

Covered Bridges Come to Iowa

The continuing flood of immigrants into the New England and Mid-Atlantic states in the Eighteenth Century and following the Revolutionary War, forced newcomers to look inland toward the western horizon as the location of the land that was to become their homestead. But it was not always these people who had the urge to move on. There were others who had not found what they wanted in the new world and sought new hills to climb, new lands to break to the plow.

Included in these groups heading west, in addition to farmers, were doctors, lawyers, merchants, engineers, bridgebuilders, the whole gamut of tradesmen. When they had landed in a new location and began to build, their patterns, plans, and ideas were based on things back home. The result was a duplication of the landscape that had been left behind.

Typical of these men were the bridgebuilders. Covered bridges were numerous in New Hampshire, Vermont, and neighboring states. So it was only natural that the New Englanders, when they landed in Pennsylvania, would solve the problem of crossing creeks and rivers by constructing covered bridges. The same thing

happened as the settlers reached Ohio, Indiana, Illinois, and ultimately Iowa.

But crossing the Mississippi and getting to the Indian land west of it was another matter. Possibly the first white man to cross the river and settle in what is present-day Iowa was the French-Canadian, Julien Dubuque, who received permission of the Fox Indians to work the famous "Mines of Spain." Two other settlements developed during the period Dubuque was active: one in Clayton County, the other in Lee County. Explorers, French and American fur traders, and government-led expeditions crisscrossed the area or traveled along eastern and western borders, using the Mississippi and Missouri rivers as their avenues of travel.

It took a series of treaties which the government negotiated with the Indians to gradually extend the area of Iowa open to settlement. Typical of these treaties was one negotiated in 1842. By this document the Sac and Fox Indians ceded to the United States the entire central and south-central sections of Iowa, except for a strip about 65 to 75-miles wide along the western border of the territory. Other provisions called for the Indians to give possession by May 1, 1843, to the eastern half and three years to give up the western half.

At midnight on April 30, 1843, the discharge of firearms sent settlers into the newly opened land. It is said that between midnight of April 30

and sundown of May 1, at least a thousand settlers staked their claims within Wapello County alone. Even though the land had been opened the Sac and Fox were allowed certain privileges to the land they held. Fort Des Moines, at the fork of the Raccoon and Des Moines rivers, was erected in 1843 to protect the rights of the redman. The Fort was staffed with troops and a small number of men who were to provide the necessary civilian trades and services. It was among the latter group that Thomas Mitchell and Peter Newcomer were found, possibly the first to build covered bridges in the State of Iowa: Newcomer, in 1844, over Four Mile Creek and Mitchell, in the same year, over Camp Creek. As more and more settlers came, the cry for bridges increased, especially for one spanning the Mississippi—and that came in 1856 when a bridge was built over the Father of Waters at Davenport. The Mississippi had been crossed by boat and ferry; the streams of Iowa, by boat, ferry, fording, and the simplest of bridges.

It was time for the covered bridgebuilder.

In his *Covered Bridges of the Middle West*, Richard Sanders Allen says:

The abundance of good timber and the many streams to be crossed made it all possible. With the Eastern Seaboard furnishing men, energy and know-how, it was in the Middle West that covered bridge building in America reached a peak of production and perfection.

Leslie C. Swanson, in his *Covered Bridges in Illinois, Iowa and Wisconsin*, also recognizes the contribution of covered bridgebuilders:

The achievements of the nation's covered bridge builders and the integral part they played in developing a great nation are a saga of engineering triumph.

Today's engineers look with awe at the century old structures still standing and say to themselves, "How did they do it?"

The early bridgebuilders, many of them unable to read or write or do the easiest of sums, were not professional engineers. But they were skilled craftsmen, usually carpenters by trade, who could design and erect a house, a church, or a town hall as easily as they could build a bridge. They built as they went. They had none of the tools of today—used the broadaxe, the adze, the wooden plane to shape the big timbers and planks, worked without nails, spikes, bolts. Their trusses were fitted together by treenails (often referred to as "trunnels,") or wooden pegs which were pounded into position.

Few early bridgebuilders had the benefit of training as an engineer. Few had been educated to work out scientific methods for calculating bridge trusses, strength or load weights. As one old fellow said, "I build a bridge 'more than strong' enough to carry the loads it may be called on to sustain." That they were pretty accurate at

their job is attested to by the six to eight-ton loads still being carried by some covered bridges.

Why did Iowans build covered bridges?

The answer to that question is simple as well as logical. Covered bridges could be constructed quickly, were durable, and cheap. Timberland was readily available and, more important, the manpower to build bridges was there. In those days farmers in a bridge construction area were happy to work off their poll tax. That was the common thing to do.

Procedures followed in building a bridge were fairly standard, except for changes caused by the truss used.

An open field was selected near the bridge site. From timbers delivered to the builder, a sample panel or part of the bridge was laid out. All the builder's skill went into this operation. The joints to be made were notched with a sharp knife rather than marked with a pencil which would be too coarse. When the panel was completed, patterns were made and used by workmen in cutting joints, using fine-toothed saws and keen chisels for accuracy.

To the bridgebuilder, truss joints had to be exact. Scarf joints, to which the long stringers were spliced, had to carry their load so that when hardwood wedges were driven home, they would be, in effect, one long solid timber. If there was an error in making the joints, there was sure to be a

settlement, a sag, when the scaffolding was taken down. Even a trifling error might cause a gradual settling later, the weakening of a truss, and a shorter life for the bridge.

Wooden pins connected the various parts. These were called treenails (or "trunnels") and were made of oak. Most builders soaked or boiled them in oil to assure durability.

The truss timbers were carefully arranged on the ground and leveled, holes were bored for the wooden pins. Again accuracy was important. It was essential that all parts fit exactly when moved into position.

While work was going on on the ground, other members of the crew were building abutments or piers. Others erected the scaffolding in the stream between the abutments or piers. On this the finished bridge timbers would be set up and supported until the last treenail was driven home. The first timbers laid were the stringers, those long pieces extending from bank to bank, from pier to pier. They were never set level. There was always a camber, or slight convexity, so that the midstream part of the stringers were several inches higher than the ends. The camber was one of the bridgebuilder's secrets of his craft. It had two uses. Without a doubt the most important was that the bridge will settle a little when the scaffolding is removed, no matter how good the joints. This settling was included in the camber-

allowance, as well as the allowance for vibration sag caused by bridge traffic.

With the bridge finished, the scaffolding removed, the bridge was ready for its first test. If it was a good bridge, it would settle a little, compacting its parts into an everlasting whole. If not, the builder was in trouble.

Few of the more than a dozen trusses patented for use in bridge building are to be found in Iowa bridges. Those found are the Burr, the Howe, and the Town lattice trusses. Some builders also used the king post and queen post to add strength.

The Burr truss, first used in 1804 at Waterford, New York, was patented in 1817, by Theodore Burr of Torrington, Connecticut. He used vertical posts, similar to the king post, and sloping braces. To this framework he bolted an arch of hewn timbers.

The Town lattice was a tightly knit crisscross web of planks, fashioned to form a solid, durable truss. This truss made the bridge rigid and distributed the strains evenly throughout, relieving the center of greater punishment than wood could bear for long. The designer was Ithiel Town, a Connecticut architect, who sold rights to his patent for a dollar a foot.

William Howe of Massachusetts was the inventor of the Howe truss, featuring vertical tension rods of iron. Wood was used for upper and lower chords, end posts, and diagonal braces.

The king post was a simple truss. It consisted of a center post with two compression pieces slanting downward and outward to the shore.

The queen post, similar to the king post, had two posts separated by upper and lower chords.

There seems to be little information available on the construction of bridges in Iowa prior to the mid-1860's. To some extent this may have resulted from changes in the county government setup. Prior to January of 1861 a county judge handled the county government. In January of 1861, an elected board of supervisors took over in each county and assumed duties formerly handled by the county judge. It was composed of one elected representative from each township. This proved to be a cumbersome body and in 1870, through state legislative action, the county board of supervisors was reduced to three members.

In the course of these changes, the lack of adequate storage space, moving from one building to another, from one town to another, fire, and other losses accounted for the disappearance of many county records. Such losses have made it difficult to check bridge and road proceedings.

Begun by Mrs. Fred Hartsook in 1933, a splendid history of Madison County bridges has been compiled. Mrs. Hartsook's research took her to the courthouse where she ran into the problem of missing records. She noted that fact in her original paper. On the whole Madison County

records have survived well—even back to 1871 when a new 3-man board took over. One of its first actions was to vote new rules for building bridges in the county. The *Madisonian* (Winter-set) commented editorially on January 12, 1870:

Our Board of Supervisors have done very well in adopting new rules to govern the erection of county bridges. There has been much complaint about the erection of county bridges, as to their stability and make. The plan by the Board does away with the stone abutments, thus saving such expense and enabling the county to build many more bridges. It is claimed that timber can be readily replaced, and that ice will affect it less than stone. They also require that bridges shall be covered. The expense of the roof is more than made up by the permanency of the bridge. Instead of the old style framing for the support of the bent, they have adopted the lattice work frame like that used to support the ceiling of our court room.

As far as records are available, it would appear that the first bridges definitely listed as being covered were constructed in Floyd and Polk counties; Keokuk County's Delta Bridge, was started in 1867 and is the oldest covered bridge still standing in Iowa; Madison County's earliest bridge was erected in 1868.

The heyday of covered bridges in Iowa was between 1865 and 1890. Iron and steel, gradually inching into the Iowa picture during the period, had just about assumed control of the bridge building industry by the turn of the century.

With only 11 surviving covered bridges to its

credit, few people realize that Iowa plays much of a part in the over-all national covered bridge picture. Iowa is in 14th place at this writing with county totals as follows:

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|-------------|----|
| Cerro Gordo | 1 |
| Keokuk | 1 |
| Madison | 7 |
| Marion | 1* |
| Polk | 1 |

(*) Although not counted in this total, Marion County is also listed with another bridge, the Marysville span. It has been dismantled and is to be divided into two 40-foot spans. The sections then will be reconstructed in parks in Knoxville and Pella, both in Marion County. When this is done, Iowa's total will jump to 13 covered bridges.

Iowa's existing bridges are so situated that they are easy to reach. They are concentrated in a band that follows Highway 92 across the state. None of the bridges are more than a few minutes from that highway. Heading west, the first bridge is in Keokuk County, just south of Delta; next is the Hammond Bridge in Marion County; a side trip to Des Moines will locate the Owens structure, then on to Madison County, "The Covered Bridge Capitol of the Midwest," with its seven bridges. The most recent addition to the Iowa family is the Shell Rock River Bridge at Rock Falls, Cerro Gordo County, in northeast Iowa. Two other centers of covered bridge structures are to be found in Clayton and Page counties although none of the bridges are still standing.

Iowa's newspapers always have been strong advocates of covered bridges. Prior to the turn of

the century they supported the use of wood in building bridges because it was cheaper, easily available, and more convenient. Likewise, they supported covered bridges because of the protection afforded from the elements. The following appeared in the *Delaware County Union* of April 6, 1871:

COVER THE BRIDGES.—We submit to the Board of Supervisors that it would be a good plan to roof the main bridges of the county. It would add many years to their durability.

With the greater use of iron and steel for bridges, the wooden structures gradually disappeared from the scene. It was not until the 1930's that covered bridge buffs began calling attention to their disappearance. Again newspaper editors took up their cudgels with a clarion call to save the covered bridge.

Don Berry, distinguished editor-publisher of the *Indianola Record-Tribune*, has been outspoken in the battle to save covered bridges. His editorials, written for his own paper, have been reprinted widely by the state's newspapers. An outstanding photographer, his pictures of covered bridges have aided materially in his struggle. A story written by Berry was responsible for this editorial in *The Pella Chronicle* of April 3, 1947:

It was a year or two ago that Don Berry, Indianola newspaper publisher, wrote an article on covered bridges

in Warren and Marion counties and advocated their preservation . . .

Marion County has several covered bridges. Two of them span creeks on little used roads just a little south of the Pella-Knoxville road. They are picturesque in their setting on narrow, hilly, winding dirt roads and since they are wide enough and sturdy for the light traffic they should stay there and be carefully preserved against the weather and overloading. Many motorists drive these wooded roads for the pleasure of driving over and under old bridges.

Could be these bridges will have to go some day. If so, a friend suggests the bridges be moved, either by dismantling or all in one piece, to another scenic spot in the county or to a state park where, set up over a creek, folks could continue to enjoy them. How appropriately they would fit, for instance, over the streams in the Ledges State Park. It would be fun now and many times as much fun fifty years hence, to drive a spanking team hitched to a "surrey with the fringe on top" through a friendly covered bridge. Don't you think?

The following editorial appeared originally in the *Indianola Record-Tribune*. It was reprinted in the *Colfax Tribune* of February 18, 1954:

Covered Bridge of Oldtime Can Still Be Seen in Iowa

We were glad to see the Knoxville Express trying to arouse some interest in the preservation of the covered bridges in Marion county. That county has some of the most picturesque bridges in Iowa.

We have visited all in this state and a good many others. Nowhere do we remember a more picturesque bridge than the West Durham bridge over English Creek about seven miles northeast of Knoxville. It made us al-

most heartsick the last time we visited it to see it going to pieces, apparently from deliberate neglect.

Perhaps the Marion county supervisors do not think these bridges worth saving. Only a few years ago the Madison county supervisors felt the same way. Now Madison county is proudly proclaiming that it has the most covered bridges of any one county in the United States. It has seven. It is maintaining them and they are apparently good for many more years. Visitors are coming from far and near to see them.

These old covered bridges are a bit of the history of the pioneer days in Iowa that are worth preserving. Too often, as was the case in Warren county, they are abandoned or destroyed because of the skill of a super salesman peddling steel bridges.

A few years ago Madison county lost one of its most picturesque and useful bridges by action of the supervisors without the public being aware of the destruction until it was about over. Fortunately that is all changed and the county is gaining wide publicity and approval because it is preserving these historic structures.

In Keokuk county the Delta covered bridge over North Skunk River was erected in 1869 of native framework. A good many years later a steel bridge was built above the covered bridge. Only about five years ago, when the covered bridge was nearly 80 years old, the steel bridge was condemned and the traffic of a county trunk road detoured over the covered bridge.

Saving these bridges may be all a matter of sentiment. But who wants to live in a community without sentiment?

Success to those who would save the Marion county bridges.

Frank Miller, *Des Moines Register* cartoonist, is another newspaperman who has waged a two-

pronged battle in making Iowans aware of the bridges. He has illustrated them beautifully and written about them with feeling. Typical is this gem about Madison County's bridges in the July 1, 1958, issue of the *Register*:

Covered bridges are one of our most direct and handsome connections with the past. Their setting at the shady junctions of wooded streams and winding country roads has changed little since their construction in the late 1800's.

Iowa is lucky to have a good number of these old bridges left, and they are a pleasing and appropriate part of the state's landscape. Their handsome lines and weathered timbers fit in perfectly with Iowa's picturesque farm lands and peaceful rural history.

For practical reasons these bridges were covered to add to structural strength and to help the wood season properly and last longer. The "unofficial" theory that they were built like barns to encourage animals over streams seems quite plausible; and the cool dark interior surely was a welcome relief during hot and dusty buggy rides.

Adding to their charm is the fact that, though they belong in the realm of American antiques and horse and buggy days, they still perform their duty efficiently by getting sleek, high powered motor cars across streams.