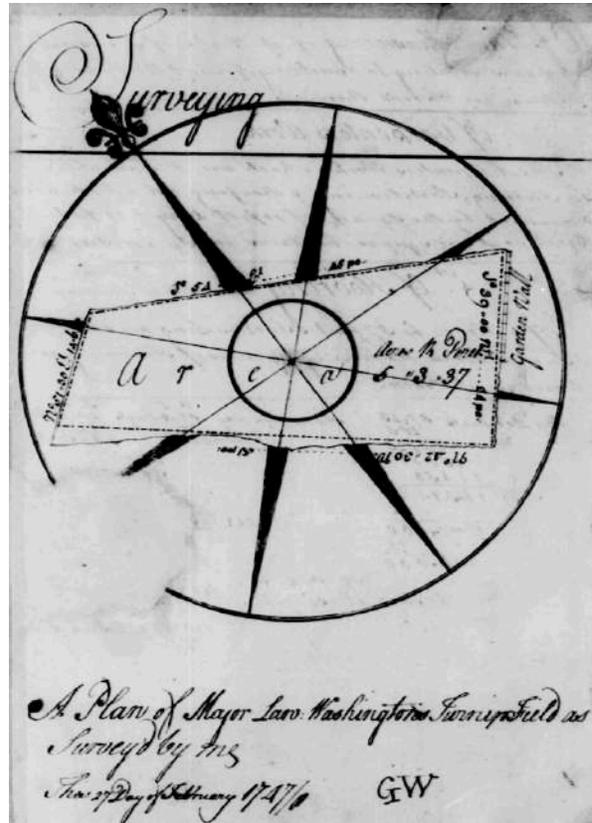
would be used by Mormon colonists for the next seventy-five years. It was a practical and pragmatic document containing all the necessary dimensions and instructions needed to layout the city and commence building it. The specific dimensions and north-south orientation were in keeping with the land survey system adopted by the United States Congress in 1785.

*Survey of Lawrence Washington's Turnip Field
by George Washington, Library of Congress,
1747*

Our first president, George Washington was a self-taught surveyor. In 1747, at the age of 17, Washington was examined at the College of William and Mary and subsequently appointed an official surveyor in Culpeper County, Virginia.

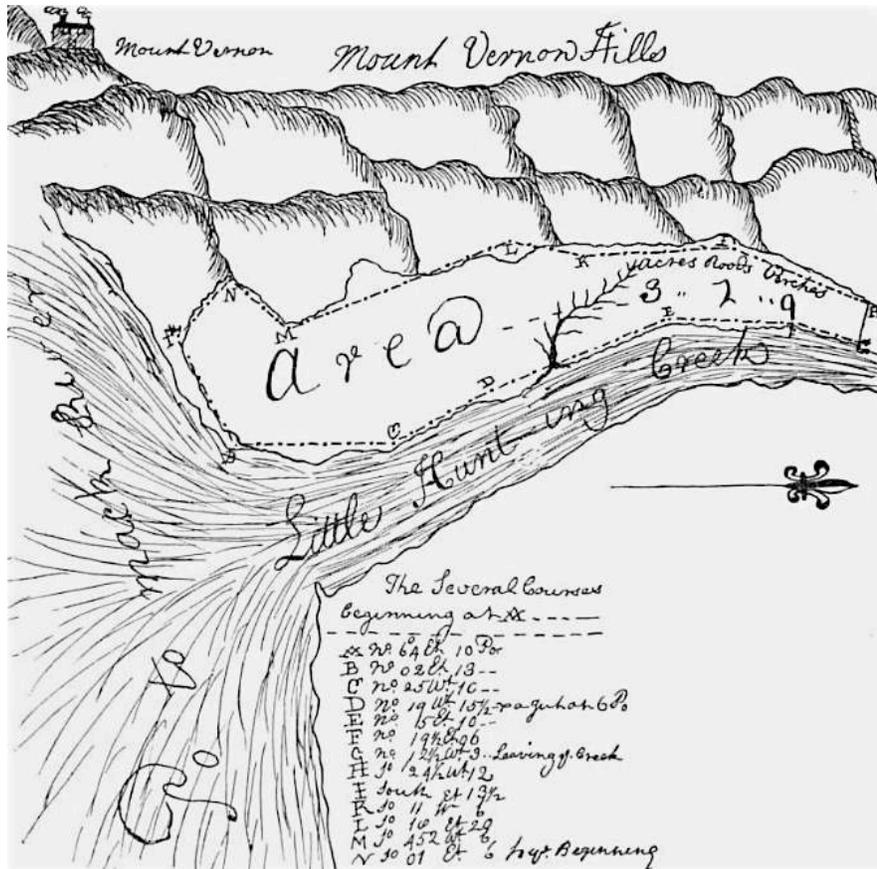
November 2^d 1749 Then Surveyd for Robert Denton a certain Tract of ungranted Land Situate in Augusta County and on the Lost River of Cacapehon and Bounded as followeth Beginning at two white Pines and a Pitch and running thence S° 62 E' Three Hundred Poles to a Chesnut, Pine and Spanish Oak on a Mountain Side thence N° 28° E' Two hundred & Six poles to two white Oakes and a Hick. thence leaving the Mountain N° 62 W' Three hun^d poles to two Pines and a white Oak on a steep Hill thence to the Beginning

E Plat drawn
ROBERT DENTON, Marker



*Survey Notes and
Illustrated Plat Map from
Journal of My Journey of
the Mountains by George
Washington, 1747-1748,
copied by J. M. Toner,
M. D., 1892*

Surveying tracts of land in Washington's time required the identification of a point of beginning, in this example trees, drawing a plat with a north arrow and placing one or more markers on the ground for future reference. No system was established to locate these survey points with respect to political boundaries or base reference coordinates.



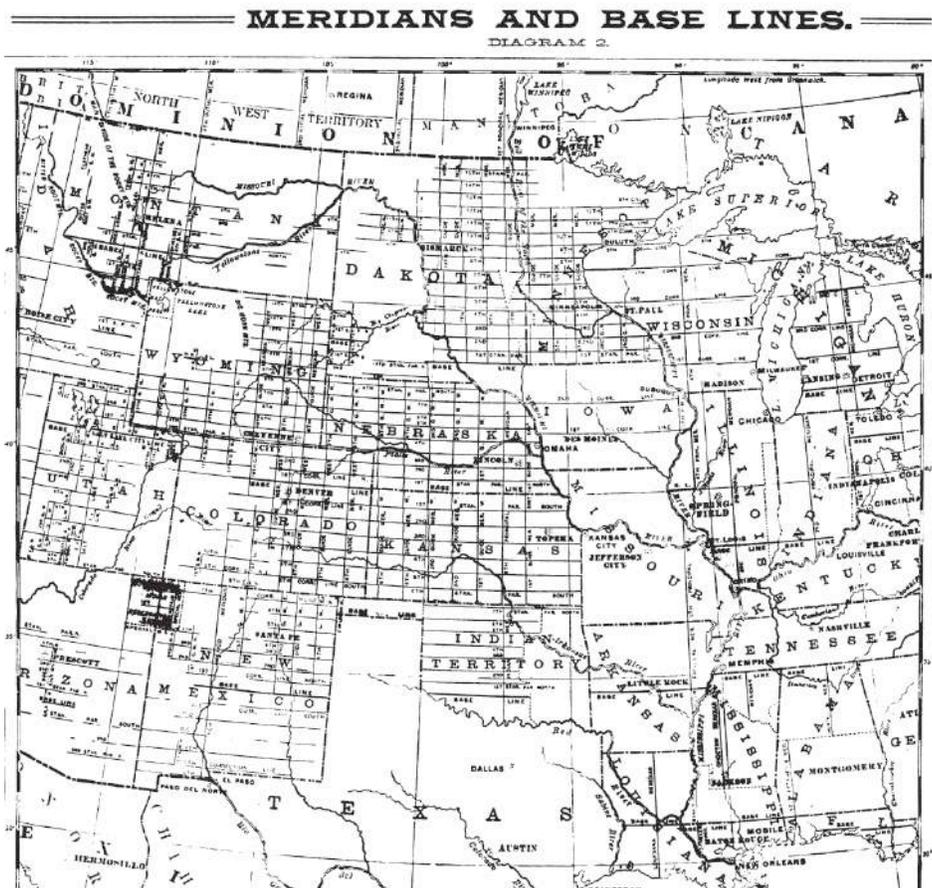
The plats of the townships respectively, shall be marked by subdivisions into lots of one mile square, or 640 acres, in the same direction as the external lines, and numbered from 1 to 36. Always beginning the succeeding range of the lots with the number next to that which the preceding one con-

Excerpts from the “An Ordinance for Ascertaining the Mode of Disposing of Land in the Western Territory”, Library of Congress, 1785

Thomas Jefferson, a trained surveyor himself, chaired the committee of the Continental Congress which proposed an expeditious method for selling lands in “*that territory ceded by the individual states to the United States, which has been purchased of the Indian inhabitants*” in 1784. It had three remarkable attributes. Slavery was to be prohibited. The territory’s subsequent government(s) had to be republican (representative democracy) in form. The land was to be surveyed prior to sale at \$1 per acre and the survey would divide the land into townships six miles square containing 36 sections. When the Land Ordinance was passed in 1785, the provision prohibiting slavery was omitted and true north orientation of the section lines was specified. Standard surveying units included a chain at 66 feet and a rod (or perch) at sixteen and half feet.

This ordinance established a public land survey system which imposed its order on the American landscape relentlessly thereafter.

*From An Illustrated
Historical Atlas Map,
Holt County Missouri,
1877*



Pragmatically, Joseph Smith's 1833 *City of Zion* plat utilized the standard surveying dimensions (one mile square, ten acres blocks, 40 rods square) embedded in the 1785 Land Ordinance, but the need to establish a *City of Zion* came from unique Mormon religious beliefs. A brief summary of the beliefs of the Church of Jesus Christ of Latter-day Saints was written by the prophet Joseph Smith and first published in 1842, enumerating thirteen *Articles of Faith*.

10. We believe in the literal gathering of Israel and in the restoration of the Ten Tribes; That Zion will be built upon this [the American] continent; That Christ will reign personally upon the earth; and, That the earth will be renewed and receive its paradisiacal glory.

The Tenth Article of Faith, from Articles of Faith, James E. Talmage, 1899

Talmage, an English convert to Mormonism, wrote a series of lectures on the thirteen *Articles of Faith* that was printed more than a decade before he became an apostle in the LDS Church. The table of contents from his book outlines the theology surrounding the beliefs that compelled Mormon town building and their colonization of the West.

“LECTURE XVII. ARTICLE 10.

The Dispersion of Israel

Israel. -- Brief history of the nation. -- Dispersion foretold. -- Biblical prophecies. -- Book of Mormon predictions. -- Fulfillment of these dire prophecies. -- Fate of the kingdom of Israel. -- Scattering of Judah. -- The lost tribes.

LECTURE XVIII. ARTICLE 10.

The Gathering of Israel

Predictions of the gathering. -- Prophecies in Bible and Book of Mormon. -- Modern revelation concerning the gathering. -- Extent and purpose of the gathering. -- Israel a chosen people. -- All nations blessed through Israel. -- Restoration of the Ten Tribes. -- Zion to be first established. -- Gathering now in progress.”

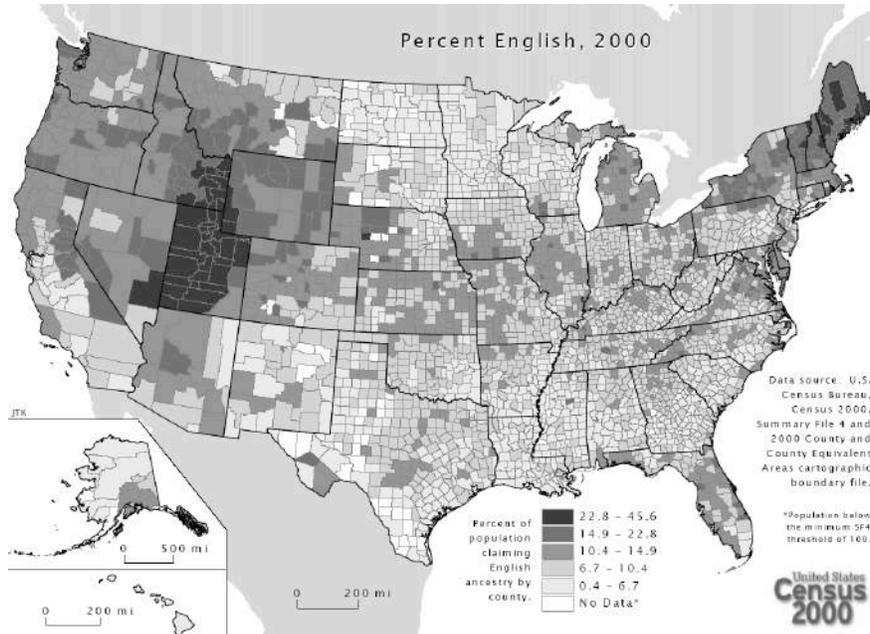
The need for the *City of Zion* plat came from these core beliefs of Mormonism. Before the Second Coming of Christ, “Zion would be built “ (and they had the blueprints). Of course it would be necessary to send out missionaries to gather Israel and restore the Lost Ten Tribes, but once baptized into the Mormon faith, they would occupy houses on town lots in Zion.

In September of 1830, only five months after the Church of Jesus Christ of Latter-day Saints was founded, a missionary expedition was sent to Indian Territory, the eastern boundary of which was twelve miles west of Independence, Missouri. (In the Book of Mormon, the ancestors of the Native Americans are called Lamanites.)

“you shall go unto the Lamanites, and preach my gospel unto them, and inasmuch as they receive thy teachings thou shalt cause my church to be established among them... I say unto you and it is not revealed, and no man knoweth where the city Zion shall be built,... I say unto you that it shall be on the borders by the Lamanites.” Doctrine and Covenants 28:8,9

In July of 1831, specific lands in Missouri were designated the *City of Zion*, a site “consecrated for the gathering of the Saints”. Doctrine and Covenants 57:1,2

One of the most successful efforts undertaken by Mormon missionaries was among working class in the recently industrialized cities in the England. LDS membership counts in 1851 showed 33,000 in the England, Wales, Scotland and Ireland and only 12,000 in Utah.



Map Showing the Percentage of English Ancestry in the U. S. by County, 2000

More than 32,000 Mormon converts left Great Britain for Utah between 1847 and 1869. The contrasting views of two nineteenth century observers of the working class, political reformer Friedrich Engels and novelist Charles Dickens, are very informative. Engels published his book *The Condition of the Working-Class in England* describing the intolerable abuse and shortened lives suffered by working people in 1844.

“Very few working-people write readily; and writing orthographically is beyond the powers even of many ‘educated’ persons... several other sects, do not teach writing, ‘because it is too worldly an employment for Sunday’.”

Dickens visited the *Amazon* (an overcrowded emigrant ship) before it set sail from London on June 4, 1863, to see what the Mormon emigrants were like, he noted:

"I..had come aboard this Emigrant Ship to see what eight hundred Latter-day Saints were like.... Nobody is in an ill-temper, nobody is the worse for drink, nobody swears an oath or uses a coarse word, nobody appears depressed, nobody is weeping, and down upon the deck in every corner where it is possible to find a few square feet to kneel, crouch or lie in, people, in every suitable attitude for writing, are writing letters. Now, I have seen emigrants ships before this day in June. And these people are strikingly different from all other people in like circumstances whom I have ever seen, and I wonder aloud, ‘What would a stranger suppose these emigrants to be!’..I should have said they were in their degree, the pick and flower of England"

“Great Salt Lake City, October 14, 1849.

“To Elder Orson Pratt: Dear Brother—You will learn from our General Epistle, the principal events occurring with us, but we have thought proper to write you, more particularly in relation to some matters of general interest, in an especial manner, the Perpetual Emigration Fund for the poor Saints. This Fund, we wish all to understand, is *perpetual*, and in order to be kept good, will need constant accessions. To further this end, we expect all who are benefited by its operations, will be willing to reimburse that amount as soon as they are able, facilities for which will, very soon after their arrival here, present themselves in the shape of public works. Donations will also continue to be taken from all parts of the world, and expended for the gathering of the poor Saints. This is no Joint Stock Company arrangement, but free donations. Your office in Liverpool is the place of deposit for all funds received either for this or the tithing funds, for all Europe, and you will not pay out only upon our order, and to such persons as we shall direct.

“BRIGHAM YOUNG.”

“an outfit” which consisted of a wagon, oxen and a *milch* cow. Emigrants were cautioned to see the cow milked and taste the milk before buying her. Food and supplies for the journey across the plains were also purchased. The expenditures made for ship passage, steamboat fare and outfitting were carefully recorded by supervising officials at each stage of the journey. They assembled themselves into companies, some of which were based upon the principle of mutual assistance, to mitigate the breakdowns and accidents they were sure to experience. Departures from Council Bluffs, Iowa began in the late May or early June depending upon when the weather permitted the mud to dry out sufficiently.

“Again, with regard to labour,—don't imagine unto yourselves that you are going to get rich, at once, by it. As for the poor, there are none here, neither are there any who may be called rich, but all obtain the essential comforts of life.

and friends, some were skilled in trades in short supply, but all found meaningful work. They were allowed to live in their wagons until they built or purchased homes. Brigham's speeches cautioned against seeking riches in the mines, encouraged them to overlook others' faults, and told them they were “*in a land of plenty*” where they could “*realize a comfortable subsistence*”.

The *gathering* of the poor to Zion made possible with the Perpetual Emigration Fund ended in 1887 when the Edmund-Tucker Act of the United States Congress disincorporated the Church of Jesus Christ of Latter-day Saints. All the funds of the Mormon Church, in excess of \$50,000, were confiscated by the federal government at that time. In 1890, the Supreme Court of the United States upheld the seizure of LDS Church property.

Even today, the theme of *gathering* to Zion remains a part of Mormon theology as reflected by this verse from hymn #34, *O Ye Mountains High*, in the LDS Church hymnbook.

“O Zion! dear Zion! land of the free.
Now my own mountain home, unto thee I have come;
All my fond hopes are centered in thee.”

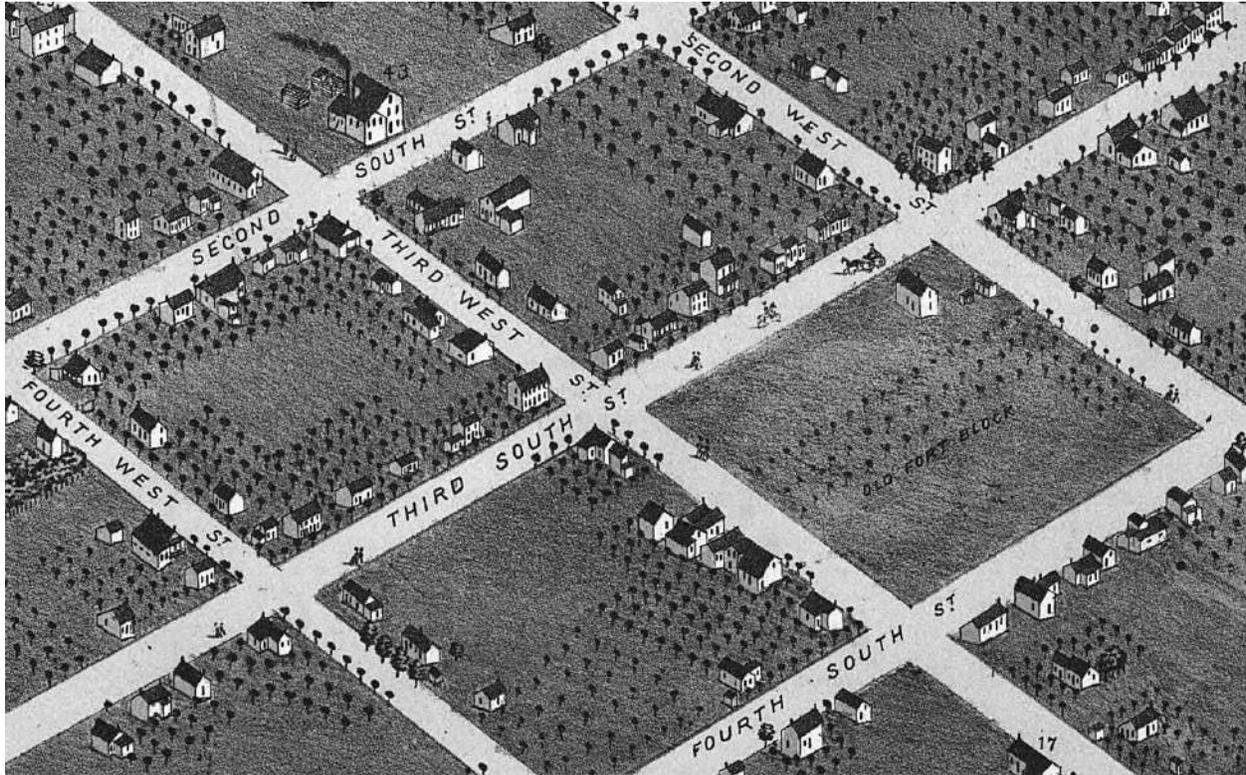
Excerpts from Liverpool to the Great Salt Lake Valley, Illustrated Frederick Piercy, 1855

In 1849, a Perpetual Emigration Fund was created to assist with the travel expenses of poor Saints who wished to be *gathered* to Zion. Notably, these funds were deposited in a Liverpool bank.

The preferred route was from Liverpool to New Orleans. Then up the Mississippi and Missouri rivers by steamboat to St. Joseph, Missouri or Kaneshville, Iowa, where it was necessary to procure

The emigrant trains typically arrived in Great Salt Lake Valley in September to lots of fanfare, parades, band music and a welcoming speech by Brigham Young. Some were met by family

A peculiar and characteristically Mormon street naming system was annotated on the 1833 *Plat of Zion*. Except for the streets bordering on the central temple blocks (named respectively Zion, Jerusalem, Bethel, Chapel and Kirtland), they were mundanely called First Street North, Second Street North, First Street West, Second Street West,... which became the pattern in nearly all Mormon cities and towns.



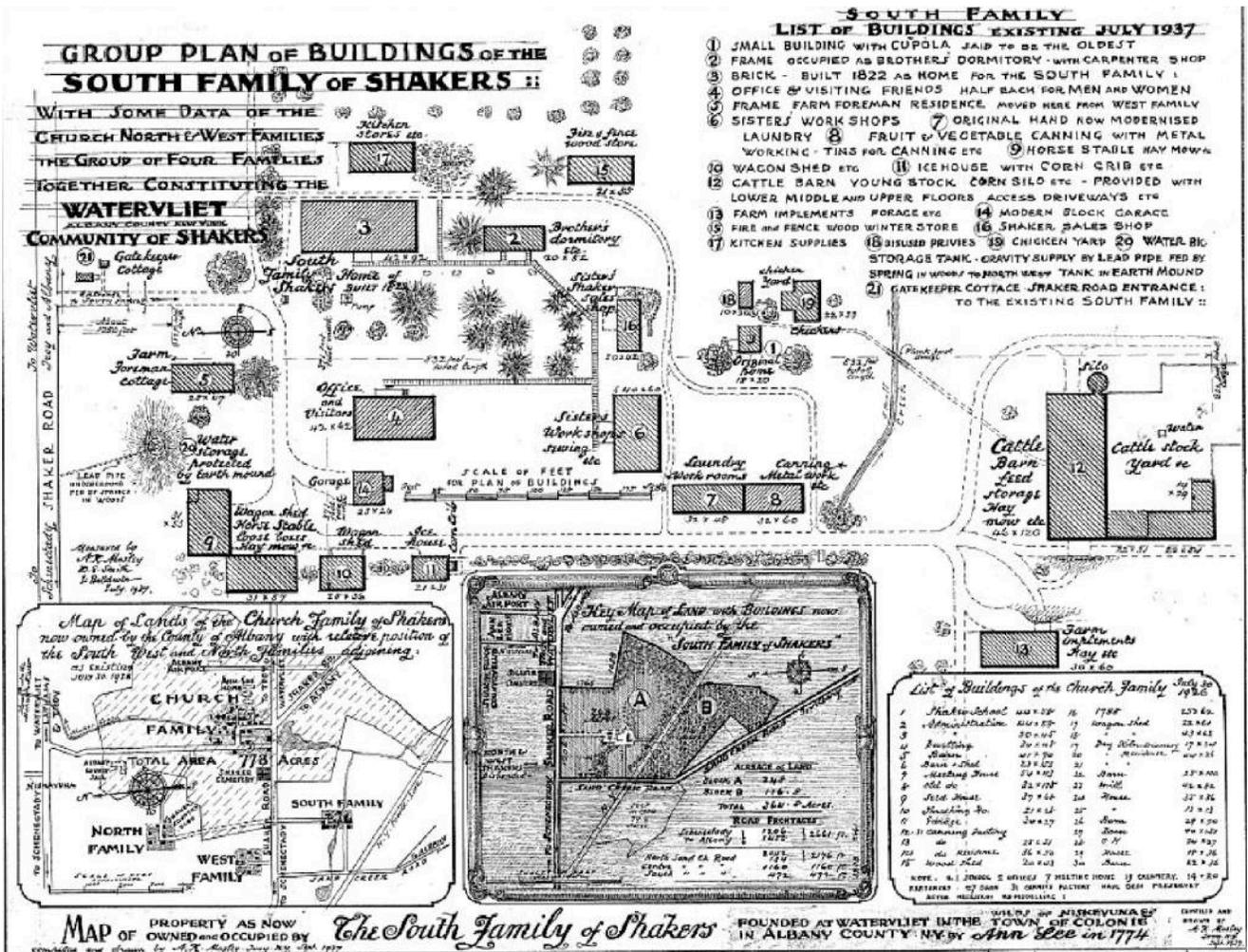
Detail, Birdseye View Salt Lake City with Street Names, Augustus Koch, 1870

Joseph Smith's *Plat of Zion* accommodated from fifteen to twenty thousand residents, which he along with Thomas Jefferson thought should be the maximum population in a city. Jefferson, who hated large cities and the mobs they enslaved through economic dependence, advocated a nation of small farmers, with each owning enough land to provide economic self-sufficiency and personal independence.

To achieve the agrarian republic envisioned by Jefferson's supporters, the United States purchased Louisiana from France, then won Oregon from the British, and took California and Southwest from Mexico. *Manifest Destiny* expansion while offering an opportunity for small farms, ushered in an age of corporate mercantilism creating some of the wealthiest industrialists ever, by transferring land through the Homestead Act (1862) to the builders of railroads.

The cities and towns colonized by the Mormons in the American West may be the closest our nation has come to achieving Jefferson's dreams of economic self-sufficiency and personal independence.

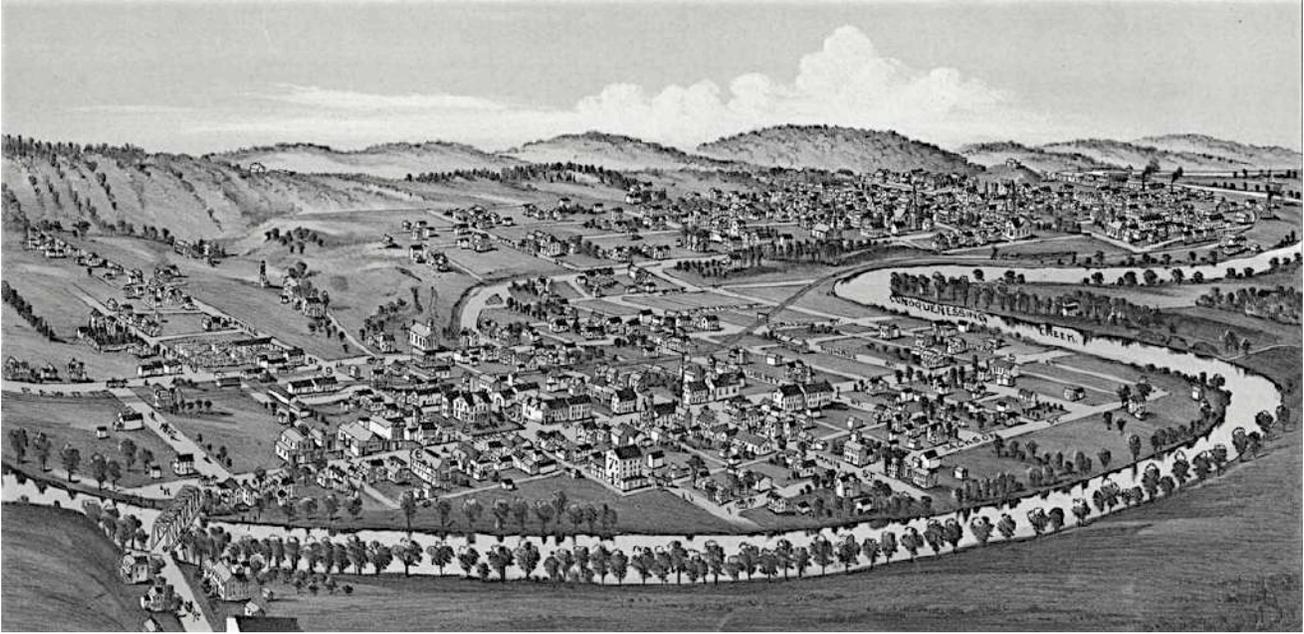
The *Plat of Zion* is one of the utopian ideas (or movements) that emerged in America before the Civil war. Other utopian societies included the Shakers, the Harmony Society settlements, the Amana colonies, socialist communities based on the ideas of Charles Fourier or Robert Owen, and the “Bible Communism” hamlet of Oneida, New York. Each of these movements devised proto-typical building types and arrangements to fit their unique beliefs.



Shaker Village at Watervliet, New York, Historic American Building Survey, 1939

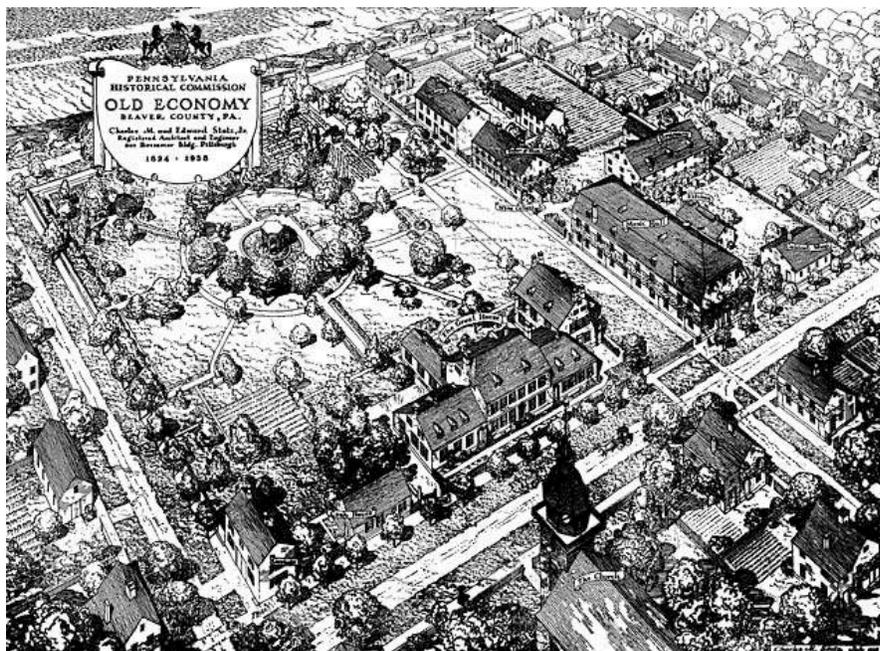
The United Society of Believers in Christ’s Second Appearing (Shakers) built more than twenty settlements the attracted more than 20,000 converts over a century after Ann Lee founded Watervliet near Albany, New York in 1774. Their enthusiastic worship including singing, dancing, shaking, shouting, speaking in tongues and prophesying. Shakers lived together as brothers and sisters in large homes, divided into groups or “families” where each with separate quarters, entries and staircases for men and women.

Strict believers in celibacy, they acquired members through conversion and adoption of orphans. State imposed limitations on the adoption of orphans by religious institutions has contributed to ever dwindling membership in Shaker communities. One of the last, Sabbathday Lake, Maine had three members in 2012.



Harmony, Pennsylvania, T. W. Fowler and James B. Moyer, 1901

The Harmony Society founded in Germany moved to Pennsylvania in 1805 and established the successful community of Harmony where all goods were owned in common and celibacy was required. New Harmony, Indiana, settled in 1814 attracted industrialist Robert Owen and became the site of his failed utopian attempt to establish a collective farming community in 1824, when Harmonites founded their last community named Economy in Pennsylvania.



Old Economy Village, Pennsylvania, 1938



Amana, Iowa, Amana Society, 1936

The Inspirationists or Ebenezer Society emigrated from Germany to Buffalo, New York in 1843 in search of religious freedom. By 1855 the growing society relocated to Iowa attracted by 26,000 acres of rich farm land where they could support their communal way of life. In their seven villages, or Amana colonies, property and resources were shared, fifty communal kitchens provided meals and no one received a wage. At least, not until 1932 during the Great Depression when adherents faced with watching their children leave to achieve individual goals set aside their communal way of life and established a profit sharing corporation to manage the farmland.

Private enterprise was encouraged including the manufacture of home appliances. The first “beverage coolers” were built in the Amana woolen mill in 1934. Amana refrigerators, freezers and air conditioners were followed by the famous Amana Radar Range (microwave oven) in 1967.



Amana, Iowa, Amana Society, 1936

Oneida Community Members at their Summer House, circa 1866

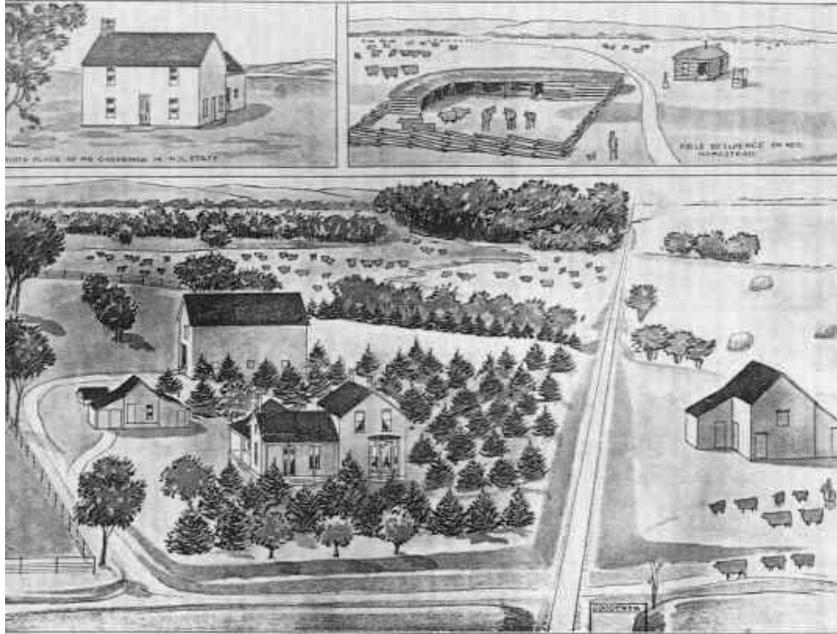
John Humphrey Noyes, whose father was a congressman and who was a cousin of President Rutherford B. Hayes, studied divinity at Dartmouth and Yale before coming to believe in 1847, that Christ's Second Coming was near and that the Kingdom of Heaven could be created on earth.

In his essay "Bible Communism," Noyes outlines the most important aspects of his religious philosophy which included the belief based on scripture that there would be no marriage in Heaven. Noyes consequently asserted that on earth all men were married to all women, and that men and women in the community should be sexually intimate with a variety of partners.

Surprisingly, the New York Oneida Perfectionists grew from just a handful of adherents in 1847 to over 300 members in 1879, when Noyes fled to Canada fleeing charges for statutory rape.



Oneida Mansion House, 1923



Brook Farm Association for Industry and Education, circa 1850

The utopian community of Brook Farm, Massachusetts was formed as a joint stock company in 1841 by George Ripley and his wife Sophia. Shares were sold for \$500 and an existing dairy farm outside Boston was purchased.

The experimental community was based upon the ideas of French socialist Charles Fourier. Ripley's connections with the *Transcendentalist Club* and

the *New York Tribune* attracted a few notable members including author Nathaniel Hawthorne, transcendentalist Ralph Waldo Emerson and poet Henry David Thoreau. Brook Farmers committed themselves to constructing an ambitious communal building known as a Phalanstery based on Fourier's principles and design which was never built. Physical labor was perceived as a condition of mental health and well-being, necessary to achieve the community's goal of "industry without drudgery".

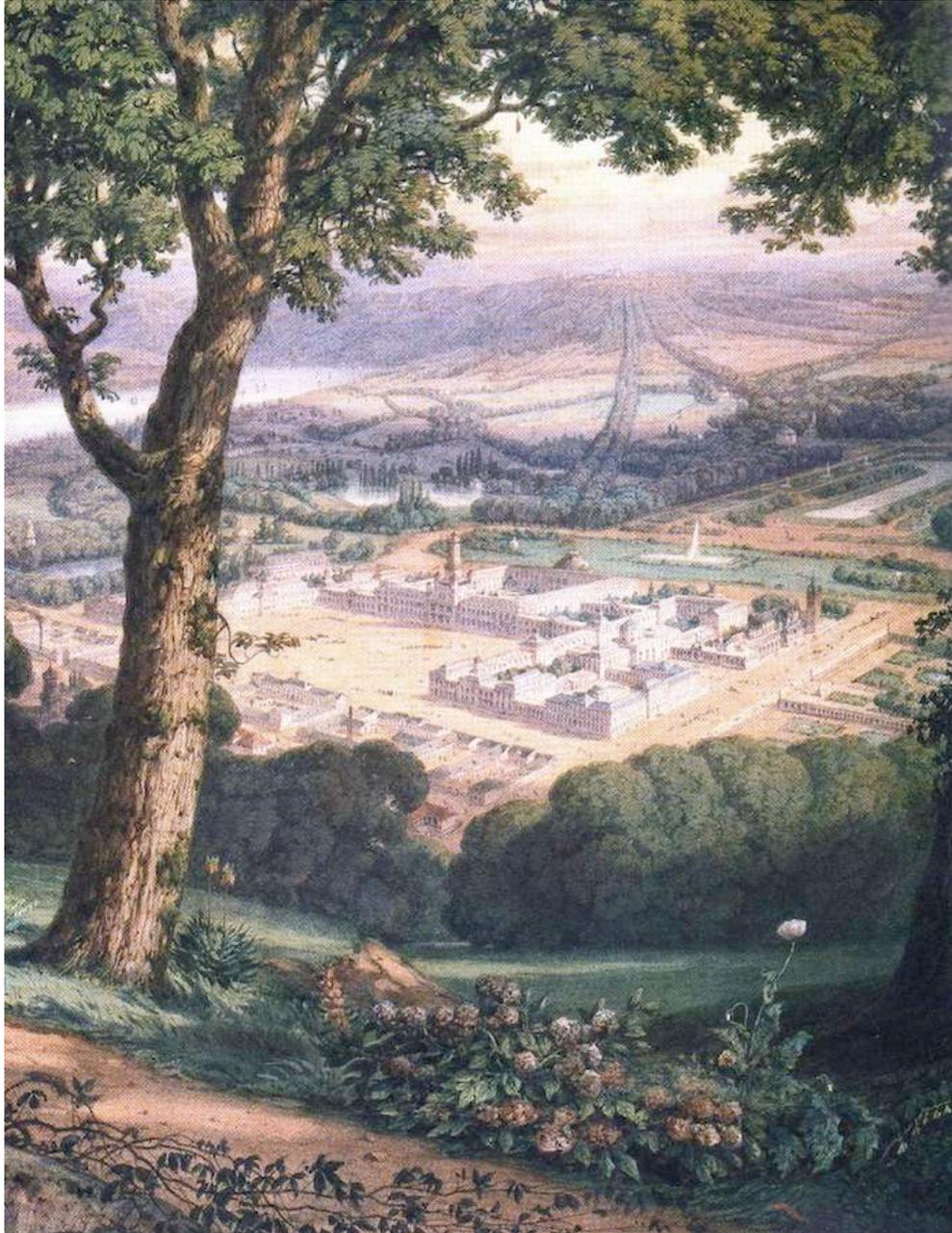
The argumentative will still raise numerous objections: 'How can you forge one social unit out of families, some of whom may possess 100,000 livres and others not a sou? How will you sort out so many different interests, or reconcile so many contradictory desires? How will you absorb all these jealousies within a plan which unites everyone's interests?' To which I answer: by the lure of wealth and pleasure. The strongest passion of peasants, as of city-dwellers, is a love of profit. When they see an associative community yielding a profit (other things being equal) *three times* as large as that produced by a community of isolated families, as well as providing all its members with the most varied pleasures, they will forget all their rivalries and hasten to put association into practice. And no laws or coercion will be necessary for this to spread to every part of the world, because people everywhere are motivated by a desire for wealth and pleasure.

To sum up, then, this theory of agricultural association, which is going to change the fortunes of the human race, appeals to the passions common to everybody, and seduces them with the allurements of profit and sensual pleasure; this guarantees its success among barbarians and savages as well as among civilised people, since the passions are the same everywhere.

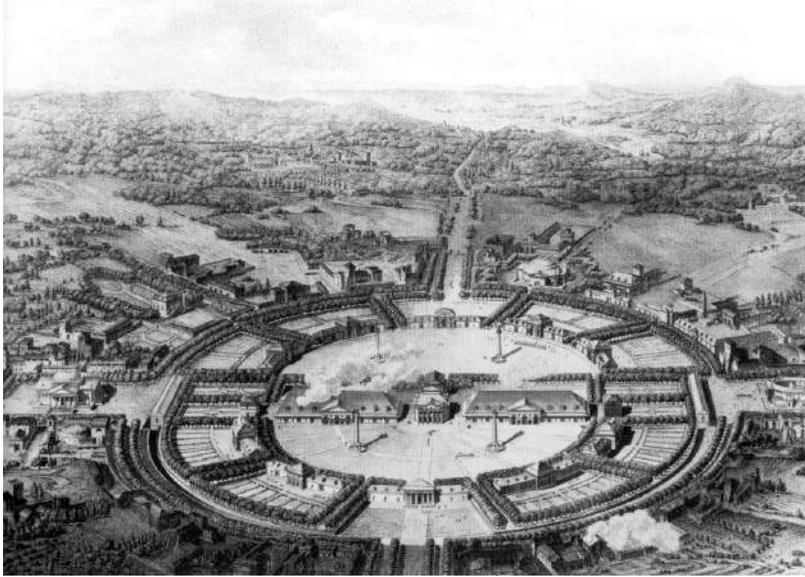
Excerpt from The Social Destiny of Man, Charles Fourier, 1841

Fourier predicted that through *agricultural associations* cooperating families could triple the value of their labor. His ideas were taken up by others and modified, most notably Karl Marx and Friedrich Engels, whose publication of the *Manifesto of the Communist League* in 1848, led to additional radical aspirations including the catchy phrase, "*from each according to his ability, to each according to his need*".

The avant-garde French socialist Charles Fourier developed the concept of the Phalanstère in 1808. He made detailed plans for a remote community of around 1,600 people working in cooperation for a mutual purpose. Fourier believed the traditional house was a place of exile and oppression for women. Lack of financing prevented him from seeing his grand-hôtel in the real world, but later in the same century, Godin in France and Ruskin in the United States, set up working colonies that took their inspiration from Fourier's work.



Laurent Pelletier, Phalanstère, 1868 (Charles Fourier): a building designed to house an ideal autonomous community of 1620 people. The building would contain all living, working and leisure activities. Visitors would have to pay to enter.



The Saltworks of Chaux, Franche-Comte, France, Claude Nicolas Ledoux, 1774

Architect Claude Nicolas Ledoux built half of his design for the Saltworks of Chaux, commissioned by Louis the XVI, King of France in 1778. This palace occupied by ordinary workers was closed in 1789 because of the French Revolution. Ledoux was also selected to design a theater in Besancon. Up until that time theaters had only provided seats in private boxes

for the aristocracy. Ledoux insisted on providing seating on the main floor for common citizens. Vision, seeing, being seen, the unseen (backstage) and illusion (theatrical transformation of sight) are all commented on in Ledoux's famous drawing of Besancon, often called *the all seeing eye*.

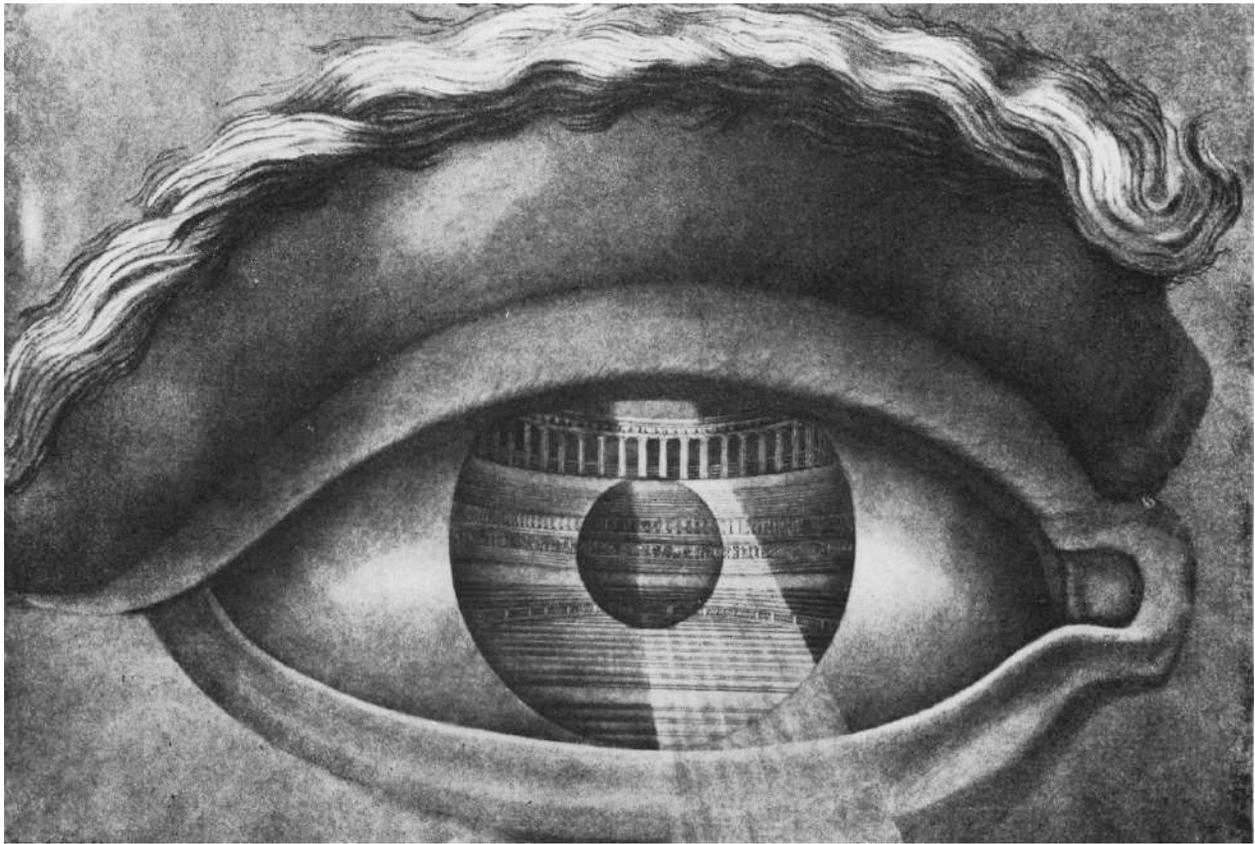


Illustration for the Theatre of Besancon, Franche-Comte, Claude Nicolas Ledoux, 1784

THE
ZION SONGSTER:
A COLLECTION OF
HYMNS
AND SPIRITUAL SONGS,
GENERALLY SUNG AT
CAMP AND PRAYER MEETINGS,
AND IN
REVIVALS OF RELIGION.

COMPILED BY PETER D. MYERS.

And they sung as it were a new song before the throne, and before the four beasts, and the elders; and no man could learn that song but the hundred and forty and four thousand, which were redeemed from the earth. *Rev. xiv. 3.*

TWENTIETH EDITION.

New-York:
M'ELRATH, BANGS, & HERBERT
1833.

ZION'S SONGS,

FOR
ZION'S CHILDREN,
AT
ZION CHAPEL,

Waterloo Road, London.

COMPILED BY

A. TRIGGS,
MINISTER OF THE GOSPEL.

Plymouth:

W. B. TRIGGS, PRINTER, GEORGE-STREET.

MDCCLXLI.

Title Pages from 19th Century Songbooks

The use of the term *Zion* to denote *God's people*, in a general sense, was widespread during the eighteenth and nineteenth centuries in both England and the United States. The religious revivals and Evangelism that sought to convert, bring or gather people to Christ, and then to activate and engage them in praying, testifying, meeting, preaching and singing, often referred to their adherents as *Zion*. A number of songs and hymns were written during this era proclaiming that God... loved Zion... was delighted with Zion... would comfort Zion... would protect Zion... would lead Zion.

The Lute of Zion
A COLLECTION OF SACRED MUSIC,
DESIGNED FOR THE USE OF
THE METHODIST EPISCOPAL CHURCH:
CONSISTING OF A CHOICE COLLECTION OF NEW TUNES FROM THE BEST FOREIGN AND AMERICAN COMPOSERS, WITH MOST OF THE OLD TUNES IN COMMON USE; TOGETHER WITH A CONCISE ELEMENTARY COURSE, SIMPLIFIED AND ADAPTED TO THE CAPACITIES OF BEGINNERS, &c. &c.

HYMNS OF ZION,
WITH
APPROPRIATE MUSIC.

REVIVAL MELODIES,

OR
SONGS OF ZION.

DESIGNED
AS AN AID TO DEVOTION
IN FAMILIES, SOCIAL CIRCLES, AND MEETINGS
FOR PUBLIC WORSHIP.

DEDICATED TO
ELDER JACOB KNAPP.

BY AN EVANGELIST.

I will sing with the spirit, and I will sing with the understanding also.—St. Paul.

PHILADELPHIA:
THOMAS, COWPERTHWAIT & Co.
1839.

BOSTON:
PUBLISHED BY JOHN PUTNAM,
81 CORNHILL
SOLD AT THE DEPOSITORY OF THE N. E. S. UNION, 79 CORNHILL,
AND BY D. S. KING, No. 1 CORNHILL.
Price \$10 per hundred, 12 1-2 cents single.
1842.

Title Pages from 19th Century Songbooks

Some popular revival tunes had militant themes referencing choices, battles, contests and wars between right and wrong, truth and lies, good and evil. *Onward, Christian Soldiers* (lyrics 1865) is perhaps the best known of these. *Hope of Israel, Zion's Army, hymns #259*, is possibly the Mormon equivalent of that Evangelical tune.

*"Hope of Israel, rise in might, with the sword of truth and right;
Sound the war-cry, watch and pray, vanquish ev'ry foe today."*

REVIVAL MELODIES.

5

Of na-tions in com-mo-tion, Prepared for Zi-on's war.

The image shows three staves of musical notation. The top staff contains the melody, the middle staff contains the lyrics, and the bottom staff contains the bass line. The music is in a common time signature and features a mix of eighth and sixteenth notes.

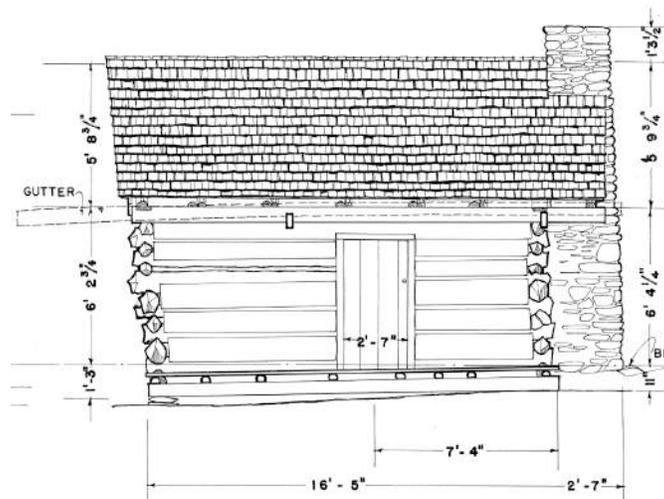
Political Context of the Town Lot

Who could acquire public land and how they were allowed to purchase it, was a topic of great debate after the Revolutionary War was won. Founding fathers Thomas Jefferson and Alexander Hamilton, had differing ideas about the *disposal* of public lands.

Jefferson thought that self-sufficient family farmers would be the best kind of citizens from which to forge a new nation. Their food, clothing and necessities would be provided through working their own land. As landowners they would have an interest in good government, yet have the economic freedom and independence to decide for themselves. Consequently, Jefferson proposed that the government sell small tracts to farmers at low prices. He valued the future good citizens more than the income to the government.

Hamilton believed that a solid financial foundation for the institutions of the new nation was paramount. His strategy was to sell public lands at wholesale prices to mercantile and banking interests, which would bind them and wealth to the new federal government, and not the individual states. Hamilton's plan required small farmers to buy their farms retail from the "speculators" that could afford to purchase large tracts from the government. Hamilton's views prevailed with the passage of the Public Land Act in 1796, but the outcry of small farmers, many of whom were Revolutionary War veterans, led to the Land Act of 1800, which reduced the minimum land purchase to 640 acres and extended government credit to the farmers; however the purchase price, of \$2 per acre, set previously was unchanged.

The federal government policy of auctioning public lands favored monied capitalists and speculators over frontier settlers who were most often forced to "squat" on unsurveyed public land. They cleared lands, built small homes and earned a subsistence living, but had little access to money. Federal troops were used to remove some of these trespassers from lands north of the Ohio River before 1787. In 1804 and 1807, federal laws were passed providing for fines, removal and imprisonment of squatters, but the 1807 act permitted those already living on these lands to retain up to 320 acres simply by registering with the local land office, until such time as the land was surveyed and sold.



Old Cabin, Cades Cove, Tennessee, Historic American Building Survey

Beginning in 1726 and continuing through 1784, the commonwealths of Massachusetts and Pennsylvania had initiated measures to grant land title to squatters through *pre-emptive* measures if they had improved the land. Slowly other states from New England to Florida began to follow similar processes. After all, not having title to land was quite common in the original thirteen colonies before the Revolution. *Pre-emption*, which allowed settlers who cleared land, built homes and grew crops to have the first chance to purchase it once it was surveyed, was commonly referred to as “squatter’s rights”. During the first decades of the nineteenth century, settlers on the American frontier increasingly demanded that *pre-emption* laws be passed to secure their future rights to land. The major opposition to a *Pre-emption Act* came from wealthy southern slave owners and northern speculators who required larger tracts of land to maximize their profits. They also argued that it would diminish income to the federal treasury.

In 1841, Kentucky’s Senator Henry Clay crafted a way to get the “Log Cabin Bill”, so called because it required the construction of a house, passed by Congress. It allowed “*every person, being the head of a family, or widow, or single man over the age of twenty-one years,*” who was a citizen or declared his intent to become a citizen, the one time privilege of entering (claiming) up to 160 acres of surveyed public land upon which he had resided for at least fourteen months, at the price of \$1.25 per acre. To gain title to the land squatters had to continue to work the

THE
PRE-EMPTION LAWS
OF THE
UNITED STATES.
ACTS OF 1841 AND 1843.

TOGETHER WITH DIRECTIONS TO THE ACTUAL SETTLERS
AS TO CONSTRUCTION OF THE SAME BY THE DEPART-
MENT AT WASHINGTON, AND RULES AND REGULA-
TIONS ACTED UPON BY THE LAND OFFICE
IN REFERENCE TO SAID LAWS.

land, build a dwelling (or cabin) on the land, and reside there for five years.

In theory, this law put small farmers on an equal footing with plantation owners and land speculators. In actual practice, there was a great deal of corruption.

Speculators became money lenders, offering land loans to squatters, and acquired title through foreclosure. False documentation allowed the assembly of plantation sized parcels. Some of these corrupt practices were facilitated by “exchange brokers” who dealt in “land warrants” that could be purchased in installments over time. Free legal papers offered to small farmers, were sometimes drawn up for the benefit of speculators posing as lenders.

NICKOLLS & CAVANAUGH,
DEXTER & RIPLEY,
ATTORNEYS AT LAW,
AND
Exchange Brokers,
~~~~~  
**DEALERS IN LAND WARRANTS.**  
~~~~~  
LAND ENTERED ON TIME.

All Land Warrants bought of either of the above firms, are
WARRANTED PERFECT IN EVERY PARTICULAR,
without limit as to time, and a written guarranty given, signed by both
firms.

The Pre-emption Papers made out Free of Charge,

When the Mormons arrived in Salt Lake Valley in 1847, they were in Alta (Upper) California, then a part of Mexico. The entire region claimed by the Mormons had been judged to be a barren wasteland by prior explorers, yet the Mormons believed in was *Zion*. Wilford Woodruff recalled that Brigham Young appointed a committee *“to draft... a constitution under which the inhabitants of said territory might govern themselves until the Congress of the United States should provide otherwise by law. ... and that “no man should buy or sell land. Every man should have his land measured off to him for city and farming purposes, what he could till.”*



Map of the United States of Mexico, 1847

The State of Deseret, when organized in 1849, had no legal authority for the disposal of public lands. Nevertheless, in 1850, by action of its legislature, it created the office of Surveyor General and appointed County Surveyors. Certificates were issued that constituted title to land. The land was free to the applicant but a charge of \$1.50 was made for survey and recording expense. Mormon leaders believed these actions were proper and would be ratified by the United States authorities once Deseret was admitted to the Union.

Brigham Young also knew that it was the prerogative of the United States to negotiate treaties to extinguish Indian title to their lands as required in Pre-emption Laws. But the Mormons believed the Indians were the descendants of the Lost Tribes of Israel, that they were literally “brothers” who were entitled to the privileges of Church membership and the blessings that would come through keeping the commandments and living civilized lives. Mormons also believed that the entire earth belonged to God.

*“The silver, gold ‘n precious stones,’ thus saith the Lord, ‘are mine,’
‘The cattle on a thousand hills, I own by right divine.’
‘The forests, rich stored mountains, plains, the fertile valleys too,
the earth and all that is therein are but my righteous due.’
‘And men themselves belong to me: they hold from me a lease
of health and strength, and even life which at my word may cease.’
The saints have learned a purer faith, they own the Lord’s just claim.
They’re stewards o’er what they possess, and hold it in his name.”*

1889 Psalmody Lyric

John Jacques, Martin Handcart Company

Brigham Young’s policy toward the Indians was that “*it was cheaper to feed them than to fight them*” and many Indians preferred to trade with the Mormons, who they saw as guests in their lands, rather than fight with them. Trading sometimes degenerated into begging and/or thievery, and very few *Lamanites* were converted and baptized, with fewer still adopting Mormon ways despite persistent missionary efforts.

The first Mormon settlers in Washington County were called as missionaries to the Indians in October of 1853. By 1854, they had established a small settlement side by side with the Paiute tribe in Santa Clara. Brigham Young had counseled the missionaries:

“You are sent not to farm, to build nice houses and fence fine fields, not to help white men, but to save red ones. Learn their language, and this you can do more effectively by living among them as well as by writing out a list of words. Go with them where they go. Live with them, and when they rest, let them live with you; feed them, clothe them, and teach them as you can, and being thus with them all the time, you will soon be able to teach them in their own language.”

The Southern Indian Mission, Juanita Brooks, 1945

At the last semi-annual conference of the Latter Day Saints, a large number of missionaries were nominated to go and preach to the Indians, or Lamonites, as they are here called. Now, since my arrival in this Territory, I have become satisfied that these saints have, either accidentally or purposely, created a distinction, in the minds of the Indian tribes of this Territory, between the Mormons and the people of the United States, that cannot act otherwise than prejudicial to the interests of the latter. And what, sir, may we expect of these missionaries? There is perhaps not a tribe on the continent that will not be visited by one or more of them. I suspect their first object will be to teach those wretched savages that they are the rightful owners of the American soil, and that it has been wrongfully taken from them by the whites, and that the Great Spirit had sent the Mormons among them to help them recover their rights.

P. S.—In proof of the facts before stated, I would say that I have had great difficulty in procuring an interpreter, though there are many persons in the Territory who speak the Indian language, but they were all nominated as missionaries, and I was forced to the humiliating necessity of imploring the clemency of his excellency Brigham Young to permit one of them to remain with me. I never saw any people in my life who were so completely under the influence of one man.

*The Utah Expedition,
Excerpts from Garland
Hurt, Indian Agent for
Utah, 1855*

Missionary efforts among the Indians were seen by government appointees as hostile to the interests of the United States. Of particular concern, was the ability Mormons had due to their familiarity with the Indians’ language and customs.

G. H.

The particular *village and farm* pattern of Mormon settlement, with homes, barns and shed located on town lots with separate fields irrigated through cooperative efforts didn't match the specific legal requirements for *pre-emption* rights. This became apparent to Utah's first federally appointed Surveyor General, David H. Burr, when he arrived in July 1855.

The federal survey established the initial point (for the Salt Lake Base and Meridian) at the southeast corner of the Temple block in the same spot previously used by Mormon surveyors. Utah's federally appointed Governor, Brigham Young, thought the government could have saved a great deal of time and money by employing the qualified local surveyors who had been using the United States standard survey methods in their prior work, and he complained vigorously when that didn't happen to Congress.

"The surveying is a great humbug. They have got their own party and surveyors imported for the purpose and I am told the surveyors have no trouble in making about one thousand dollars per month and that all they do is of no earthly benefit; they stick down little stakes that the wind could almost blow over, neither plant charcoal, nor raise mounds. Not a vestige of all they do will be left to mark where they have been in five years."

SURVEYOR GENERAL'S OFFICE,
Salt Lake City, September 30, 1855.

SIR: The accompanying map of Salt Lake City exhibits the extent to which the streets have been opened and the ground built upon. The corporate limits extend several miles each way, but there are very few dwellings outside of the lines exhibited on the map. The outlots are used by residents in the city for agricultural purposes.

The Mormon church has called upon its members (and they embrace almost the entire population) to *convey to it* their possessions. I send herewith a blank form of a deed of trust used in such conveyances. Many, if not most, of the people have yielded to the requirement, and it is expected that nearly all of them will do it. This call embraces not only the city property, but that of the entire Territory.

The provisions of "An act for the relief of the citizens of towns on the lands of the United States," &c., passed May 23, 1844, will not meet the exigencies of the case in this city. It will be seen that the city proper occupies more than three full sections. Therefore, if the government should deem it expedient to give the residents (who have not surrendered their possessions to the church) the right of *pre-emption* to the lots they occupy, some special legislation will be necessary.

I have the honor to be, most respectfully, your obedient servant,
DAVID H. BURR,
Surveyor General of Utah.

*The Utah Expedition,
Excerpt from David H. Burr,
Surveyor General of Utah,
1855*

When Burr left Utah in the summer of 1857, over \$90,000 had been spent for public land surveys of some 2 million acres, but not an acre had been sold to offset the survey costs. Both Samuel C. Stambaugh, who replaced Burr after the *Utah War*, and his successor Samuel R. Fox, agreed "*that no necessity exists, at present, for the extension of these surveys.*"

By late 1857, Mormons found that the *pre-emption* rights to land upon which they had relied were somehow, through the actions of federal appointees, not going to be applied fairly.

principal planks in their platform. You may know, sir, that Utah was picked out, and the only Territory excluded from a participation in *pre-emption* rights to land. You may also be aware that bills were introduced into Congress for the persecution of the Mormons;

*The Utah Expedition,
Excerpt from John W. Taylor,
1857*

On December 6, 1858, President James Buchanan had publicly recommended "*that the benefits of our land laws and pre-emption system be extended to the people of Utah*".

Utah Territory Legislative Act No. 191, 1860

LEGISLATIVE ACT.

No. 191.—An Act declaring certain things to be property, specifying the owner thereof, defining the mode for recovering its possession, and providing for redress of any grievances that may arise from proceedings under this act.—*Approved January 20, 1860.*

Despite this presidential recommendation, the *pre-emption* land claims of Utahns continued to be of great local concern. The practice of “land jumping”, where non-Mormons would take possession of lands that were improved, irrigated and even fenced, prompted the passage of this Act in January, 1860.

SECTION I. *Be it enacted by the Governor and Legislative Assembly of the Territory of Utah,* That any person who has inclosed, or may hereafter inclose, a portion or portions of unclaimed government land, or caused it to be done at his expense, or has purchased, or may hereafter purchase, such inclosure; or erected, caused to be erected, or purchased any building or other improvement thereon, or may hereafter do so, is hereby declared to be the lawful owner of the claim to the possession of such inclosed land, and the lawful owner of the improvements thereon and thereunto appertaining; and he shall be so deemed and held in all legal proceedings, and in all rights and doings pertaining or relating to the aforesaid property.

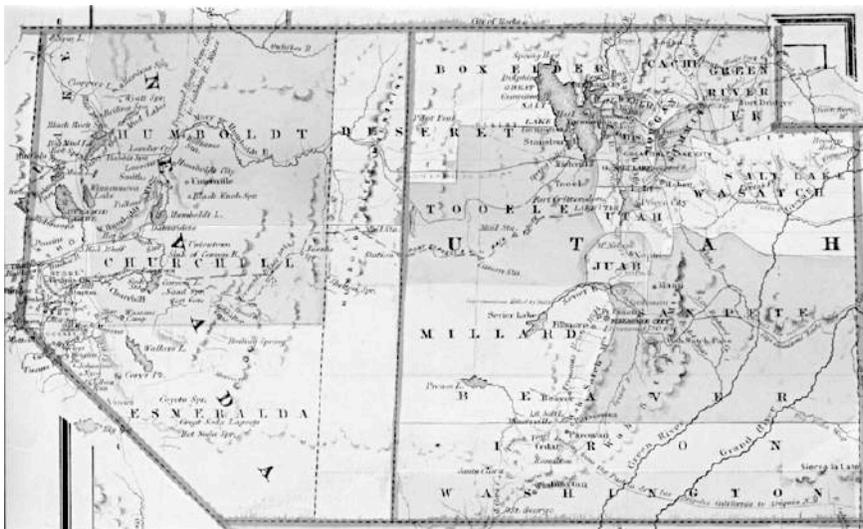
The Territory of Nevada was carved from western Utah in 1861. The status of prior surveys and land claims was clarified that year.

From the Annual Report of the Commissioner of the General Land Office, 1861

“Surveys of Carson’s valley, Nevada, had been made by Mormon county surveyors under color of the authority from the Utah legislature, when the region of country formed a part of Utah. The surveyor general of the latter Territory, under order from this office, had given notice of the illegality of such surveys, and of the invalidity of any claims resting upon the same, with a warning of the penalty prescribed for violation of the laws of the United States in that respect.”

“The surveyor general reports depredations committed by parties claiming to hold the lands under the territorial laws of Utah, suggesting early surveys, with a view to speedy sale by the United States. It is also stated that the lands in Carson Valley are claimed by persons waiting the extension of surveying lines, so that they may conform their boundaries to the government surveys. ... The Truckee River valley... contains a large amount of the best lands in the Territory, fit for agriculture and grazing purposes, occupied by settlers holding extensive

claims of from one to three thousand acres, under color of Utah territorial legislation.”



Many Mormon settlers abandoned their homes and lands in Nevada Territory because they had no hope that their *pre-emption* claims would be upheld.

Colton’s Map of Nevada and Utah, 1864

Democratic Filibustering to Prevent Discussion of Homestead Bill—It Passes the House.

On the 1st of February, 1859, H. R. 72, "to secure homesteads to actual settlers," came up for action. The Democracy attempted by parliamentary strategy to defeat it, and even to prohibit discussion on its merits, but it passed the House—120 to 76—the Republicans, with one exception, voting for the bill, and 60 out of 98 of the Democracy voting against it. The South was solid, as usual, against donating "land to the landless."

The Senate passed a substitute for the Grow bill, which, with some modifications, was accepted by the House on the principle that "half a loaf is better than no bread." The substitute gave to actual settlers homesteads at twenty-five cents per acre, but did not include pre-emptors then occupying public lands. This bill was vetoed by President Buchanan June 22, 1860, and the Senate, in which the bill originated, voted to sustain the veto.

The Secession of the Confederate States during the Civil War made it possible to pass the Homestead Bill. Lincoln's Emancipation Proclamation (freeing the slaves within the rebel states) and the Homestead Act both went into effect on January 1, 1863. Any citizen, or intended citizen, who had never borne arms against the United States, could file a claim on 160 acres of surveyed public land. If the homesteader built a 12 foot by 14 foot cabin and continued to live on the land for five years, his only cost was a small registration fee.

Utah had neither a government land office nor an active survey district in 1862. President Lincoln had set aside the Uintah Valley as an Indian Reservation in 1861, but Congress didn't approve it until 1864, after which a treaty was signed in 1865. Unfortunately, that treaty was rejected by the Senate in 1869. The entire process to extinguish Indian title was derailed in 1871, when Congress said that, "no Indian nation or tribe... should thereafter be recognized as a power with whom the government might contract a treaty."

THE PRESIDENT

In his last message to Congress, strongly recommends that the Indian Territory be opened for settlement, and there is no doubt but that Congress at its present session will pass the necessary act declaring the unoccupied lands in

INDIAN TERRITORY

THAT
GARDEN OF THE WORLD,
OPEN FOR
HOMESTEAD AND PRE-EMPTION

MAP OF INDIAN TERRITORY,
Showing the lands that will be subject to Homestead Entry and How to Reach Them.
White indicates Homestead Lands, of which there will be over 10,000,000 acres.

In view of the early opening of the Territory, it is necessary for those who would improve the opportunity to secure Free Land and Homes in this magnificent country, to be prepared to start, as soon as the lands are declared by Congress to be subject to Homestead Entry. The rush will be great, and early comers will have every advantage.

Every Person 21 Years of Age or Over will be ENTITLED TO 160 ACRES.

COFFEYVILLE & INDEPENDENCE

The two large towns on the Border, and the nearest points to the Public Lands will be the

GREAT OUTFITTING POINTS

FOR

Immigrants to the Indian Territory.

The Old Government Wagon Road starts from both these points. Plenty of Wood and Water on the route, and all large streams and bad crossings are avoided.

THE GOVERNMENT LAND OFFICE IS AT INDEPENDENCE.

THE KANSAS CITY, LAWRENCE & SOUTHERN R. R.

Being the Short, Direct and only Good Route to the Public Lands in the Territory, are making every preparation necessary to accommodate the rush, and will make

Special Low Rates for EMIGRANTS and their HOUSEHOLD GOODS

J. E. LOCKWOOD, General Ticket Agent, Kansas City, Mo.

The stalemate regarding land claims was resolved when non-Mormon officials in Utah demanded a Land Office in 1866, after the discovery of silver mines in the Territory. Utah's appointed Governor Charles Durkee urged the Territorial Legislature to:

“avail themselves of the beneficent provisions of the Homestead Act. The occupied lands of the Territory have been reclaimed from their desert state by a marvel of persevering industry, and the title of the occupants who have in truth created for the lands their only value should be placed beyond legal question. I would be pleased to unite with you in a memorial to Congress soliciting an appropriation for completing the public surveys... and the opening of an office at this city for the sale and entry of public lands.”

The initiative supported by both Gentiles and Mormons bore fruit in 1868, when Congress directed that Pre-emption and Homestead Laws be made applicable in Utah Territory.

The act “approved July 16, 1868,” authorizes the appointment of a surveyor-general, establishes a land district, authorizes the appointment of a register and receiver, and directs that the Pre-emption and Homestead laws of the United States be made applicable to said Territory.

Brigham Jarvis Sr. with his Surveying Instruments, Washington County Historical Society, circa 1900.

When the first survey crews arrived in the fall of 1868, they were directed to first survey those lands that would be granted to the Union Pacific Railroad. The land office opened in early 1869 and was swamped with business. During the first six months, nearly 150,000 acres were acquired by Utah's citizens. As had been the pattern in other territories, there were incidents of corruption, but the historical records maintained by Utah's county surveyors and territorial officials prevented some of the worst abuses.

“several land claims in the vicinity of the city have been jumped recently, three or four of them by gentlemen connected with the Land Office in this city.. Mr. Clement, brother of the Surveyor General... Mr. Hoffman, (an associate of Mr. Maxwell) register of the Land Office... Mr. Hoffman took possession and claimed a (ten acre) city block... these claims were enclosed (fenced) and improved by water ditches years ago.”



Territorial Delegate to Congress, William H. Hooper, to the General Land Office, Washington, 1871

Afterword

Elizabeth Wood Kane's concern in 1873, that the "*thrifty settlers should be driven off by the shiftless lazy horde*" was founded on real events (see page 18 above). Titles to the town lots in Saint George weren't granted by the government until 1875 (see page 51 above), because they had to wait for the completion of federal land surveys being done by Major John Wesley Powell (see his astronomical monument survey sketch on page 65 above) of the United States Geographical Service, United States Army.

Part of the reason for the grandiose and overly optimistic plat map of Saint George drawn by John Menzies Macfarlane in 1877 (see page 61 above) might have been the sheer joy resulting from secure land titles. The new simplicity in land acquisition afforded by the Homestead Act of 1862, the Townsite Act of 1867 and the specific exemptions granted by Congress to Utah in 1868 accommodating her *Plat of Zion* inspired *village and fields* colonization patterns were also cause for rejoicing.

The first portion of the home on the southeast corner of Second South and Second East streets could have been built in 1876 by John G. Smith, the first bishop and founder of Smithfield (Cache County) anticipating his retirement, in Saint George just two blocks from the Temple which would be completed the next year. It probably was purchased by Brigham Rees, a stone mason, when he was 28. He and his sister came Utah from Wales in 1868, probably with the aid of the Perpetual Emigration Fund (see page 82 above). Arthur F. Miles, who enlarged the home after he purchased it in 1891, emigrated from England with his brother George. He served as a common school superintendent, owned a cattle herd, was a partner in the Paymaster copper mine, was employed as cashier at the Bank of Saint George, and was elected Clerk and Recorder of Washington County.

The town lots in the town plats that followed *Plat of Zion* principles, were more revolutionary in their time than we might think. They embodied the dreams of politicians like Thomas Jefferson and Abraham Lincoln by providing free land for small farmers. They tested the social theories of transcendentalists like Henry David Thoreau and Nathaniel Hawthorne by creating opportunities for self-reliant, yet collaborative dignified labor. They were recognized by scientists like John Wesley Powell and Elwood Mead for the excellence of their cooperative community building. They became patterns for later public policy in the West especially regarding cooperative irrigation and water development projects.

Self-reliant, cooperative, sociable, efficient, progressive, revolutionary. Each of the *little pieces of Zion* that make Saint George and other Mormon communities will have their own stories, and be populated with their own cast of characters.

To own your own land. To work hard every day. To live from the fruits of your own labor, in a village where people called each other brother and sister. A cool, green village redeemed from the desert by shared labor. To fight for the common good. To work, learn, dance, sing, and pray together. To make a *little piece of Zion*.

A Little Piece of Zion: The Saint George Town Lot



Appendix One

THE MORMON LAND SYSTEM IN UTAH.

THE SPEECH OF THE HON. GEORGE Q. CANNON AS TEMPORARY CHAIRMAN OF THE THIRD NATIONAL IRRIGATION CONGRESS.

Ladies and Gentlemen of the Irrigation Congress:

I might say truthfully that this is somewhat unexpected to me. I received notice last night on my arrival after midnight at the hotel from the chairman of the National Committee that it was contemplated to put my name in nomination as a temporary chairman of this National Irrigation Congress. I almost hope, and if it had not been for my pride in the territory from which I came, that some other name might have been substituted for mine, for in the midst of men like these we have gathered here to-day I submit that I feel a sense of modesty, and would rather sit and listen than take a prominent part in the proceedings of this congress. Nevertheless, it is probably due to Utah, in view of the attitude which she has occupied for the last forty-seven years on this great and important question, that she should occupy some prominent position in this congress.

Forty-seven years ago I crossed the plains in company with companions who were then seeking homes in the Far West. I did not occupy so prominent a position in the community as has been represented, because I was but a youth 20 years old, but I was then, as I am now, deeply interested in the future of this Western country. I felt that there was a great future for it, and then to me, as with all those who traveled at that time, it was so different to know the old conditions under which we lived that it seemed like a new world. We entered Salt Lake valley, that is, I and the party I accompanied, about eight weeks after the pioneers headed by Brigham Young had entered the valley. That band consisted of 142 men and three women. We came forward and traveled with women and children in large numbers, there being some 2,000 all told in the different companies.

THE LUXURY OF POTATOES.

The pioneers had already planted a few seeds and made some attempt at irrigation, but as they landed the latter part of July (the 24th it was) it was very difficult to do anything except to preserve the seed. That seed was carefully cared for and husbanded, and from that seed the seed potatoes (that was the first vegetable introduced into Utah) sprung. But it was not until 1849 that any of us, unless it was through curiosity, tasted potatoes. We preserved the seed so carefully that we did not dare to taste potatoes.

In 1848, after planting our crops, we found that we were in such a situation that food must be raised, and as we did not have the scientific friends that we have with us now to do it in a scientific manner, we went at it as best we could, and took out water by the simplest means in our reach, and we were successful in raising at least a part of a crop. After our grain had been sown and our fields looked promising, black crickets came down by the millions and devoured our crops. I have seen fields of wheat look as promising as they could in the morning and by evening they would be as bare as a man's hand—devoured by these crickets.

For a time it seemed that everything planted would be torn up, and we were in such a position as you can well imagine. California

was on our west, 800 miles distant; to the east was no settlement nearer than Des Moines, Iowa, and a few settlements perhaps in upper Missouri, so that we were entirely dependent upon all we brought in our wagons, and we had to deal it with the utmost care. Food was weighed out by the ounce and limited to every individual that no one should eat more than his share of the pieces that were divided for the week's supply.



HON. GEORGE Q. CANNON.
Of Utah, Temporary Chairman Irrigation Congress.

THE MORMON LAND SYSTEM IN UTAH.

189

I was a young man then growing, and I never worked so hard as we had to do then, and I was continually hungry during that winter; it seemed to me that I was hungry to the end of toes and fingers. I was an orphan, but I had an aunt, and she said on my birthday: "George, we will have all we can eat to-day, as it is your birthday. You invite your young friends to come in and partake with us." I looked forward to the anticipation of having a good square meal on that morning. I mention this because it is an interesting point to know that I did eat all I could, but I was hungry ten minutes afterward. The stomach having become contracted by having so small an amount of food, the system was starved and it required more than one meal to satisfy nature.

THISTLE TOPS AS GREENS.

When spring came the thistles began to grow up. Our fields produced a great many thistles. I have gone out with the boys in mid-day when the horses had come in and pulled the thistle tops for greens. It is a fact that the distention of the stomach caused by eating these thistles allayed the hunger we felt, and with the milk from the cows we soon grew fat. These crickets devoured most of our crops. I had no responsibility upon me, but I have often thought of the feelings of the men that had families under these circumstances; but there was unbounded courage. Every man felt he would stay there, no matter what the consequences might be. To us who lived in Utah about that time it seemed there was a visitation of Providence to save us. Sea gulls came by hundreds and by thousands, and before the crops were entirely destroyed these gulls devoured the insects, so that our fields were entirely freed from them. Whenever I see a boy pointing a gun at a gull I feel that I ought to knock his gun up. The bird has become sacred to me. I have gone along ditches in the morning and have seen lumps of these crickets vomited up by these gulls, so that they could begin again killing them.

The drying of this country at that time was something dreadful. It seemed as though the land was dead. I remember seeing it illustrated in the case of a grave that was dug. I was there at the time. It is now in the part of the town covered by inhabitants and it seems the ground has not been disturbed for ages. We dug a ditch, and so dry was it that when we turned the water in (some of you gentlemen have perhaps visited Salt Lake City and seen where the great coöperative store stands) and there a ditch was dug to convey the water to the fort, which was about a half mile, and it took two days for it to run that distance, the ground was so thirsty.

THE UTAH OF TO-DAY.

Now great results have followed, and I can say to-day that Utah is proud to have the opportunity of

participating in a Congress of this character. We feel the questions to be brought before this Congress are of the greatest importance, not only to this portion of America, but to the entire Union. Every man in this entire republic ought to be interested in this question which will be discussed, I hope, so freely and profitably in our Congress. It is a matter which affects not only the West alone, but the East, and in fact it may be said to affect humanity, and everything should be done in our deliberation to reach the united action so that whatever we resolve upon will be acceptable to the whole people and members of Congress.

I am glad that these deliberations take this wide course. I would like to see every person who takes an interest in irrigation, whether they live in the arid regions or the heaven-watered regions, and I hope every man will express himself with the utmost freedom, that there may be a unity of sentiment and a unity of action.

We in Utah have proved that the small holdings are the best for the people. Our pioneers, when they went into that country, arranged in the first place that men at the head of a household should receive a city lot. The city was divided into blocks of ten acres, containing eight lots of one and a quarter acres each. I remember applying for a lot and was told that I was not a married man and could not have the land. Outside the city the first lots were five-acre lots, later ten-acre lots, and later twenty-acre lots. Mechanics were expected to have ten acres. Those who were engaged in business drew ten acres if their families were large enough. It was not a law, but was suggested. Laws were then made that no man should manipulate land, so that every man in the community should have a sufficient quantity to supply his wants and to enable him to raise what he wanted, but could have nothing for manipulation. We had to set our faces against the manipulation of land and the manipulation of water. We dread above everything large companies coming in and making canals and taxing our people for the water. We do not think that is necessary. We have proved that water can be taken out and that it can be used by the poor man by a proper combination of efforts by being united. We have proved this and also that large tracts of land are not necessary for the public good. Therefore, I think I express the feeling of our people and the satisfaction of our people in Utah. But I make this statement in proof: Our conditions are different than those surrounding California, Colorado, Arizona, Montana, etc. I do not wish in making this remark to be understood that we oppose other measures. I only wish to say that it has been proven to us to be attended with the best results.

Ladies and gentlemen of this Irrigation Congress, I thank you for the honor you have done Utah in selecting me as the temporary chairman of this congress.





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