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## Frontier Settlement and Community Building on Western Iowa's Loess Hills

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Despite the unique Loess Hills topography, Anglo-European settlement in the Loess Hills followed a well established pattern developed over two-hundred years of previous frontier experience. Early explorers and Indian traders first penetrated the wilderness. Then the pressure of white settlement caused the government to make treaties with and remove Indian tribes, thus opening a region for settlement. Settlers arrived and purchased land through a sixty-year-old government procedure and a territorial government provided the necessary legal structure for the occupants. Pioneers selected farmland near water and timber, practiced proven frontier agricultural methods, and built towns based on patterns developed during earlier frontier experiences. Technological changes tempered this experience in Iowa.

INDEX DESCRIPTORS: Loess Hills, Indian occupation, exploration, frontier settlement, community building, western Iowa.

The Loess Hills rise abruptly above the Missouri River's eastern alluvial plain in six counties of Iowa. They extend southward from Woodbury County, through Monona, Harrison, Pottawattamie, Mills, and Fremont Counties. Before Europeans began to move into the region, the Loess Hills were a hunting ground and home for several Indian tribes. At the beginning of the eighteenth century French fur traders made an unsuccessful attempt to establish trade with the Indian inhabitants. The region moved from French to Spanish control in 1763, but the later transfer from Spain to France to the United States between 1800 and 1803 precipitated the movement of explorers, fur traders, missionaries, and government agents into the upper Missouri River region (Nasatir, 1930; Van der Zee, 1913).

The United States government turned its attention to the new purchase and sent an expedition under Meriwether Lewis and William Clark to explore the enormous western acquisition. They reached what is now western Iowa in July, 1804. From their journals come the earliest descriptions of the Loess Hills region.

July 28th. At one mile this morning we reached a bluff on the north. A little below the bluff... is the spot where the Ayauway Indians formerly lived.

August 20th. [Just below the site of present day Sioux City] Here we had the misfortune to lose one of our sergeants, Charles Floyd... He was buried on top of a bluff with the honors due to a brave soldier; the place of his interment was marked by a cedar post. We called this place Floyd, also a small river about 30 yards wide (Fulton, 1883; Coues, 1893; Jackson, 1962).

Floyd's Bluff became a landmark for travelers on the Missouri River.

The Loess Hills continued to attract interest. Journals of subsequent trade and military expeditions as well as Indian agents' reports are laden with descriptions of and reactions to the remarkable Loess bluffs and Hills. Much additional information appears in the records of artists and naturalists attracted to the upper Missouri River wilderness (Expeditions: Brackenridge, 1816; Douglas, 1964; Galaher, 1945; Kearny, 1908; Nichols and Halley, 1980; Nicolle, 1927; Peterson, 1931; Artists and Naturalists: Briggs, 1926; Catlin, 1876; McDermott, 1951; Phillips, 1979; Thwaites, 1905; Wood, 1966; Indian Agents and Trade: Athearn, c1967; Babbitt, 1916; Babbitt, 1925; Chittenden, 1902; Mullin, 1925; Oglesby, 1963; Robeson, 1925; United States Office of Indian Affairs, 1837; Van der Zee, 1913). Even after permanent settlement began in the late 1840s the Loess bluffs and Hills continued to attract notice. Comments and descriptions appear in surveyors' reports, emigrant guides, letters, overland diaries, and county histories. These later records take on a boosterism not evident in the explorers', artists', and naturalists' journals. (Surveyors' Reports: Cassen, 1960; Iowa. Secretary of State, 1960; Iowa. Secretary of State, 1836-1858; Emigrant Guides: Ashton, 1893; Blanchard, 1869; Burke, Iowa Board of Immigration,

1870; Parker, 1856; Tostevin, 1870; Goddard, 1869; County Histories: Bloomer, 1871; Farwell, 1978; Fulton, 1940; Fulton, 1883; Anonymous 1890-91; Anonymous, Fremont County, 1881; Anonymous, Mills County, 1881; Anonymous, 1883; Letters and diaries: Gould, 1862; Rector, 1855). By 1878, Iowa students found descriptions of the Loess Hills in their state geography books (Bessey, 1878).

Popular local notice of worldwide uniqueness appeared in an 1892 Sioux City promotional publication.

The soil in portions of the region, commercial tributary to Sioux City, is identical with the soil of the famous valley of the Yang-Ste-Kiang, China, which has been cultivated for ages without exhaustion, and is considered one of the most fertile spots on the globe.

A failure of the corn crop, either by reason of excessive rainfall or drought, is unknown in this section, as the peculiar composition and construction of the soil which is rich alluvial loam, renders it impervious to either ([Sioux City Jobbers' and Manufacturers' Association, 1892]).

Before 1846 land in the Loess Hills area was part of Indian territory. Traders established business with tribes in the region, exchanging manufactured goods for furs. Pressure of American settlement in Illinois and Wisconsin caused the federal government, in 1833, to relocate the Chippewas, Ottawas, and Potawatomes to western Iowa between the Boyer and Nodaway Rivers. This raised the population by more than 2,000 individuals in hunting grounds which several other tribes already frequented. To control activity in the region the government erected a blockhouse, barracks, and tents, thus building Camp Kearny on a plateau near the top of an almost perpendicular bluff (located in present-day Council Bluffs). Only a year after its completion, however, the army donated the buildings to Father Pierre-Jean de Smet for use as a mission for the Potawatomes dwelling in the region (Babbitt, 1916; Chittenden and Richardson, 1905; Van der Zee, 1913).

In 1842, when war between the Sioux and the three united tribes (Potawatomi, Chippewa, and Ottawa) seemed imminent, the government established Fort Croghan midway between the mouth of the Boyer and Mosquito Rivers near the southwest corner of the present city of Council Bluffs (Horton, 1981; Van der Zee, 1916). In 1846 Iowa became a state and the government began to remove the remaining Indian tribes to another Indian country across the Missouri River. This action opened the entire Loess Hills region for legal, permanent settlement.

Previously written laws had already determined how this settlement would occur. The Ordinance of 1785 established the procedure by which settlers purchased land. A rectangular survey system located townships which were then subdivided into thirty-six sections. The

resulting boundary lines, which ignored topography, became the definitive basis of farm size and shape, school locations, roads, and township and county governments.

Previous statutes also determined how the land would be governed. United States law prevailed over the region, although the remaining Indian tribes attempted to function under their own tribal laws. The Ordinance of 1787 created a governmental structure for territories like Iowa until the territory sought entrance to the Union as a state. Iowa became a state in 1846, at which time a state constitution and state law replaced the old territorial arrangement (Table 1). In the same year, the Indian tribes remaining in the Loess Hills began to depart.

The earliest overland migration to the Loess Hills region began in 1843. Starting at the Mississippi River, emigrants from the settled states crossed southern Iowa in unexpected numbers, headed for Oregon. Residents of Iowa Territory also joined the moving throng (Van der Zee, 1913). Before this time the handful of squatters residing in southern townships of the future Fremont County had come by way of the Missouri River or over trails through the northwestern part of Missouri. These early pioneers believed they were citizens of the state of Missouri because that state claimed the boundary was ten miles north of the present one. Some owned slaves, and when the United States Supreme Court finally determined the border in 1849, they departed for places where slavery was permissible (Ericksson, 1927; Anonymous, Fremont County, 1881).

The official federal survey of the public lands was supposed to begin after the acquisition of title from the Indians, and before settlement occurred. The survey often did not actually begin before settlers moved into an area. The government eventually allowed these settlers, called squatters, to purchase their land through pre-emption when it was placed on sale at a government land office. Because Missouri claimed the extreme southern area of the Loess Hills region, the earliest land entries under pre-emption were at Plattsburg, Missouri. After the resolution of the boundary dispute, claimants entered pre-empted lands at Fairfield, Iowa. The government opened a land office at Kaneshville (Council Bluffs) in 1853 and at Sioux City in 1855. The price of this land, purchased from the government, was \$1.25 an acre (Lokken, 1942).

Until 1846, when the Mormons commenced their journey from Illinois to their new home in the Great Salt Lake Valley, settlement in western Iowa was sparse. As part of their plan for emigration, they established way-stations to grow food, supply necessary provisions, and repair equipment for westward bound Saints. When the Mormons reached the Missouri River they established permanent camps on both sides. A number of settlements sprang up in the southwestern Loess Hills region to serve as staging places for the long journey across the plains. Other settlers came to the region as well, knowing that Indian removal was underway (Babbitt, 1916).

The permanent settlement of the Loess Hills followed a pattern similar to that in eastern Iowa. The newcomers, whose past pioneer experience had been in wooded areas of Ohio, Indiana, and Kentucky, ignored the Loess Hills prairies, clinging instead to the wooded creeks and streams where wood for home building, fuel, and fencing was plentiful. The United States government surveys made between 1851 and 1858 clearly document the cabins and cultivated lands adjacent to streams, rivers, and wooded areas. Railroad developer and surveyor John Insley Blair also reported that settlers clustered along the streams and timber of Boyer River (Bloomer, 1871; Garver, 1911; Fulton, 1883; History of Fremont County, 1881; Hilton, 1950; Shimek, 1910; United States Department of the Interior, c1930).

From the moment of arrival the pioneers actively changed, exploited, and attempted to control the Loess Hills environment. They felled trees, broke sod, plowed ground, and removed the natural vegetation to plant crops and orchards. They cut prairie grass for hay. Wildlife, still available in some abundance, was killed for food. They built dams on rivers and streams to create power sources for grist and

Table 1.  
Time Line of Iowa Political Jurisdictions

prior to 1673 -	Indian lands
1673 - 1762 -	French claims
1762 - 1800 -	Spanish claims
1800 - 1803 -	French claims
1803 - present -	United States of America
1804 - 1805 -	District of Louisiana (assigned to Indiana Territory for practical administration)
1805 - 1812 -	Territory of Louisiana
1812 - 1820 -	Territory of Missouri
1820 - 1834 -	no official jurisdictional authority
1834 - 1836 -	Territory of Michigan
1836 - 1838 -	Territory of Wisconsin
1838 - 1846 -	Territory of Iowa
1846 - present -	State of Iowa, under the Constitutions of 1846 and 1857

sawmills (Babbitt, 1916; Dodge, 1932; Farwell, 1978; Lokken, 1942; Shimek, 1910; Tostevin, 1870). On the low-lying Missouri River plain settlers built dikes and ditches to drain the wet lowland and control flooding (Anonymous, Fremont County, 1881). When they dug wells to tap the plentiful underground water resource of the Loess Hills, settlers discovered the unusual characteristic of loess soil. "The subsoil [is] so firm that the walls stand firmly if protected above the water in the well . . . [the soil] does not cave; wells seldom have to be walled except for a few feet from the top and at the water edge" (Iowa State Agricultural Society, 1877; White, 1870).

Some of this activity created unexpected problems. Council Bluffs citizens straightened a meandering stream through the town (Indian Creek), which resulted in an eroded, water-filled chasm. The misdirected water destroyed bridges and swept away homes (Anonymous, Fremont County, 1881). Pioneers also planted trees on their land and the activity increased after the state geological survey report of 1870 noted that trees would thrive in the Hills, and that it would be useful to plant forests for fuel, beauty, shelter, and shade (Anonymous, Fremont County, 1881; White, 1870). In Pottawattamie County, the Board of Supervisors encouraged timber growing by providing a tax advantage for tree-planting landowners (Board of Supervisors Minute Books, Pottawattamie County, 1875).

Most settlers came to farm. Drawing on generations of pioneer agricultural experience they cut timber for cabins and cleared land for their crops. Although farm methods from past experience were in general use, changes did develop. The Harrison County Agricultural Society reported that in 1868 there had been less grain culture experimentation than in the eastern counties during their years of early settlement. Farmers had raised very little oats, rye, barley, buckwheat, hemp, flax, cotton, or tobacco. They preferred corn and wheat (Iowa State Agricultural Society, 1867).

New technology appeared in the Loess Hills farms during the pioneer period. In 1866 Harrison County reported farmers used planters to put in a large portion of the corn crop. Would-be newcomers were advised that "all the modern machinery necessary to supply the want of manual labor is easily attainable." The writer went on to suggest that the region's horse-powered-machinery-oriented

(Fig. 1 - 2.) Artists Karl Bodmer and George Catlin provided a visual record of the bluffs prior to American settlement.

Fig. 1. Catlin's drawing of Floyd's Bluff, 1832 (from *North American Indians*).

Fig. 2. View of the mouth of the Big Sioux River, 8 May 1833 by Bodmer (courtesy Joslyn Art Museum and the Northern Natural Gas Company of Omaha).





farmers failed as fruit growers because they would not get off their sulkies to do the necessary hand work fruit trees required (Iowa State Agricultural Society, 1867; Tostevin, 1870).

The unique qualities of the bluff soil motivated farmers to plant vineyards, and grapes succeeded very well. An 1876 Pottawattamie County agricultural report stated, "The bluffs in the neighborhood of the Missouri River are best adapted to the vine because of the warm porous nature of the soil and the sheltered condition of the ground. The prairie is too much exposed for so delicate a fruit." There was little effort to make wine; the local market consumed the fruit fresh (Tostevin, 1870).

Although farmers had found a good market locally and the Missouri River provided transportation for livestock to more distant markets, prospects expanded after railroads arrived. "We want more stockgrowers who will bring improved cattle, horses, sheep and hogs," the 1868 Monona County agricultural report stated. "We have a few fine herds. A few are shipped to Chicago. But as a general rule we find a home market" (Iowa State Agricultural Society, 1869). In Harrison County, hogs "were plenty." The market was at Council Bluffs. The bluffs, carved by rivers, produced "a most excellent quality of grass," deemed to furnish "the best sheep pasture in the West" (Iowa State Agricultural Society, 1868). Stock raising and dairy business increased substantially after grasshopper invasions in the 1870s caused a shift away from cash grain crops (Briggs, 1915).

By the end of the century, enough farmers had worked without sulkies to produce mature apple orchards. Apple shipments from Fremont and Mills County exceeded those from any other county in the state. In addition, fifteen carloads of grapes left Council Bluffs in one month (Ashton, 1893).

During the late 1840s and the 1850s a number of towns developed to serve the needs of the surrounding agricultural settlements. These urban centers developed in traditional ways based on a two-hundred-year heritage of pioneer town-building experience. As in former frontiers, towns were service centers for the surrounding agricultural region. They were by necessity located where transportation was accessible — in this case on the alluvial plain along the Missouri River, on established overland routes such as the one that followed the base of the bluffs, or in the valleys of Missouri River tributaries. Other forces might spark their beginnings or contribute to later success (Rohrbough, 1978).

Some towns developed at former fur trade or military post locations. In 1847, Augustus Borchers began to trade with the Indians in his store at the foot of the bluffs in Fremont County. Located on the Nishnabotna River three or four miles above the river junction with the Missouri, this site ten years later became the market town of Hamburg — named for its founder's German home (Anonymous, History of Fremont County, 1881).

At Council Bluffs, several factors essential to urban development on the frontier stimulated growth. An American Fur Company trader first built a cabin within the present-day city limits of Council Bluffs in 1824. The future townsite also served as location of two military posts and later as an outfitting center for immigrants on their way west (Babbitt, 1916; Ressler, 1974; Tostevin, 1870; Wyman, 1949). These immigrants included the Latter-Day-Saints (Mormons) who established settlements at and near Council Bluffs (then called Kanessville), to provide for their westward migrations between 1846 and 1852 (Lokken, 1942). Council Bluffs received added support when the federal land office opened there in 1852. When those arriving changed from transient to permanent settlers, the town's character matured (Wyman, 1949). It eventually emerged as a commercial center serving the surrounding agricultural region.

By 1870, Council Bluffs had evolved from "the original town sheltered in the bluffs" to a city with "handsome residences . . . partially concealed from general view by the bluffs. The most romantic spots are the avenues that lead up through the glens. Here

the well-to-do have made themselves suburban homes, that rival in beauty anything we have ever seen" (Tostevin, 1870).

Meanwhile, a different but still traditional sequence of events took place upstream. An American Fur Company employee settled at the mouth of the Big Sioux in 1849, and other fur traders joined him there (Green, 1857; Anonymous, 1890-91). More permanent activity took place in 1854 when surveyor John Cook, a partner in the Sioux City Townsite Company, located a claim and laid out Sioux City. In the spring of 1855, the first stage and first mail arrived at the Sioux City post office. More important, the government established a federal land office there. By the winter, seven log houses, including an inn, stood on the newly platted site. The following year local settlers voted to move the county seat to Sioux City from Sergeant's Bluff and the first steamboat arrived (Hafner, 1940; Iowa Writer's Program, 1942).

Sioux City became the market center for farm products produced in Woodbury County and the surrounding region. "Its population of six thousand people are consumers," the 1877 agricultural report stated, "while the merchants have lay-govenment contracts for supplies for the army and Indians on the Missouri River; giving a market additional, and one independent of eastern markets." Twelve years later, in 1890, Sioux City's population had pushed past 38,000 (Anonymous, 1890-91; Iowa State Agricultural Society, 1877).

Sioux City also had a developing suburb. In this case the bluffs were an obstacle rather than a natural phenomenon to preserve for an attractive residential area (Anonymous, 1890-91, Iowa State Agricultural Society, 1877).

A ten-minute ride on a cable car brings one to the northern portion of the city where man's tact and ingenuity have been taxed in leveling the score and more of Hills and filling the intervening valleys. This is destined to become the principal residence part of the city. The present terminus of the cable line is over three miles out, and the power house is situated about midway (Anonymous, 1890-91).

Some communities began with the arrival of like-minded people. In many ways, Tabor City was a recreation of Oberlin, Ohio. Immigrants from Oberlin sought to recreate the educational experience available in their former home. They first settled on the alluvial plain in Fremont County, but after a flood destroyed their early efforts, they relocated on the bluffs to found the City of Tabor and Tabor College. The town and college later became a center for the abolition movement prior to the Civil War (Brooks, 1881; Farquhar, 1943; Anonymous, History of Fremont County, 1881).

Railroad development added a new dimension to town development. When a railroad company needed a town where one did not exist, the company proceeded to create one. Missouri Valley Junction is such a place. Located at the base of the bluffs, the Sioux City & Pacific Railroad established machine shops at Missouri Valley. Only three years after its founding, the town boasted a population of 1500 (Tostevin, 1870).

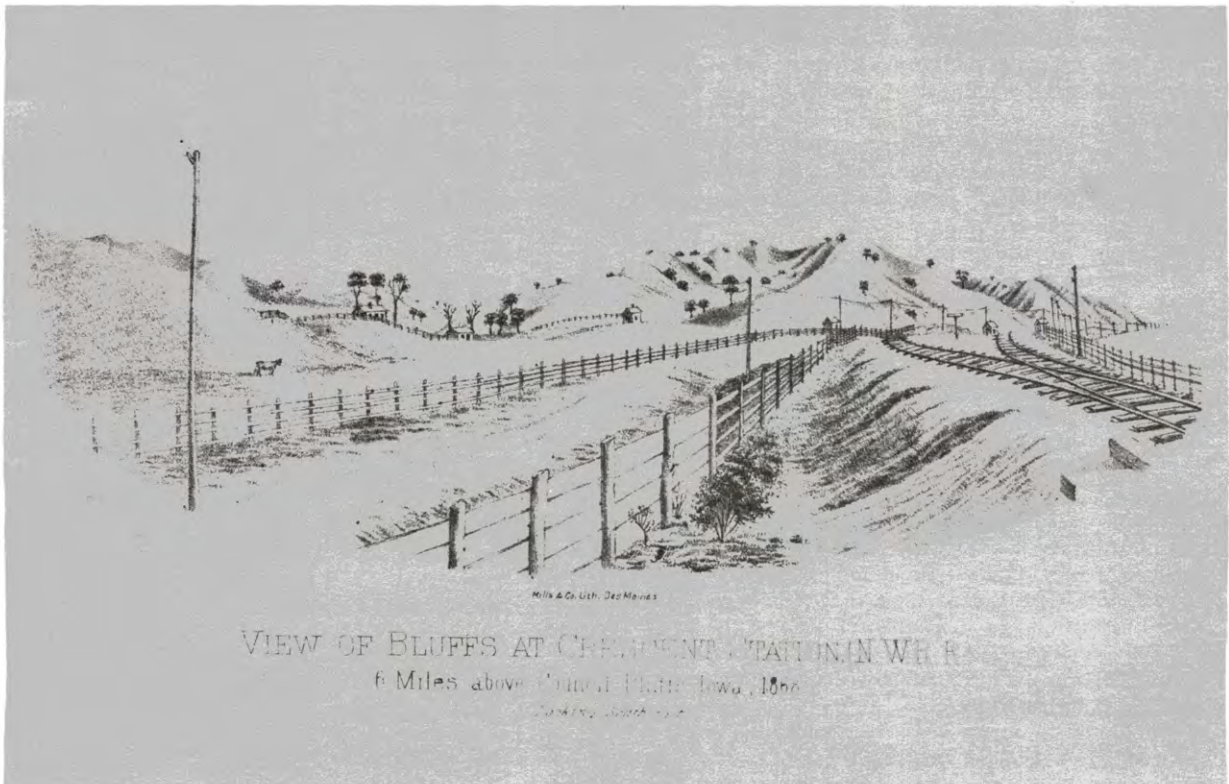
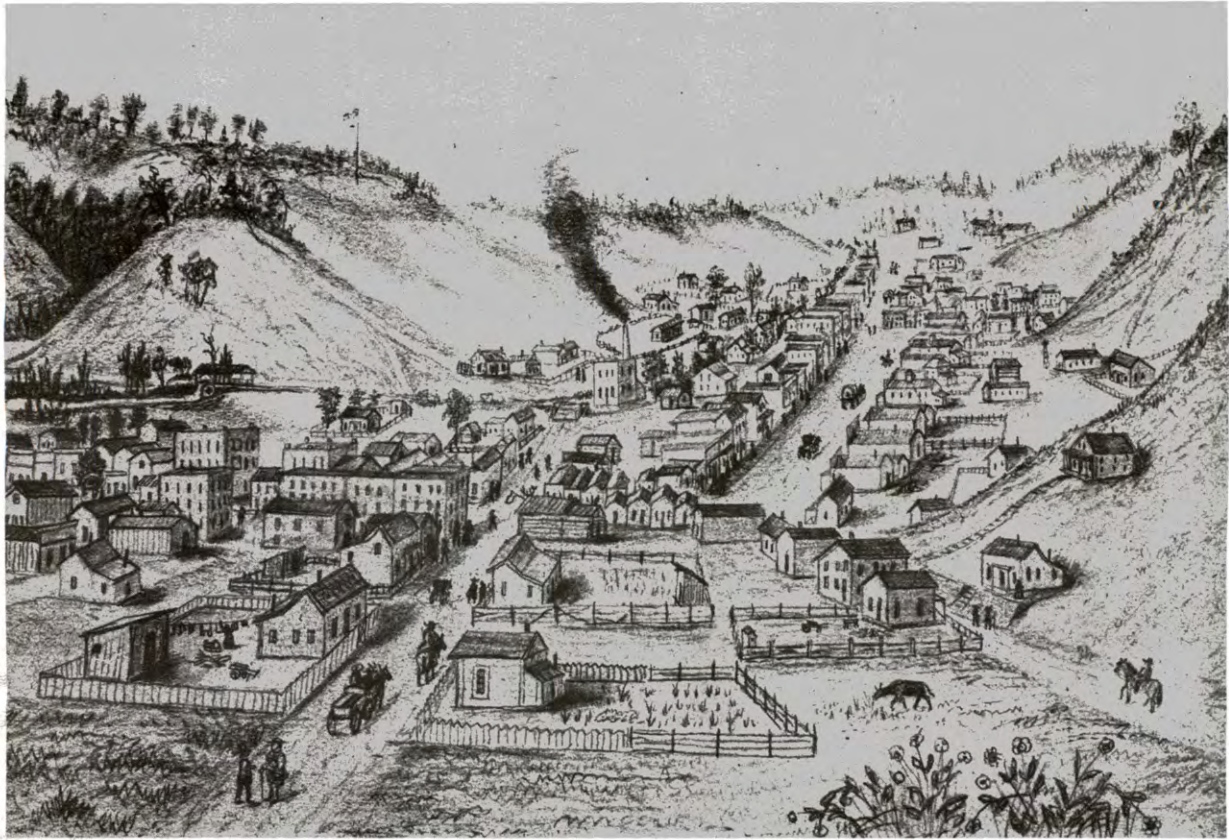
In each county one town became the center of government. Five of the six county seats are in the bluffs: Sidney (Fremont County), Glenwood (Mills County), Council Bluffs (Pottawattamie County), Logan (Harrison County) and Sioux City (Woodbury County). Onawa (Monona County) is on the alluvial plain. Despite the uneven topography, the towns were laid out in a grid pattern.

(Fig. 3 - 4.) After settlers arrived, they changed the bluffs for their purposes.

Fig. 3. Council Bluffs, looking north, drawn by George Simons, 1858 (original at Council Bluffs Public Library).

Fig. 4. The road and railroad that follow the base of the bluffs (from Charles A. White's *Report on the Geological Survey of the State of Iowa*, 1870).





As businesses and industries developed, the loess became a useful natural resource. Paving-brick manufacture became a flourishing business of the Loess Hills region. Brickmakers sold loess clay bricks for local and regional use (Shimek, 1909; [Sioux City Jobbers and Manufacturers' Association], 1892; Udden, 1901; Udden, 1903). Lime kiln operators exploited the loess's "peculiar property of standing secure with a precipitous front." They fashioned kilns entirely out of loess, carved in the side of a hill and used for burning lime for a whole season, sometimes longer. Potters built kilns in this manner as well. An enterprising Council Bluffs brewer tunneled into the Loess Hills behind his brewery, and created cellars for storage. In some instances, small, temporary, arch-roofed stables or cattle shelters were excavated in the side of steep banks. In 1870 state geologist Charles A. White noted that the soil provided a secure base "for the most massive structures." He went on to suggest that "if future emergencies should . . . require them," subterranean passages could be built (Udden, 1901; White, 1870).

### DEVELOPMENT OF TRANSPORTATION SYSTEMS

Good transportation was vital for successful urban enterprise and agricultural settlement. Rivers provided the major transportation routes for the early Loess Hills settlers. Steamboats first ascended the upper Missouri River in 1831 to supply goods for the fur trade (Van der Zee, 1913). As the business of the frontier region changed from Indian trade to agriculture, the steamboat cargoes began to cater more and more to the transportation of settlers, their goods, supplies, and consumer products, returning downriver with agricultural products instead of furs. Council Bluffs captured a large share of river traffic at first, but after 1856, Sioux City became a rival; it was the dominant trade center by the end of the decade (Holt, 1925). Both river ports served as major market centers for the early occupants of the Loess Hills.

Frontier wagon roads meandered in relation to topography, often following old Indian trails (Hilton, 1950). One early route followed the base of the Loess Hills bluffs, moving north from Hamburg (Farwell, 1970). In Woodbury County trails followed the loess ridgetops as they connected with one another. Rural roads eventually joined a main road to a market center such as Council Bluffs (Bain, 1895). Routes crossing the bluffs presented a real challenge to travelers as Missionary Thaddeus Culbertson confirmed in his 1850 journal.

Yesterday . . . we had a great deal of level road but just before coming to the river we had to cross the steepest bluff that I have yet seen. We ascended quite a steep bluff and I expected something of a declivity on the other side but judge of my fearful surprise to find that I had to turn the wagon at a right angle to prevent it from going down the other side and then in a few feet I had to start down a very long and steep ridge scarcely wide enough for two carriages to pass. This was rather a fearful undertaking for so unskillful a driver but summoning up all my courage I started and thanks to the good mules, we got down in safety.

Local road and bridge building and maintenance received constant attention from county boards of supervisors, and by the 1880s, they were realigning roads, often on township or section lines (Board of Supervisors, Pottawattamie County, 1882). Road building and grading had a significant impact on the Loess Hills and the unique qualities of the soil had, in turn, an impact on road construction. Roadside excavations stood perpendicular without change for many years. In one instance, the names of carvers remained on a loess bank, long after they would have ordinarily "softened and fallen away to a gentle slope" (White, 1890). Loess soil was also useful for building up roads across the lowlands (Shimek, 1910).

Later on, road realignment and grading altered the Hills. In

Council Bluffs, advocates for a new and larger high school incorporated the bluff location of the old school in their arguments, claiming that since the town had recently regraded the street on which the high school stood, students must climb sixty-four steps above the sidewalk to reach the building. This, they believed, was injurious to the students' health. Proponents of the new building succeeded in tearing down the old building, bringing the hill down to the road grade, and rebuilding on the old site (Council Bluffs Public Schools, 1894).

Transportation improvements prompted changes at Sioux City.

With the exception of a small bottom-land plateau on which the original city plat was made, Sioux City was left by one of Nature's freaks with a very uneven, hilly and broken surface. To the person who never visited this point prior to the railroad era . . . it would indeed be difficult to picture the . . . view held by the little band of pioneer settlers who came here in 1855-56. They looked out upon hillsides and corresponding valleys which today have been reduced to dead level, with cable and electric street-car lines diverging in almost every direction, and which run at low grades over land at one time too steep for a horse to travel over (Anonymous, 1890-91).

Railroad construction in Iowa ceased during the Civil War, but following the war's conclusion, Iowans turned their attention to the completion of railroad lines linking the Mississippi River to the Missouri River. The arrival of the rail connections with Chicago and St. Louis in 1867, and with St. Paul and the mountain mining country by 1872, changed prospects for marketing farm products (Branch, 1929; Halma, 1974; Anonymous, History of Fremont County, 1881; Anonymous, 1890-91). Railroads provided a year-round link with eastern markets and eventually, transportation for the yet unsettled prairies located away from rivers and streams (Tostevin, 1870). Although migration to western Iowa had continued throughout the Civil War, much unsettled land remained available in the Loess Hills after the conflict. Once railroad lines reached the Missouri, land sales boomed and population soared (Wyman, 1949).

Railroad transportation raised farmers' expectations for success, as a Harrison County agricultural report illustrates:

As we have one railroad now completed and running diagonally through the centre of the county [Harrison] and another one commenced running north and south, our farming prospects seem of the best character. Stock raising will especially prove very profitable to those engaging in it (Iowa State Agricultural Society, 1866).

Another problem dissolved upon the arrival of railroad transportation. Pine lumber from Michigan, Wisconsin, and Minnesota became available, and coal from the Des Moines River Valley mines provided an unfailing supply of cheap fuel (Tostevin, 1870).

### CONCLUSION

The settlement of the dramatic and beautiful Loess Hills followed traditional frontier development patterns. Indians and fur traders gave way to settlers through informal and formal processes repeated for over three generations. Early settlers drew on the frontier heritage and chose land near rivers and wooded streams to raise their grains and livestock. Urban development also closely followed past frontier experience. Towns founded for a variety of reasons eventually depended on the surrounding agricultural economy until railroads subsequently dominated civic development. Previously established frontier settlement patterns prevailed in the Loess Hills region because of the persistence of those patterns, overriding the initial impact the bluffs might have had. The settlers made minor adjustments and used the loess soil to their advantage, just as others in other geological regions had done.

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