The PALIMPSEST

The Old Mill In Winter

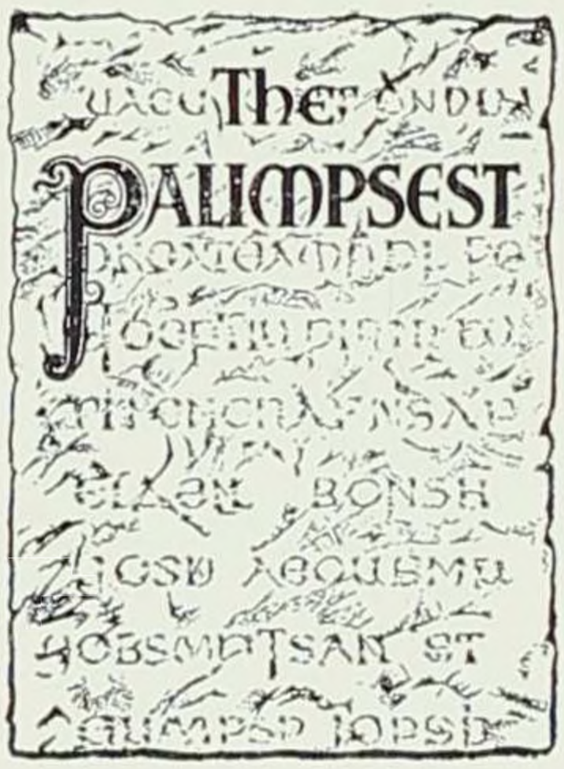
Iowa — Land of Many Mills

Published Monthly by

The State Historical Society of Iowa

Iowa City, Iowa

JANUARY 1961



The Meaning of Palimpsest

In early times a palimpsest was a parchment or other material from which one or more writings had been erased to give room for later records. But the erasures were not always complete; and so it became the fascinating task of scholars not only to translate the later records but also to reconstruct the original writings by deciphering the dim fragments of letters partly erased and partly covered by subsequent texts.

The history of Iowa may be likened to a palimpsest which holds the record of successive generations. To decipher these records of the past, reconstruct them, and tell the stories which they contain is the task of those who write history.

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JACOB A. SWISHER

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Illustrations

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ENTERED AS SECOND CLASS MATTER JULY 28 1920 AT THE POST OFFICE AT IOWA CITY IOWA UNDER THE ACT OF AUGUST 24 1912

PRICE — 25 cents per copy; $2.50 per year; free to Members
MEMBERSHIP — By application. Annual Dues $3.00
ADDRESS — The State Historical Society, Iowa City, Iowa

THE PALIMPSEST

EDITED BY WILLIAM J. PETERSEN

VOL. XLII ISSUED IN JANUARY 1961 No. 1

Mills of Antiquity

In the ages of antiquity man had nothing that resembled a mill. He probably used a "rock in place," and another "rock in hand" to crack or crush nuts and grain for his sustenance. Any advancement in this process developed very slowly. The only improvements through long ages were that the rock on which the grain was crushed tended to become cup-shaped, and the pounding stone oval or conical, and because man frequently moved from place to place there was a tendency to use rocks that were portable. These developments foreshadowed the mortar and pestle which were employed by the inhabitants of ancient Chaldea and Britain, and by the aborigines of North America.

At length the development of the saddlestone presented a second step in the evolution of millstones — changing the method from pounding to grinding. The saddlestone has been described as "piece of quartz or other hard rock about the size of a half brick, one side of which has a convex

surface, and fits into a concave hollow" of a larger stone. The operator seizing the upper stone, would, "with a forward and backward rowing movement, grind the grain." It is believed that saddlestones were used in Ancient Chaldea, and are known to have been used in Egypt about 2300 B. C. They were used in Greece and Rome prior to the advent of the Roman quern.

The quern, which came into use about the second century B. C., constituted the third and final major improvement in the development of millstones. Whereas the motion of grinding on the saddlestone was oscillatory and, therefore, alternating, that of the quern was rotary and continuous. The first querns appear to have been hand mills consisting of a lower stone of somewhat conical form with an upper stone shaped to fit over it. On the upper stone was a handle to enable the operator to rotate it, and an opening through which grain was fed. With the passing of the years the upper stone was modified until the grinding surfaces were flat. It was then but a short step to the grooving of the flat surfaces and the modifying of the grooves for improved grinding. Thus, men of antiquity designed and developed a type of millstone that was destined to endure for many generations, and is still remembered as a basic unit and a significant part of the "Old Rustic Mill."

To a large extent the crude mills of antiquity

were operated by hand power — frequently by the hands of a slave, more often perhaps by the hands of a woman. Thus Samson, when he was made captive, about 1115 B. C., "did grind in the prison house," and at a much earlier date the patriarch, Abraham, directed his wife, Sarah, to make ready three measures of "fine meal" as a repast for the angels.

Although hand-power mills continued to be used for centuries, mechanical power also came into use at an early date in many lands. Water wheels were of many types — overshot wheels, undershot wheels, breast wheels and turbines — all turning millstones to grind the golden grist. In the evolution of milling it was but a short step from the larger mills operated by slaves to mills of a similar type propelled by horse power. Horse-power mills like water wheels were known to the Greeks and the Romans. They were used in Germany, England, and France, before they were brought to America by the early pioneers. The first mill on Manhattan Island, it is said, was a horse-power mill built in 1628.

During the two thousand years or more since the water wheel came into use and the horse-power mills were designed, other modes of power have been evolved. The windmills — the windmills of Holland and the world — who has not heard of their power? Steam power, too, has played a major role in the operation of steam

boilers and steam turbines used in the turning of mill wheels and millstones. Thus in ancient and modern times, in foreign and domestic lands, many types of mills have developed. Indeed, the stages of culture may, in a measure, be revealed by the types of mills that were used — mills, mills many of them and of a wide variety.

But for adventure and romance, for simplicity of action and dignity of service, for charm and tradition, the old water mill is unsurpassed. What youthful memories, what pure delights, what economic significance is associated with the millstones, and the moss covered water wheels of the Old Rustic Mill.

Early Iowa Mills

When the early pioneers first felt the enchantment of the Iowa prairie, they were coming into an area that would one day be "A Land of Many Mills." Indeed, almost every type of mill that has been devised in any land in all the ages has at some time been used in Iowa. There were hand mills of various types and many designs, including the primitive kinds that did not turn. Chief among pioneer instruments for grinding, however, were rotating mills. There were horse-power mills, ox mills, and treadmills. There were windmills, powerful and mighty, though not used extensively for the grinding of grain. There were water mills in abundance, and steam and electric power mills not a few. There were sawmills, woolen mills, flour mills, gristmills and paper mills — mills a thousand strong. Iowa was, indeed, a land of mills.

The first water mill in Iowa was erected before the land was open to white settlers. When logs were needed to build Fort Crawford near Prairie du Chien, Wisconsin, Federal troops were directed to cross the Mississippi River and erect a sawmill on the Yellow River in what is now Iowa. There a dam was built, a sawmill constructed, and

Jefferson Davis, then a lieutenant in the United States Army, superintended the work during the summer of 1831. According to tradition, Davis was kind to the Indians in this vicinity and as a result he was adopted into their tribe and given the name of "Little Chief." Thus it was that the first water-power mill in Iowa came to be known as the "Jeff Davis Mill." A few years after its erection it is reported to have burned "like a ship at the water's edge." Many years later investigators rediscovered the location of the old mill and recorded the site of the first milldam in the Iowa country.

The region west of the Mississippi River was opened to white settlers on June 1, 1833. Although the early pioneers needed mills for the sawing of logs and for the grinding of grist immediately upon their arrival, no laws were passed for the building of milldams prior to 1838. Meanwhile, most of the logs were hewn with axes, and most of the grinding of grain was done with hand mills — coffee mills or homemade crushers and grinders, sometimes even "jointers" or "graters." Some pioneers, however, did erect mills and milldams without legislative action.

The water-power milling industry in Dubuque County seems to have begun with the erection of a log mill near the mouth of Catfish Creek in 1834. A year later this was replaced by a small frame building which had "a single run of small

French buhrs." At the site of this little mill the famous Rockdale mills were established in the decade of the forties. In 1834 Benjamin W. Clark, one of the first settlers in Scott County, built a sawmill on Duck Creek, fifteen miles up the Mississippi River from his home in Buffalo. In 1835 a gristmill was built on Crow Creek near Le Claire. This building was sixteen by eighteen feet in dimensions and was constructed of hewn logs. It contained a single set of millstones "cut from prairie boulders."

The village of Augusta on the Skunk River in Des Moines County was settled soon after this area was opened for settlement. There in May, 1835, Levi Moffatt, William Smith, Robert Chestnut, and Fred Kessler began the construction of a dam and sawmill, which was soon operating. In one corner of the mill "a one-stone run" of burrs was placed to grind corn and wheat. The "Moffatt Mill" as it was called, served the pioneers of a wide area and came to be a renowned Iowa landmark. The original building was destroyed by the flood of 1851, but it was rebuilt and operated successfully until 1876.

When water power mills were not available for the grinding of grain, Iowa pioneers resorted to other means of generating power. A typical frontier mill of the burrstone type operated by man power was designed and constructed by Aaron Porter. The pioneers of 1837 in Cedar County,

who had grain but no means of grinding it, prevailed upon Porter to build something that would serve as a mill. Going to the prairie he selected two boulders for the upper and nether millstones. The grinding surface of these stones, about ten inches in diameter, were "dressed down" to suit the purpose for which they were to be applied. One of the stones was fastened to the floor of his cabin. A hole, or eye, was drilled through the center of the other one, which was so adjusted as to revolve from the pivotal center. An upright shaft completed the machinery. One end of the shaft was fixed in the upper side of the upper millstone, and the other end was fitted "gudgeon fashion," in a joist above.

The power was derived from the shaft which was operated by two men, one using his right hand and the other his left. With their other hands they fed the mill. It was a rude, primitive contrivance, but it served its purpose, and its construction was regarded by the people, whom it was intended to accommodate, as "a great and convenient accomplishment," hence it came to be widely known as the "Little Savior." Many bushels of grain were carried to it by the pioneers on foot, or horseback, or in rudely constructed ox carts or sleds. Usually two of the settlers would go to the mill together and help each other with the grinding. No toll was exacted — no charge made for the use of the mill. It was built for the

accommodation of the settlers, and was a convenience that was greatly appreciated by the pioneers.

Mills operated by horse power were available in some areas. Lucius H. Langworthy of Dubuque, writing in the decade of the sixties about very early conditions in that region, noted that as more settlers came, horse-power mills were erected throughout the county. "They consisted merely of an enclosure of logs with a great wheel in the center, around which a large leather rope called a whang was placed and was also attached to a smaller wheel, the gudgeon of which turned the mill stones and ground the corn, the motive power being horses. Customers took their own teams and wagons with shelled corn and went often to the horse mill ten, twenty, and even thirty miles distant — waiting sometimes one, two, or three days for their turn to grind, living in the meanwhile on parched corn and sleeping out in their wagons or around a heap of burning logs."

An early pioneer, commenting upon his westward trip across Iowa, said: "In the middle of the day a stop was made for dinner at a farm house by the roadside, and attention attracted to a number of farm teams gathered around a frame work in the adjoining barnyard. This frame work turned out to be an old-fashioned tanbark mill, with a horsepower sweep attached. . . . The neighboring settlers had gathered in, each with

his little sack of shelled corn, and taking turns hitched their teams to the sweep and ground out their different grists. The travelers had their dinner from bread made of this meal, with fried bacon and eggs, and enjoyed it as heartily as they would now one served in the best hotel in Iowa."

Unique in the annals of Iowa was the treadmill used for the grinding of grist. Sometimes the motive power was furnished by oxen or cattle. Windmills were not commonly used in Iowa for the grinding of grain—but there was some experimentation in this area. Upon the promise of a bonus of a thousand dollars a resident of Adair County built a windmill for grinding. The power was to have been "supplied by four huge wings," after the style of the mills of Holland. But the wind was "too uncertain and too erratic" for successful operation.

An early pioneer — Egbert T. Smith, a resident of the Wapsipinicon valley, attempted to harness "an Iowa zephyr" and utilize its power. But he proved himself to be a veritable "tenderfoot." The wind would not obey his will, but worked in its own wild way. "It laughed at Smith's temerity; it roared at his audacity; it whispered its displeasure; it shrieked at his interference; it howled, it sulked, it bucked, it balked; it shook his machine in its frenzy; it would not be tamed and work his saw." It is reported that in the end Smith saw the folly of his plan and ac-

knowledged defeat "in language more forceful than elegant."

In 1875 the Dutch settlers in Sioux County subscribed $800 for a genuine Dutch windmill. It operated successfully for a time and was one of the features of the landscape which told the world of the colony's nationality. But it was soon dismantled and supplanted by a modern steam roller-mill. It was later suggested that the structure "deserved a better fate," and should have been preserved as a pioneer landmark.

Steam power has played an important role in the milling industry. Gasoline engines and electric motors, too, have turned many millstones. But in Iowa the history of milling, prior to the era of big business, centered around the many water mills along Iowa streams, and there remains today an affectionate interest in the Old Water Mill.

Listen to the water-mill:
Through the livelong day.
How the clicking of its wheel
Wears the hours away!
Languidly the autumn wind
Stirs the forest leaves,
From the field the reapers sing,
Binding up their sheaves;
And a proverb haunts my mind
As a spell is cast —
'The mill cannot grind
With the water that is past.'

Decade by Decade

A retrospective view of Iowa through the years reveals a gradual rise followed by a gradual decline in milling. For the greater part of five decades there was a gradual annual increase in the number of mills, the peak having been reached in the late seventies. Since that time there has been a gradual decline in the number of mills until they are now all but gone.

Prior to 1831 the Federal Government had erected the "Jeff Davis Saw Mill" in what is now Allamakee County. As soon as the Black Hawk Purchase was open for settlement, pioneers began coming into Iowaland, bringing with them such portable mills as they had — coffee mills, jointers and graters, and perhaps an occasional mortar and pestle. Soon thereafter mills began to be constructed of such materials as were available to the pioneers. In 1833 a combined sawmill and gristmill was built near the mouth of Little Turkey River in Clayton County where the town of Millville was later established.

Other mills erected in the early thirties included the Sageville Mill in Dubuque County, Clark's Mill near Buffalo in Scott County, and Moffatt's Mill at Augusta in Des Moines County. About

1836 Samuel Clayton and his sons constructed a brush dam across Chequest Creek in Van Buren County and established the Clayton Mill, one of the famous old mills of that area. It was about this time that Aaron Porter built the "Little Savior" for residents of Cedar County. And the water of the Maquoketa River was harnessed for a mill at Cascade in Dubuque County.

In 1838 William Meek and his sons asked permission to build a dam across the Des Moines River at Bonaparte in Van Buren County, and establish a mill that continued to be prominent in Iowa history until 1900. Five other franchises to build milldams were granted by the first Legislative Assembly of Iowa Territory. In 1839 Benjamin Nye was given authority to erect the first of three mills on Pine Creek in Muscatine County near the site of Old Pine Creek Mill that still stand in Wild Cat Den State Park. It was about this time, too, that David Switzer erected his little mill on Clear Creek at Coralville, near Iowa City, which was to become one of the original pioneer mills of Johnson County.

The decade of the forties witnessed the establishment of the Terrell Mill at Iowa City — the first gristmill on the Iowa River — a mill which operated for fifty years and then gave its water power to the State University of Iowa "for the advancement of science and learning." That period also witnessed the attempt to utilize the wind-

mill for the grinding of grain, an experiment that proved impractical at the Buhrmaster Mill near Burlington. One of the renowned old mills of the decade of the forties was the Wassonville Mill near Wellman, in Washington County. In Jackson County, McCloy's Mill and Tubb's Mill were both established in the decade of the forties, while in the Polk and Warren county region the Parmelee Mill was already serving a large area. But for general interest, for extensive service both in point of years and in area covered, few mills surpassed the Coralville Mill erected in the forties and operated in the fifties by Samuel J. Kirkwood — later known as "Honest Sam," who won wide renown as an orator and statesman, attaining the offices of legislator, Governor, United States Senator, and a member of the President's cabinet.

Prominent among the mills built in the fifties were Fountain Spring Mill in Delaware County, Rock Creek Mill in Cedar County, mills at Monticello and the Oxford Mills in Jones County, mills at Littleton in Buchanan County, at Hardin City, Iowa Falls, Steamboat Rock, and Alden in Hardin County, at Mason City in Cerro Gordo County, at Otranto in Mitchell County, and at the little Bohemian settlement of Spillville in Winneshiek County. Farther to the west was Soper's Mill in Story County, Old Red Mill in Dickinson County, and White Cloud Mill in Mills County. By 1860 Iowa had 333 flour and

gristmills and 540 sawmills. But there were yet many to be erected, and the peak of the flour milling industry was not reached for another decade and a half.

Among the mills that were prominent in the decade of the sixties, although most of them had been established earlier, were the Lowell and Oakland mills in Henry County, the Currier Mill in Mahaska County, the Coppock and Brighton mills in Washington County, and the Larrabee Mill in Fayette County. It was in the sixties, too, that a millrace was built for the Amana mills, and from that day to this Amana has been known for its milling and manufacturing interests.

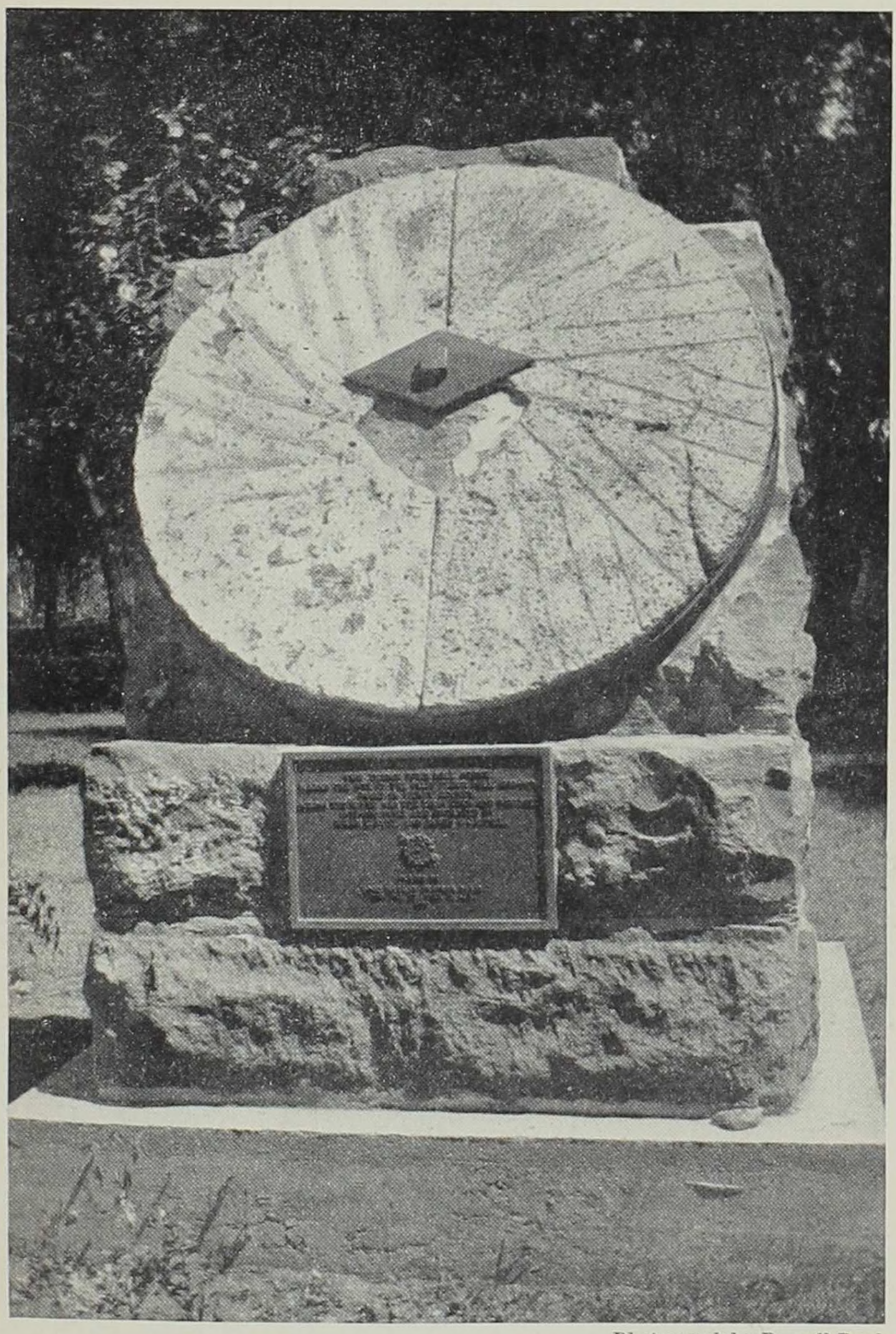
In 1870 the Federal census takers counted 502 flour and gristmills and 545 sawmills in Iowa. The Hawkeye state had truly become a land of a thousand mills. Most of these were operated by water power. In the flour and gristmills alone more than five hundred water wheels were turning and more than a thousand runs of millstones were grinding.

It was in the decade of the seventies that Iowa reached its peak in the wheat-growing industry, with the production of 44,131,807 bushels in 1875. In this same decade the number of gristmills rose to the highest ever attained. In 1880 Iowa had 713 flour and gristmills, with 2,121 runs of millstones, operating by more than a thousand water wheels which were supplemented by 287 steam

engines. Iowa also had 328 sawmills, with forty-eight water wheels and 320 engines. Thus, sawmills had decreased in number during the seventies and many of them had adopted the use of steam. Flour and gristmills, on the other hand, had increased in number, and for the most part they had retained the use of water power. In addition to these, there were thirty-four woolen mills using twenty-two water wheels.

The establishment of a thousand mills was visible evidence of a wide-spread interest in local milling, to avoid the necessity of making long and tiresome journeys to more distant mills. But there came a day when the interest in local milling declined. In some cases this was due to the building of larger and better mills that were reasonably accessible. In other cases, time was taking its toll. Mills were destroyed, dismantled, or abandoned in greater numbers than they were built, restored, or replaced. Perhaps floods, fires, and ice jams were the chief causes for the destruction of old mills. The famous old Moffatt Mill on the Skunk River was destroyed, and a carding mill, a sawmill, a furniture factory and a distillery — all the property of Levi Moffatt — went down stream in the flood of 1851. Many less renowned mills suffered a similar fate.

But there is yet another story. Many old mills stood year after year, decade after decade, defying the elements and only slowly weathering



Photograph by Russell Paul

An old French millstone has been mounted in an attractive manner and preserved as a significant historic landmark at Lowell in Henry County.

Courtesy of Moffatt E. Finck

Moffatt's Mill on the Skunk River in Des Moines County was one of the first and most widely patronized mills in southeastern Iowa. One of its millstones is preserved in Crapo Park, Burlington.

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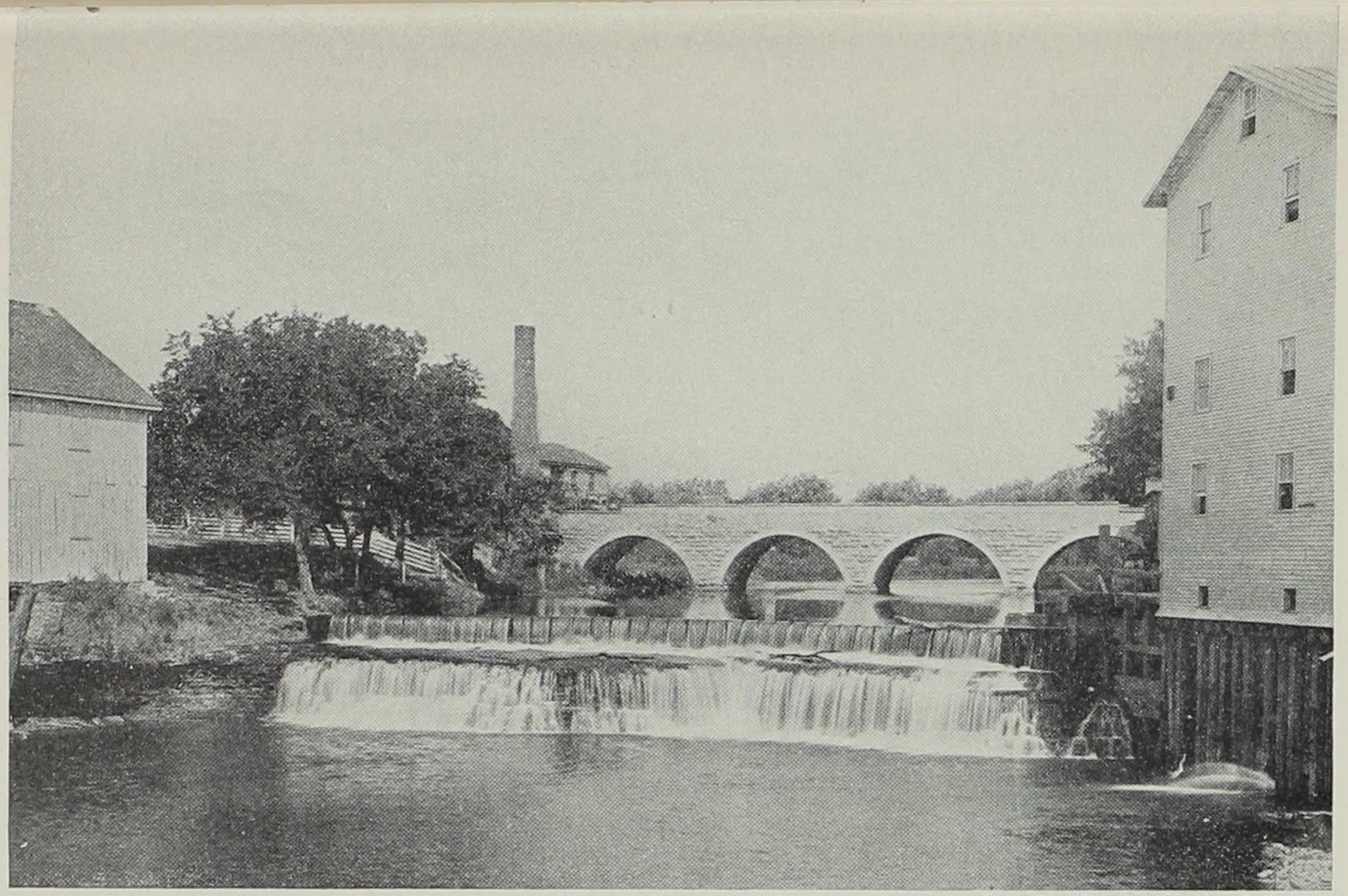
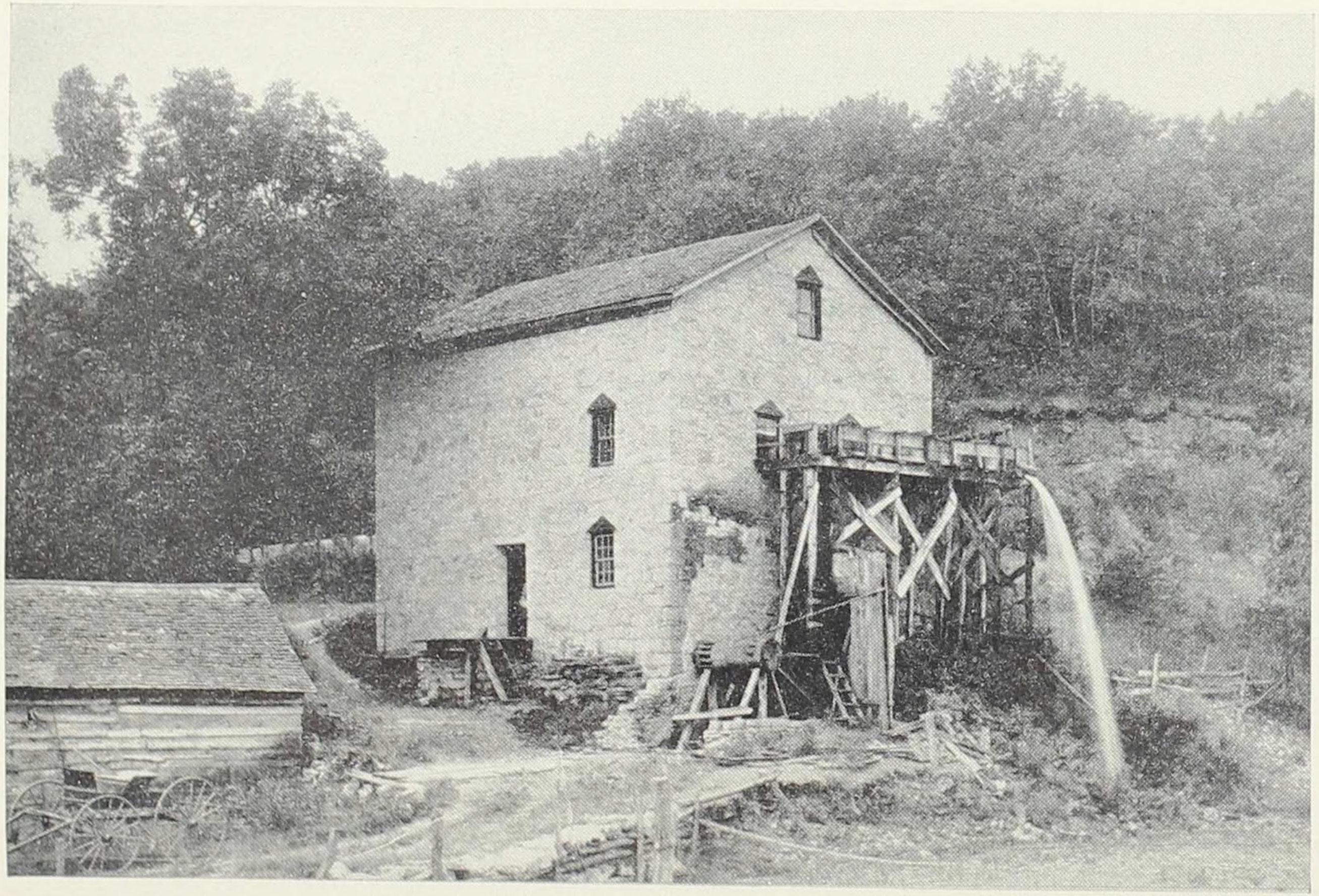


From the Floyd A. Nagler Collection

A fall of nine feet in the waters of the Maquoketa River gave the town of Cascade its name and its water power. An old mill there withstood the floods of 1856 and 1925. The dam was later removed as a flood control measure. But the old mill remained.



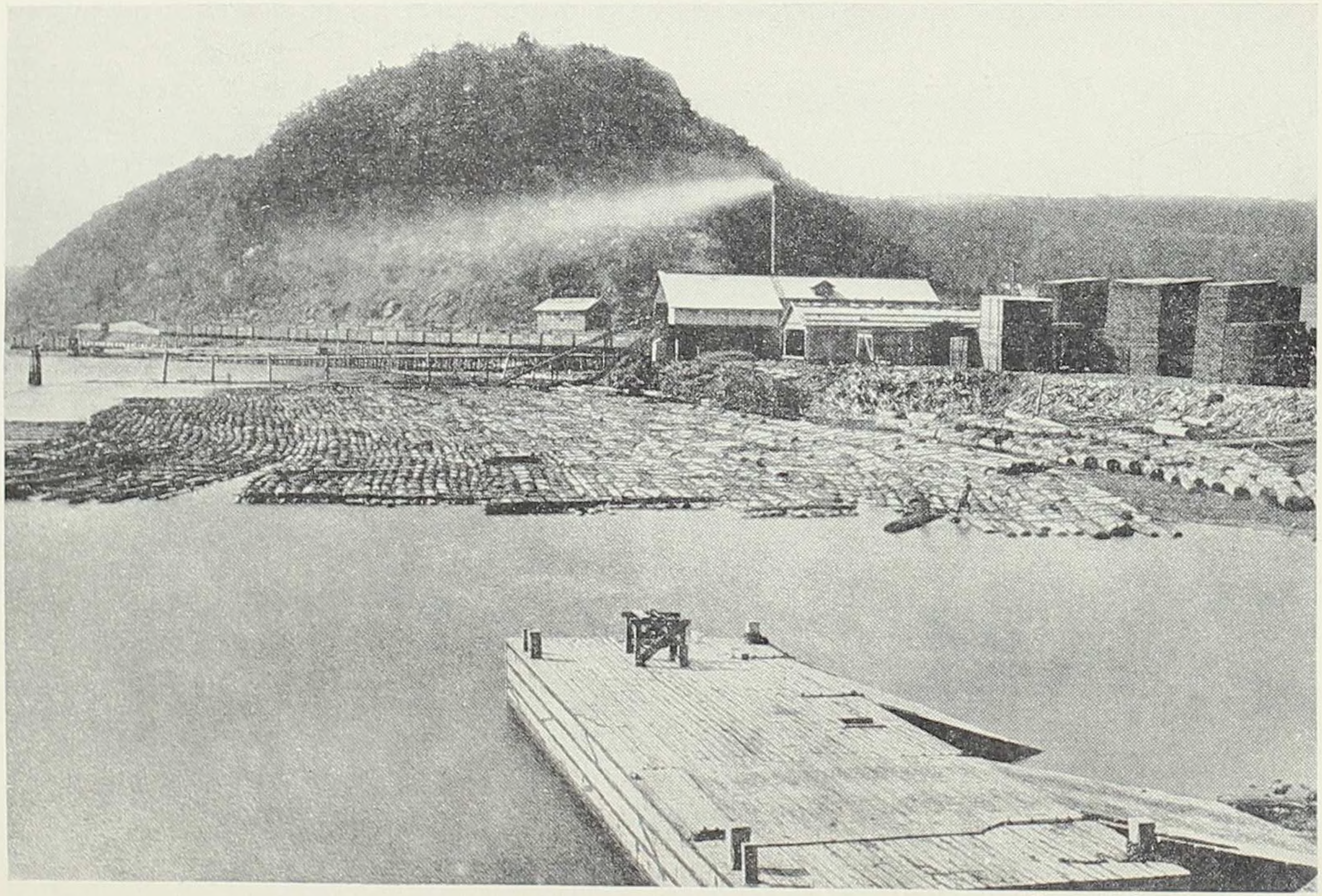
Photograph by Samuel Calvin

Fountain Spring Mill near Greeley, in Delaware County, had a millrace and flume carrying water from a spring down the slope of a hillside to an overshot mill wheel in the valley below. A 1907 picture shows the original wheel in place, but badly broken.

down the slope of a hillside to an overshot mill wheel in the valley below. A 1907 picture shows the original wheel in place, but badly broken.

From the Floyd A. Nagler Collection

William Werhan, the first postmaster at Forest Mills in Allamakee County, was the owner of the first sawmill and gristmill in this area. In 1865 he built this larger flouring mill which served the pioneers for many years.



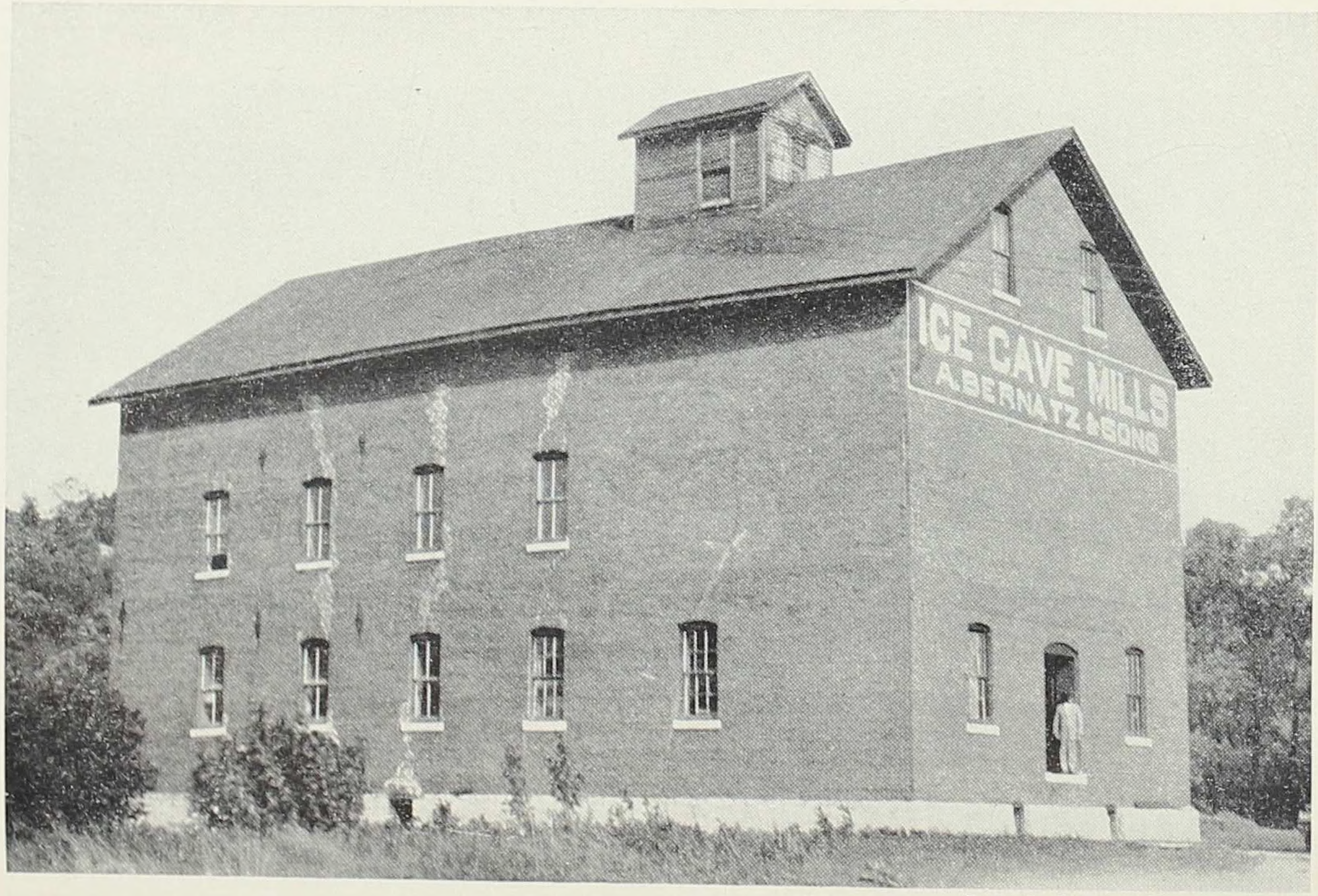
Courtesy of Florence L. Clark

The Fleming Sawmill and Log Raft began operating at Marquette, in Clayton County, in the decade of the sixties. In 1882 they were doing "an immense business, employing 120 men, and having a pay-roll of $5000 per month.

sixties. In 1882 they were doing "an immense business, employing 120 men, and having a pay-roll of $5000 per month."

From the Floyd A. Nagler Collection

One of the two old mills that served the pioneers of Vernon Springs in Howard County. This picture with its typical rural setting shows the old mill as it appeared in horse and buggy days.



From the Floyd A. Nagler Collection

Decorah was for many years a milling center, obtaining grain from both northern Iowa and southern Minnesota. Ice Cave Mill on the Upper Iowa River was a pioneer landmark in that area.

Ice Cave Mill on the Upper Iowa River was a pioneer landmark in that area.

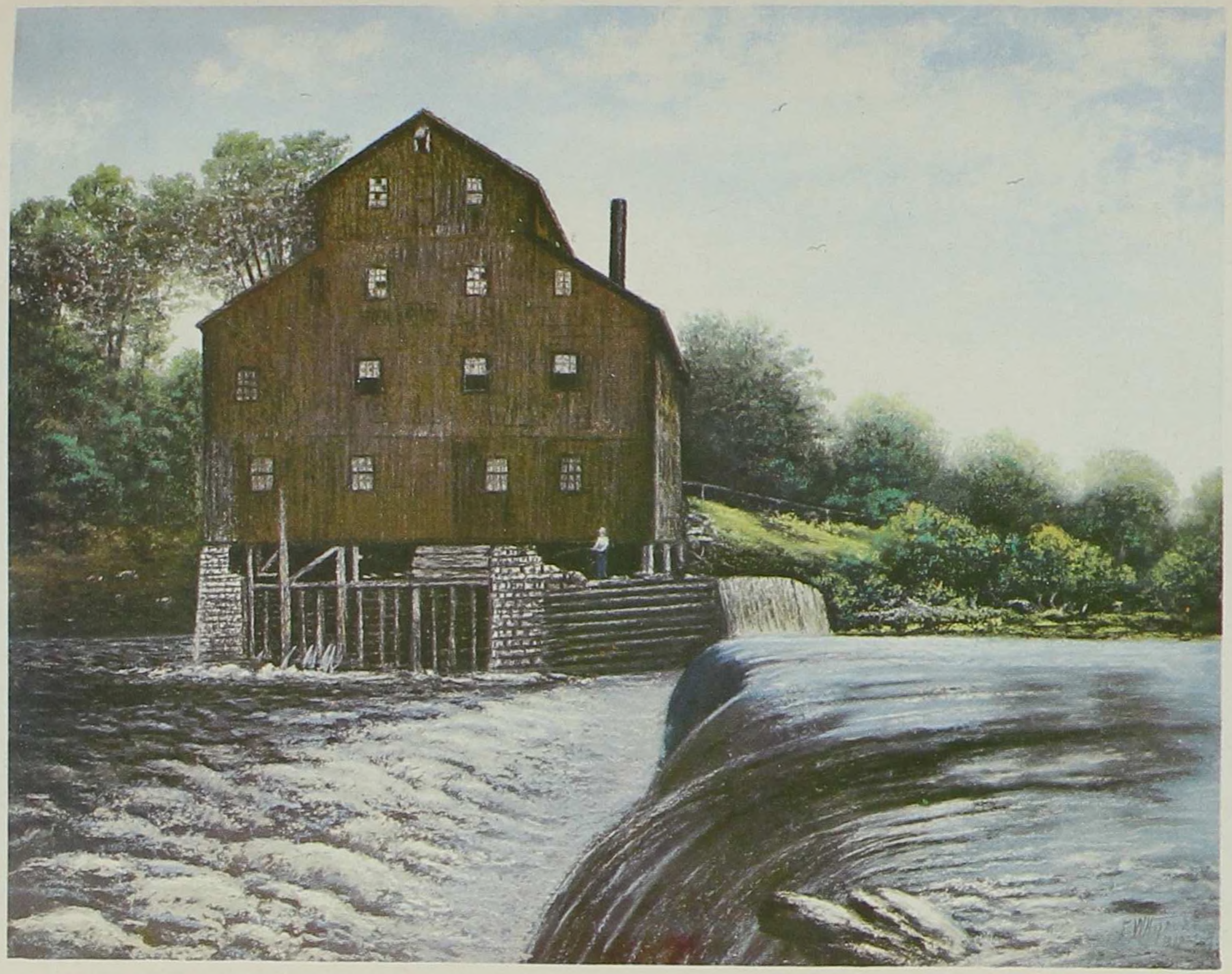
From the Floyd A. Nagler Collection

The Staudinger Mill near Monona, in Linton Township in Allamakee County, was operating in 1868 and was used in later years as a dwelling.

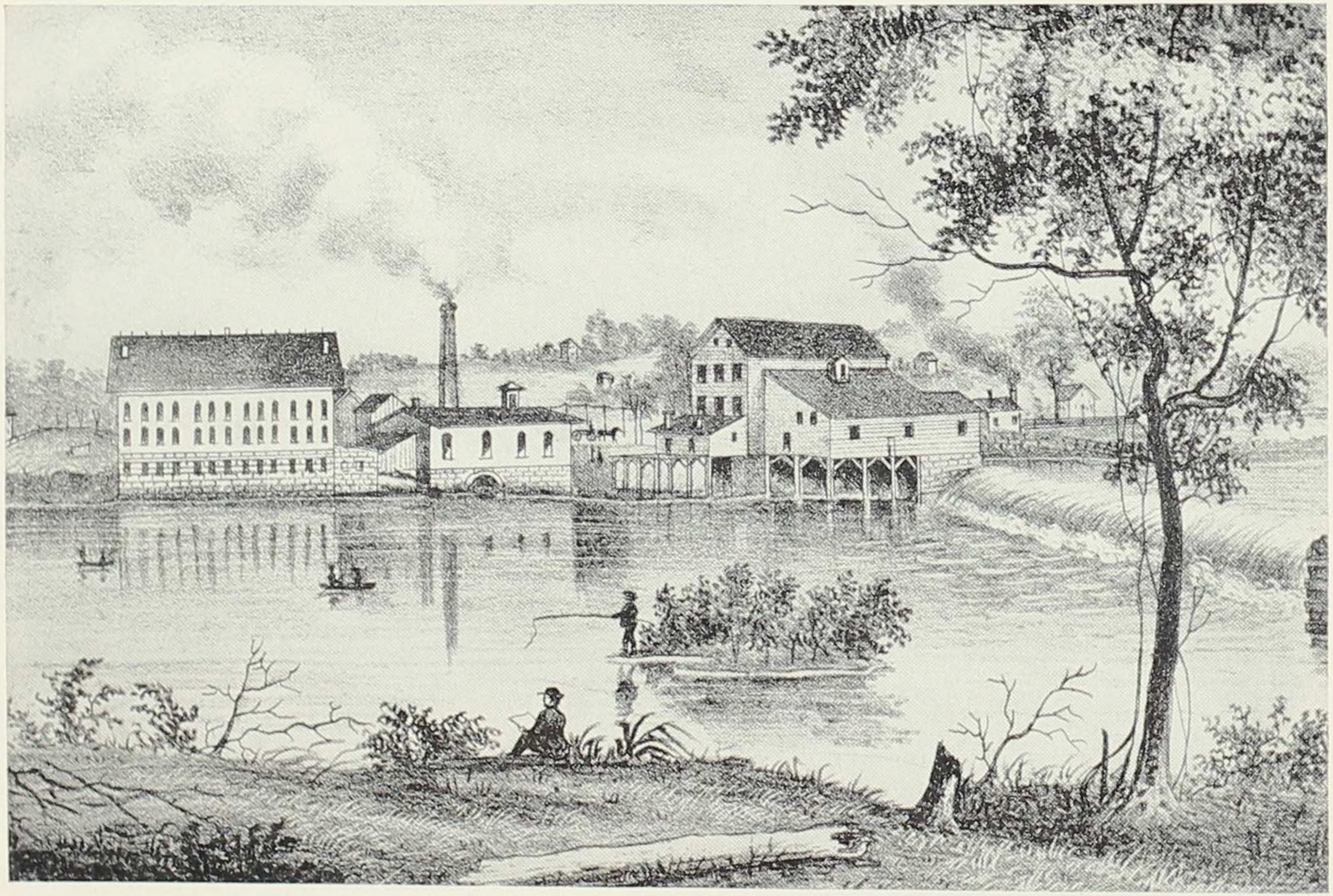
Lulu Guengerich

Wassonville Mill (Washington County)

Wassonville Mill (Washington County)

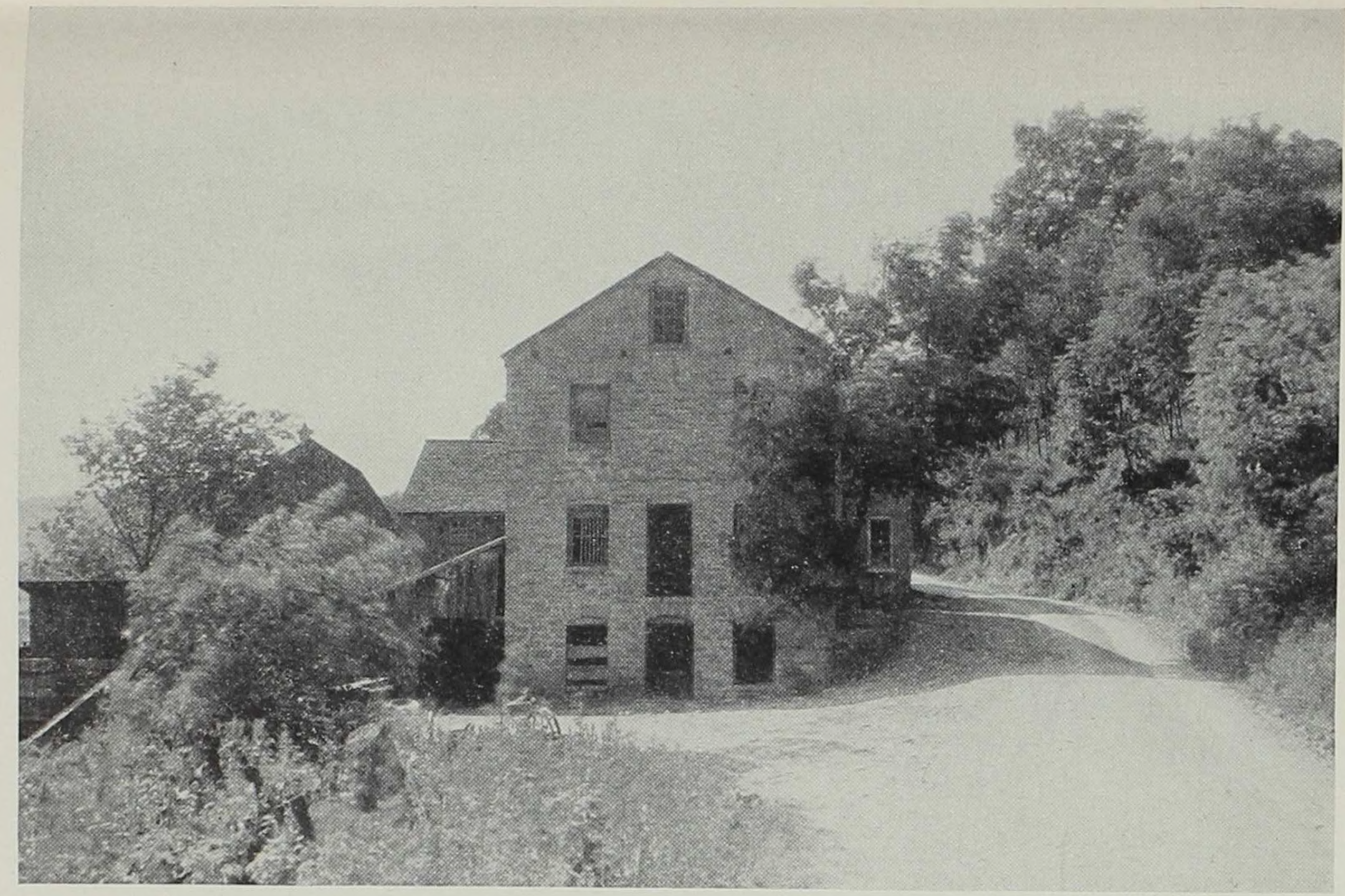


Brighton Mill (Washington County)



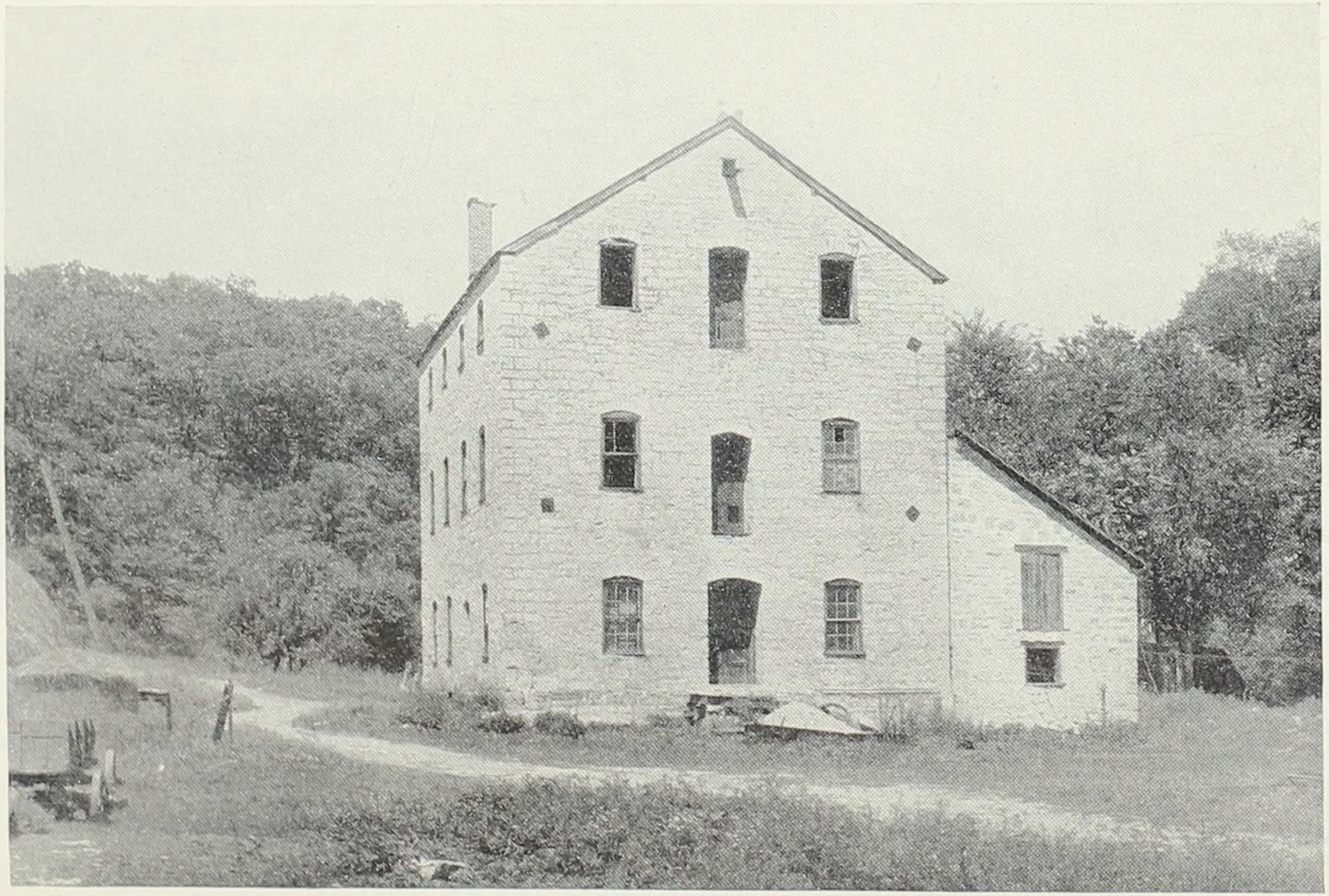
Courtesy of Mae Osborn

The mill dam at Coralville was used not alone for the grinding of wheat and corn, but for the operation of a sawmill, a paper mill, a woolen mill, and an oatmeal mill. Later it was used to generate electric power.



From the Floyd A. Nagler Collection

The Pelzer Mill near Guttenberg, in Clayton County, was a three-story limestone structure, with two runs of burrs. It was built in the decade of the forties and served the pioneers for many years.



From the Floyd A. Nagler Collection

The Kleinlein Mill near Strawberry Point was operated by water supplied by a series of springs along Spring Creek. The mill and a brewery were "in successful operation" in 1882.

Creek. The mill and a brewery were "in successful operation" in 1882.

Courtesy of Mrs. O. K. Dick

The Iowa Flouring Mill was a substantial limestone structure twenty-eight for forty feet in dimensions, on the banks of the Iowa River at Iowa Falls, Hardin County. The mill was built in 1857, and served a large area in Northwest Iowa.

Courtesy of Susie Webb Wright

The Wassonville Mill on the English River near Wellman in Washington County had a long and noteworthy record of service. The old building withstood the winds and snows of ninety winters.

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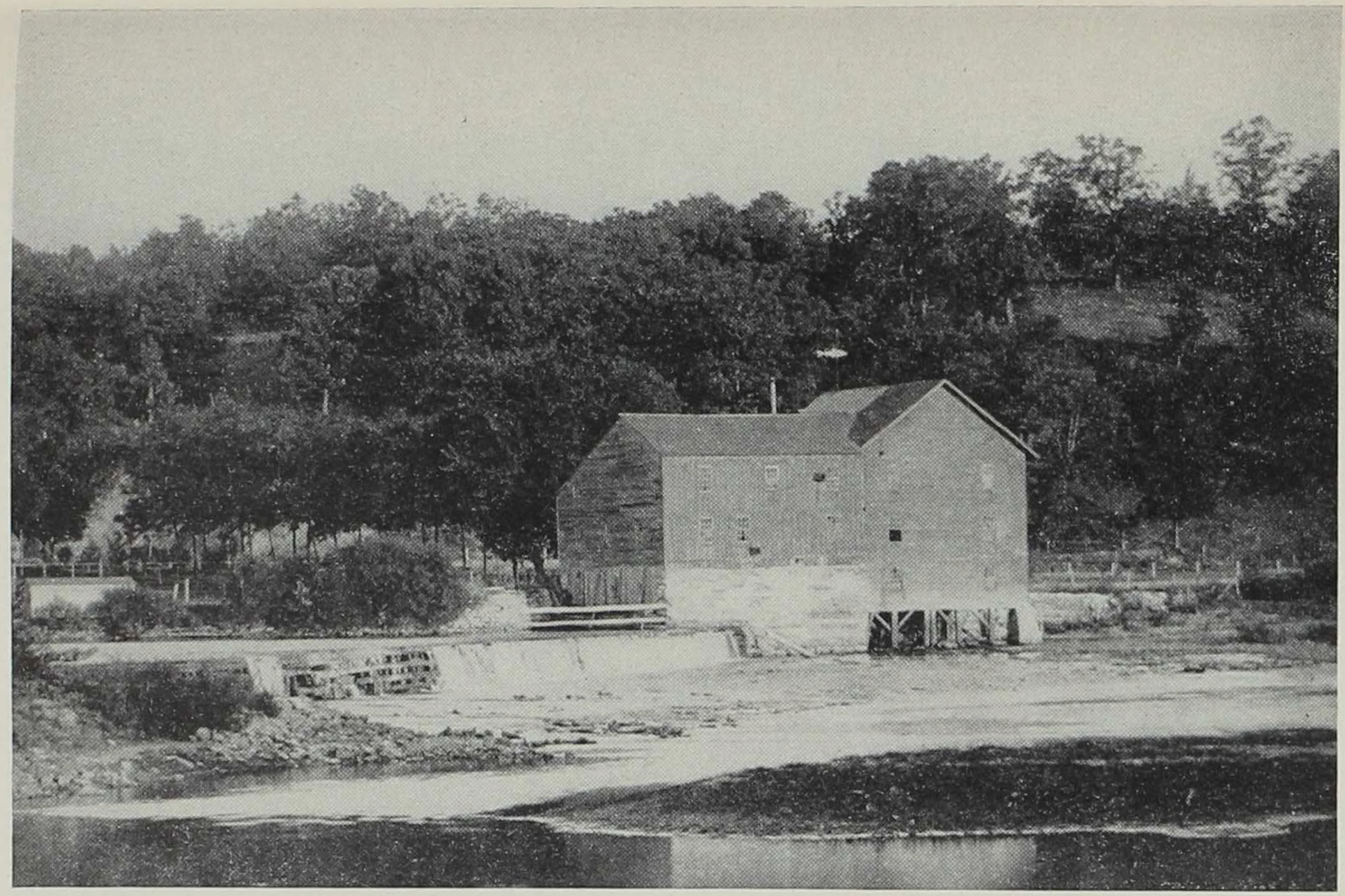
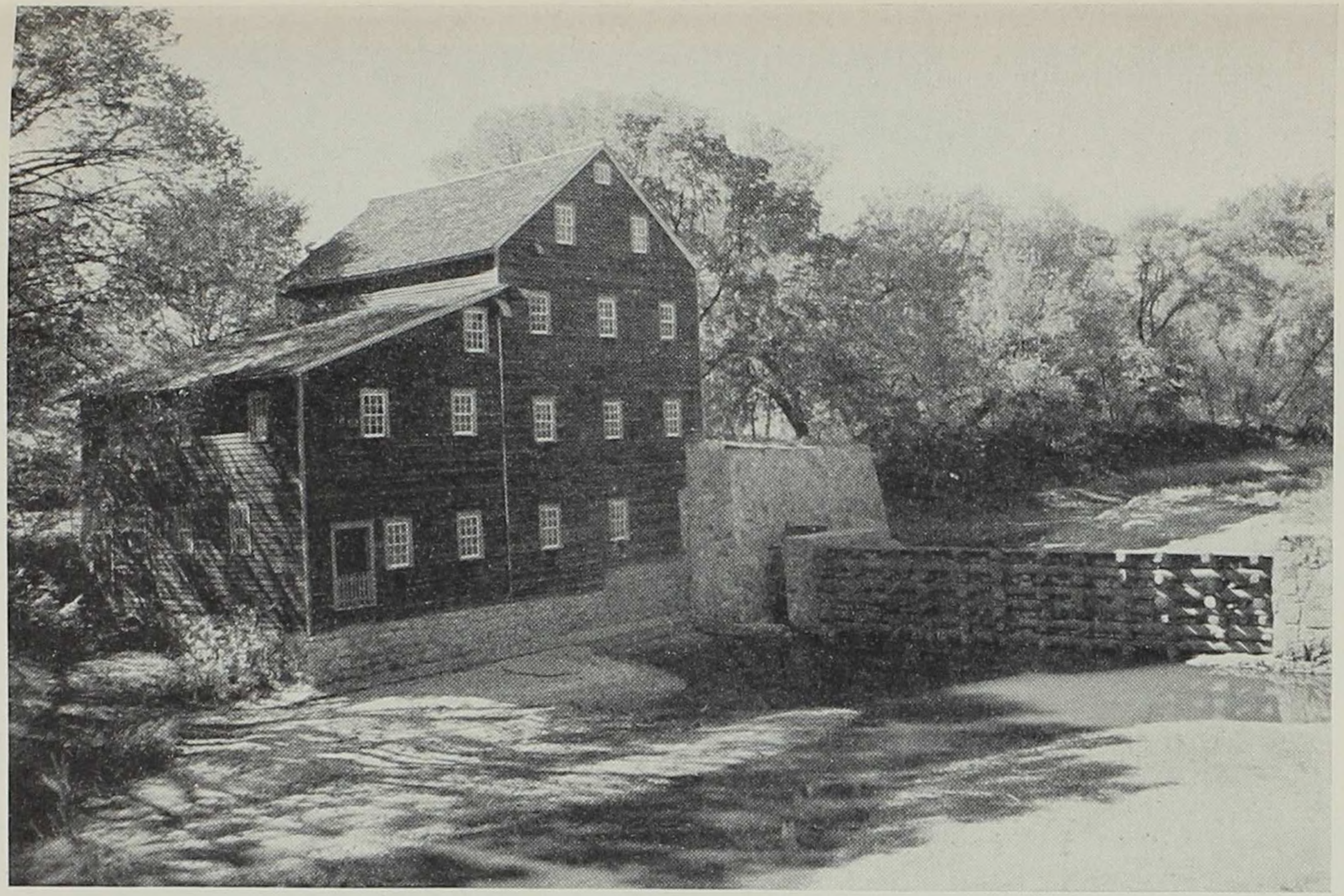


Photograph by Bertha M. H. Shambaugh

In 1840 Walter Terrell was granted permission to build a dam at Iowa City. Three years later he completed the first gristmill built on the Iowa River. After fifty years this water power was given to the State University of Iowa.

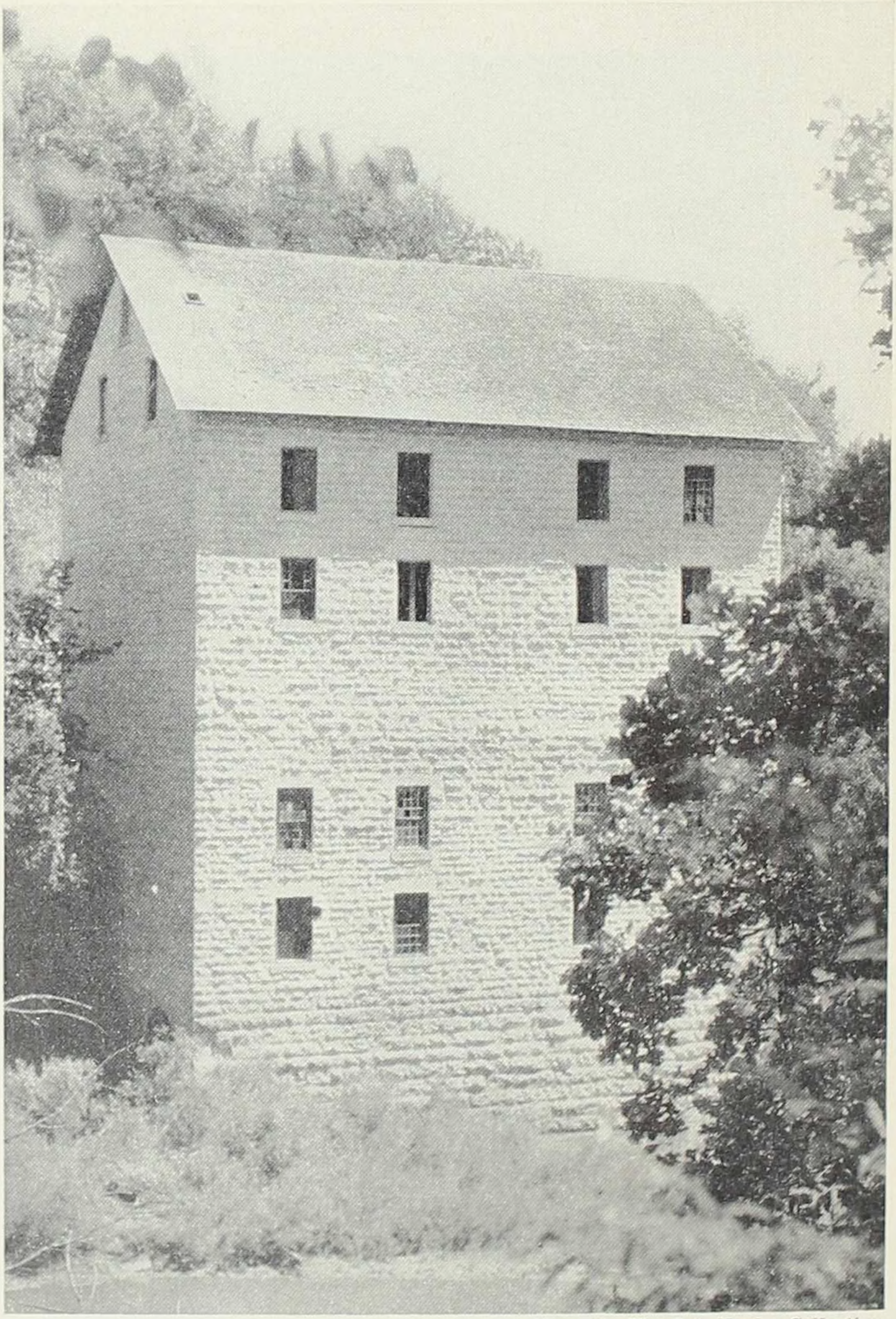
From the Floyd A. Nagler Collection

One of three mills built by Benjamin Nye along Pine Creek in Muscatine County. This is one of the renowned and well preserved old mills in Iowa.



Photograph by John E. Briggs

The reconstructed Pine Creek Mill in Wild Cat Den State Park near Muscatine, bids fair to remain one of Iowa's significant historic landmarks.



From the Floyd A. Nagler Collection

The Motor Mill on the Turkey River, near Elkader, in Clayton County — a six-story stone structure — was built by John Thompson with the hope of founding a town around it. But the chinch bugs and the westward movement of wheat prevented this.

away. There was Pelzer's Mill at Guttenberg, the Garnavillo Mill on Buck Creek, and the Mederville Mill on the Volga River in Clayton County. There was Old Mission Mill and Larrabee's Mill in Fayette County. All were renowned but now they are gone.

There was Clark's Mill at Buffalo, Buhrmaster's Mill near Burlington, and Clayton's Mill and the Meek Brothers' Mill in Van Buren County. There was Currier's Mill in Mahaska County; Coppock's Mill, Bunker's Mill, and the Brighton Mill in Washington County; the Oakland and Lowell mills in Henry County; and the Merrimac Mill in Jefferson County. Each of these has a history and a romance not soon to be forgotten.

There was the Switzer Mill, the Terrell Mill, and the Kirkwood Mill in Johnson County. There was the Marengo Mill and the Amana Flouring Mills in Iowa County that have joined the ranks of the mills that are gone. There was the old Soper Mill in Story County, the Old Pottawattamie Mill in Pottawattamie County, the Old Red Mill in Dickinson County, and the Old White Mill in Cherokee County. Through the years Iowa mills have come and served and gone, but they are not forgotten — nor should they be. For they were a significant part of the history and romance of early Iowa.

Going to Mill

Going to mill in pioneer days on the Iowa prairie was something of an adventure. Sometimes it was an arduous task. Now and again it was an expedition that challenged the sturdiest of the pioneers. The slow mode of travel by ox team was made yet slower by the absence of improved roads and bridges, while such a convenience as a ferry was almost unknown on inland streams. The distance to be traveled was often fifty or sixty miles — frequently farther, and the way might be beset with difficulties and hardships that were more real than apparent.

If Dame Fortune were kind to the pioneer, as she sometimes was; if the family at home were reasonably secure; if the streams and sloughs were not too swollen; if the water at the mill were not too high nor yet too low for grinding; if not too many farmers had already arrived at the mill and were waiting with their grist; if the days were long and the weather fair, the trip to the mill might be reasonably pleasant — an adventure to be enjoyed by pioneer youth.

But, alas, on the Iowa prairie in pioneer times, Dame Fortune was not always kind. The family was not always secure from attack by the Indians

or other dangers incident to pioneer life. Nor was the home always supplied with sufficient food to forestall hunger for a protracted period of time. Sloughs were often soft, streams were swollen, and roads were almost impassable, necessitating great delay in travel.

Occasionally pioneers went to mill on horseback, and sometimes this method of transportation proved to be quite satisfactory. A pioneer of Van Buren County wrote that since each customer at the mill had to wait his turn, whether he were one mile or twenty from home and whether in great need of flour or not, it was common for such travelers on the way home to be hailed with the question: "Is the mill a runnin'?" And often the response was "Creek too high," "Creek too low," "Froze up," "shaft broke," or other such discouraging news. If the answer were "Yes," the writer said, "It was but the work of a few minutes for father to mount old Jule, take a bag of grain 'aboard' and trot off down the trail" to mill.

Going to mill on horseback, however, was not always feasible. A pioneer in Muscatine County once took a bushel of corn on the back of an Indian pony and rode eight miles to a horse-power mill. The pony was small, the mill turned hard, and the stones ground slowly. It took all day to go to the mill, do the grinding, and return home. The pioneer had to furnish the corn and the horse power, pay twelve and one-half cents toll, and do

his own grinding. It was nevertheless the easiest way to get bread.

Despite any precaution that might be taken, the pioneer settler might expect to encounter difficulties and delay. The mill might be temporarily idle and unable to operate. More likely it would be thronged with other customers, some of them having come a great distance, awaiting their turn for grinding. In some cases a register was kept, and customers were served in the order in which their names appeared on the register. Sometimes service was thus engaged three weeks ahead at a mill that operated day and night.

In 1848 Ezekiel Clark purchased a dam and a mill at the present site of Coralville. After he had installed new equipment it is said that it was no unusual sight to see "fifty or sixty" wagons arranged at the mill at one time, each awaiting its turn. Settlers came from northwestern Iowa, as well as from Johnson County and surrounding area, to have grain ground or to make purchases of flour. At times the machinery was operated day and night, and "the vicinity of the mill often looked like a camping ground," so great was the number of settlers who had come from a distance.

Clark sold an interest in this mill to his brother-in-law, Samuel J. Kirkwood, who became well known as a miller and statesman. It is reported that one day, when Kirkwood was operating the Coralville Mill, there came to the mill a "young

man by the name of John F. Duncombe. He had driven all the way from Fort Dodge, for the purpose of making a shipment on the railroad which had recently been opened to Iowa City. Rather than return with an empty wagon, and as a speculation, he decided to buy some flour, and reap the benefit of the high prices which that commodity would bring in his home town. When he was about to leave the mill Mr. Kirkwood called his attention to the fact that he could easily haul much more flour than he had purchased. Mr. Duncombe replied that he had taken all he could pay for. Thereupon the miller studied his customer's appearance for a moment, and then told him to load up his wagon and send back the money when he had sold the flour. The confidence thus expressed was not betrayed, and at the same time Kirkwood thereby gained a good friend. In politics Duncombe was an ardent Democrat, but thereafter he frequently crossed party lines to vote for his good Republican friend Kirkwood.

Many a pioneer traveled weary miles to the mill, but a Benton County boy conceived the idea of reversing the order and taking flour to the pioneer. His father had wheat for which there was no ready market. Yet it was reported that in Fort Dodge, flour was selling for ten dollars a hundred "in gold." This appeared to the boy as a golden opportunity, but the father was less optimistic.

He envisioned a trip to Fort Dodge as a hazardous undertaking, and so it was. Again and again the pioneer salesmen, with their wagon and flour were "stuck in a slough" and had to be pulled out by oxen. Finally, when they arrived at Webster City, they were told that a slough just ahead was called "Little Hell," and one farther on was known as "Big Hell," so they abandoned the trip to Fort Dodge, and sold their flour at Webster City for $8.75 per hundred. Financially the trip was successful, but the experience proved that taking flour to the pioneers was quite as difficult and hazardous as taking the grain to the mill for grinding.

From Wheat to Corn

The wheat-growing industry in Iowa began with the coming of the first immigrants. In 1840 one hundred and fifty thousand bushels of wheat were grown in Iowa. By 1850 Iowa was producing more than a million and a half bushels of wheat annually — ten times as much as it had raised a decade before. In 1856 the State had more than 380,000 acres of its fertile land devoted to the wheat crop, and in that year its wheat production exceeded five million bushels. By 1870 it had reached an annual production of twenty-nine million bushels — more than one tenth of the nation's crop. Iowa then ranked second among the wheat producing states of the nation, being surpassed by Illinois alone. In 1875 Iowa had reached its peak in the wheat-producing industry. The farmers of the State had sown more than three million acres to wheat and harvested more than forty-four million bushels of the golden grain.

One of the factors favoring the extension of wheat farming was the liberal land policy of the government. Moreover, wheat grew best on new land, and little capital was needed to begin wheat farming. With the passing of the years the intro-

duction of improved farm machinery stimulated increased interest and constituted an important factor in the extension of the wheat-growing industry.

As wheat production increased, mills multiplied. In the decade of the seventies when Iowa's wheat production exceeded forty million bushels a year, mills became numerous. In 1879 there were 713 flouring and grist mills, and 1,002 water wheels and 287 steam engines in the milling industry. Iowa was indeed a land of wheat, and a land of mills.

There came a day, however, when a decline in the production of wheat became clearly apparent, and the number of mills likewise declined. There were a variety of causes for this change of conditions. The acquisition of government land at a low cost, which had once been a boon to wheat culture in Iowa, came at length to be a deterring factor. Land prices in Iowa increased materially while cheap government land was still available in Minnesota and the Dakotas. Hence farmers interested in wheat culture tended to move into the Northwest. Soon it was discovered that wheat could be grown in other states, ground into flour, and shipped to Iowa more advantageously than it could be produced here. The extension of railroads into the Northwest tended to increase this differential.

Another factor that tended to reduce wheat

production in Iowa was the ever-increasing interest and profits in the cultivation of oats and corn. In 1880 Iowa ranked second among the states of the Union in the production of oats, and twenty years later it ranked first. Likewise, in 1870 Iowa ranked second in corn, and attained first place in 1890. Iowa was fast becoming a land of corn, and more corn.

Not the least of the influences which contributed to a reduction in the growing of wheat and the operation of mills in Iowa, were the insects which ravaged the fields. While the Union and Confederate armies were fighting at Bull Run, in July, 1861, the Iowa farmers were fighting an army of chinch bugs. In 1871 twenty-one counties in southern Iowa reported that spring wheat was "almost an entire failure" because of chinch bugs. Many fields in Washington, Appanoose, Monroe, Montgomery, and Madison counties were plowed up and planted to other crops. In 1874 grasshoppers visited the northwestern counties of Iowa, and in some areas, when harvest time came there was little to harvest.

In 1879 the chinch bugs again infested southern Iowa, and in 1881 they were so thick throughout the Middle West that a "chinch bug convention" was held at Kansas City, where a resolution was passed "to abstain from the cultivation of wheat," and to grow oats, buckwheat, clover, flax and hemp. The greatest damages were incurred,

however, in 1887 when there was an estimated loss of $25,000,000 because of chinch bugs. One of the best remedies seemed to be the abandonment of wheat culture.

As the mills had moved westward with the wheat industry in the decades of the fifties and sixties and had made Iowa a land of mills, so also mills followed wheat culture into Minnesota. Characteristically, wheat raising and milling were closely allied on a new frontier.

Thus it was that prior to the decade of the eighties, there was a gradual rise in wheat production in Iowa, and a corresponding growth and expansion in the milling industry. In like manner, following the eighties, there was a marked decline in wheat culture and a corresponding decline in milling. Hence, any history of the old water mill must be concerned with the rise and fall of wheat.

When wheat growing became difficult in Iowa, farmers learned that if oats were sown in fields where there had been chinch bugs, the crop might be damaged to some extent, but the bugs would probably not continue to breed there the following year. Hence oats and corn could be rotated without creating a favorable condition for the chinch bug. If a crop of clover or alfalfa became a part of the rotating program, the land would be strengthened for corn, and the insects would tend to disappear.

In his book, *I Remember, I Remember,* Cyrenus

Cole commented upon the transition from wheat to corn, and the role that was played by the chinch bug. Mr. Cole remembered how his parents had suffered a complete failure of their wheat crop. As his father and mother walked through the blighted wheat field one day, he had heard the father say: "There will not be a loaf of bread in the whole field." The mother, wringing her hands, asked: "Then where will we get bread for our children?" Whereupon the father made the stately reply: "The Lord gave, the Lord has taken away, blessed be the name of the Lord."

If the Lord did not provide wheat that year, He provided corn, which the chinchbugs had passed by. So when winter came, the Cole family "ate cornmeal mush in the morning, cornmeal mush at noon, and cornmeal mush at night — always with a great big tablespoon." They also ate bread made from cornmeal, muffins and griddle cakes hot from the fire, with butter and molasses to spread over them. Indeed, they fared so bountifully that when they emerged from winter quarters the mother boasted that her children never before had been so strong and well.

Many years later Mr. Cole declared that perhaps his father was right when, in the devastated wheat field he gave thanks to the Lord. The chinch bugs had, indeed, "turned out to be a blessing in disguise." At all events it seems clear that chinch bugs impeded wheat culture, and stimu-

lated an interest in corn and livestock. If, then, we lament the decline in wheat culture and the passing of the old water mill, we may ascribe it, in part, to the invasion of grasshoppers and chinch bugs.

If Iowa has declined in its production of wheat, it has attained a place of high rank in the production of other agricultural products. It is widely acclaimed as the "State where the Tall Corn Grows." It ranks first among the states in the finishing of fattened cattle. Meanwhile, old mills for the grinding of wheat have been superseded by new, larger, and more modern mills. A notable example of this has been the development of the Quaker Oats Company at Cedar Rapids, which has come to be the largest milling industry of its kind in the world.

But despite the ravages of time, the changes in economic conditions, and the development of new and modern industries, there is yet a deep-seated and affectionate interest in the charms of the old water mill.

The Old Mill: A Memory

And now a word in retrospect. The milling industry had its beginning in Iowa in the decade of the thirties. In some instances the sawmills came first. By the decade of the seventies much of the native timber had been cut and the lumber industry was concentrating in the big pine sawmills along the Mississippi. Flour mills developed and expanded in the forties, the fifties, the sixties, and seventies. Then the grasshoppers and chinch bugs came. Wheat moved out and corn moved in. Where there were once substantial and picturesque mills there are now cribs, and silos, and barns and government storage bins — visible evidences of accumulated wealth. The transition has been a dramatic incident in the story of Iowa.

As historians and as students of art and culture and wealth, we look backward across the years and see Iowa again a great wheat country, a lumber and flour producing area, a land of a thousand mills — horse-power mills, steam mills, and water mills; mills along the banks of many rivers; sawmills and gristmills; woolen mills and flour mills; mills, mills — everywhere mills.

In the accumulation of wealth, break not the charm of early days that live like a song in

memory. Rather preserve the artistic and the beautiful. Cherish a memory of the old water mill, and build around it shrines that will endure through the years. Where are the mills that once lent picturesque charm to the valleys of Iowa? A few of them have become modern milling centers, but for the most part they are gone. In more than half the counties there is not now even a trace of an old water mill.

But look again. A few dilapidated old mills, some of them abandoned, are still to be seen. Weathered and worn though they are, these old mills have a historical value. Service has given them dignity; age has conferred prestige; and years of idleness have changed their character from workshops to resorts. Vine-covered and mossy though they are, some of these firm old structures may still be preserved. Pine Creek Mill in Muscatine County is within the boundaries of a State Park. Moreover, it has been remodeled and rebuilt to preserve its essential features.

About 1880 a "new process" of milling was developed, and roller mills were substituted for the ancient millstones. With the advent of this method and the abandonment of the rotating stones, the old millstones came to be only a relic — a souvenir of the days that are gone. Many of the old stones have been lost in the mud of river beds, but some have been recovered and used as historical markers. At the town of Lowell in Henry County

a French millstone has been mounted upon a substantial base to mark the site of an old mill. In Shakespeare Garden of Crapo Park, Burlington, is one of the old millstones that was formerly used in Moffatt's mill on the Skunk River in Des Moines County. And at Iowa City an old millstone on each side of the doorway adorns the entrance of the Hydraulics Laboratory, one of the University buildings. At Cherokee, Iowa Falls, and Hampton markers have been erected for old water mills.

When a good man serves his fellows, we honor him; when he retires, we give him praise. So may it be with the old water mill — honor for service, praise for the wheels that are still, and monuments of stone and bronze for the mills that are gone. In the printed page, in picture, in story, and in song the old water mill still lives.

IOWA MILLS

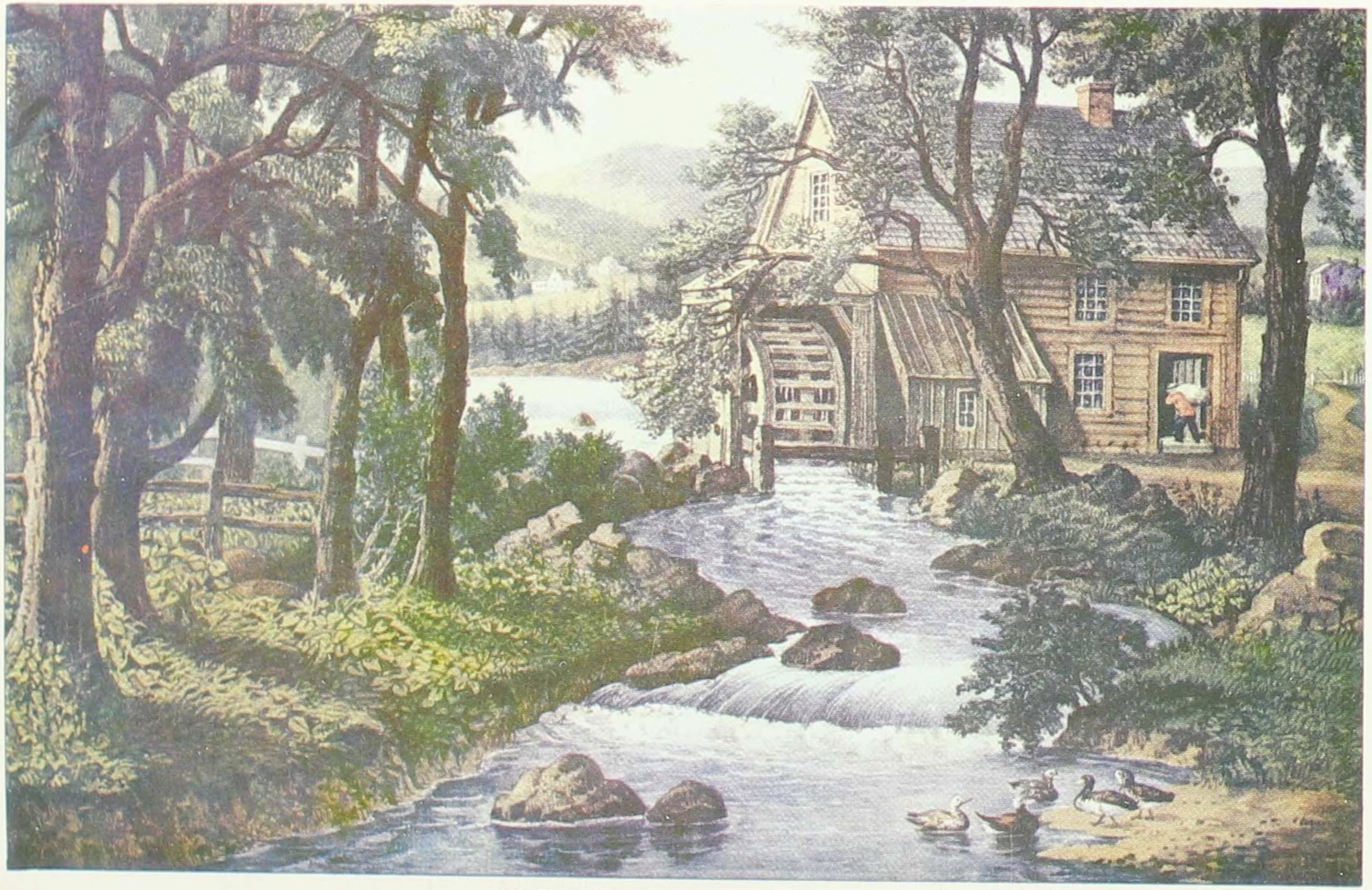
This list of mills, arranged alphabetically by counties, includes those known to be operating or still standing in 1939 and 1940. For a complete list, so far as available, see J. A. Swisher's *Iowa — Land of Many Mills* (1940), pp. 245-272.

County	*Name of Mill*	*Operating in*
Adair	Fontanelle Roller Mills (Fontanelle)	1939
Carroll	Doud Milling Company (Manning)	"
Cass	Atlantic Mill & Elevator (Atlantic)	"
"	Griswold Milling Company (Griswold)	"
"	Massena Mill Company (Massena)	"
Cedar	Durant Roller Mills (Durant)	"
Chickasaw	New Hampton Mill (New Hampton)	"
Clinton	Model Roller Mills (Clinton)	"
Crawford	Doud Milling Company (Denison)	"
"	Westside Roller Mills (Westside)	"

County	*Name of Mill*	*Operating in*
Dallas	Dallas Center Mill (Dallas Center)	"
Davis	Panada Roller Mill (Floris)	"
Dubuque	Dyersville Mills (Dyersville)	"
Guthrie	Lennon's Flour Mill (Panora)	"
Hamilton	Webster City Mills (Webster City)	"
Hancock	Garner Roller Mills (Garner)	standing 1939
Harrison	Merritt Milling Company (Dunlap)	1939
Humboldt	Brown's Mill (Dakota City)	"
Iowa	West Amana Flour Mill (West Amana)	standing 1939
Jasper	Lynnville Mill (Lynnville)	1940
"	Prairie City Milling Company (Prairie City)	1939
Johnson	Brumwell Mill (Solon)	1940
Lee	Lee County Flour Mills (Donnellson)	"
"	Walljasper and Company (West Point)	"
Linn	Howeler and Son's Mill (Marion)	1940
"	La Fayette Mill (12 miles N. of Cedar Rapids)	1940
Marion	Blommer's Mill (Pella)	"
Marion	Bussey Roller Mill (Bussey)	1939
Marshall	Marshalltown Milling Company (Marshalltown)	"
Mills	Malvern Milling Company (Malvern)	"
Mitchell	Crescent Roller Mills (Otranto)	"
Monona	Onawa Flour Mill (Onawa)	"
Monroe	Albia Roller Mills (Albia)	"
Montgomery	Grant Mill Company (Grant)	"
"	Replogle Company (Red Oak)	"
Muscatine	McKee Feed and Grain Company (Muscatine)	"
"	Pine Creek Mills (Wild Cat Den State Park)	standing 1940
Page	Clarinda Flouring Mills (Clarinda)	1939
"	Driftmier Milling Company (Shenandoah)	"
"	Essex Mill and Elevator Company (Essex)	"
"	Johnson Brothers' Mills (Shenandoah)	"
"	Shambaugh Milling Company (Shambaugh)	"
"	Trullinger-Redfield Company (Shenandoah)	"
Plymouth	Plymouth Roller Mills (Le Mars)	"
Polk	Inland Milling Company (Des Moines)	"
Pottawattamie	Centennial Flour Mill (Avoca)	standing 1939
"	Macedonia Grain and Elevator Company (Macedonia)	1939
Scott	Boetger Rye Mill (Davenport)	"
"	Phoenix Flour Mills (Davenport)	"
"	Ralston-Purina Company (Davenport)	"
"	Western Flour Mills (Davenport)	1940
"	Wutenberg's Mill (Donahue)	1939
Shelby	Harlan City Roller Mills (Harlan)	"
Tama	Chelsea Roller Mills (Chelsea)	"
Union	Creston Flour Mill (Creston)	"
Winnebago	Buffalo Center Mill (Buffalo Center)	"
Winneshiek	Bernatz Brothers' Mill (Decorah)	1940
"	Evergreen Roller Mills (Fort Atkinson)	1939
"	Turkey River Valley Roller Mills (Spillville)	1940
Woodbury	International Milling Company (Sioux City)	"
Worth	Fertile Roller Mills (Fertile)	1939

Iowa Flour Mills in 1880

County	No.	Capital	Em-ployees	Value of Product	County	No.	Capital	Em-ployees	Value of Product
Adams	6	$ 27,000	17	$175,384	Jasper	10	$ 82,000	25	$242,244
Allamakee	22	163,000	34	238,356	Jefferson	8	68,500	25	261,550
Appanoose	5	36,000	19	150,717	Johnson	8	140,500	56	348,967
Benton	9	90,000	35	155,613	Jones	8	95,300	14	232,920
Black Hawk	12	237,200	81	860,420	Keokuk	11	113,500	25	260,608
Boone	5	86,000	22	236,160	Kossuth	2	30,000	7	66,315
Bremer	5	82,000	24	102,545	Lee	10	126,029	42	432,157
Buchanan	7	182,900	17	163,912	Linn	21	393,000	121	1,060,471
Buena Vista	5	33,600	12	135,434	Louisa	4	42,000	13	147,895
Butler	8	94,200	35	242,299	Lucas	4	29,500	11	67,752
Carroll	2	27,200	7	74,346	Madison	7	44,200	16	119,376
Cass	7	48,100	16	188,178	Mahaska	15	130,600	29	208,677
Cedar	8	65,300	10	88,532	Marion	10	93,800	29	199,770
Cerro Gordo	9	160,500	25	298,031	Marshall	8	125,200	33	284,336
Cherokee	5	33,600	9	82,514	Mills	7	63,500	15	209,705
Chickasaw	3	38,000	11	150,500	Mitchell	11	177,000	42	398,315
Clark	4	29,000	16	126,499	Monona	4	53,000	13	98,881
Clay	2	17,800	4	81,510	Monroe	6	29,600	9	104,460
Clayton	20	253,445	37	357,359	Montgomery	8	86,400	16	117,590
Clinton	21	154,200	49	425,983	Muscatine	10	131,500	29	331,799
Crawford	6	49,000	16	169,749	Page	8	62,000	21	110,284
Dallas	14	105,700	27	197,337	Plymouth	4	113,800	24	342,150
Davis	6	30,000	18	87,362	Polk	12	176,725	50	352,504
Decatur	7	54,500	13	100,491	Pottawattamie	13	153,279	59	712,026
Delaware	11	91,900	15	114,860	Poweshiek	5	31,600	9	95,970
Des Moines	3	20,000	9	86,044	Sac	4	27,500	11	80,140
Dubuque	23	187,920	51	407,748	Scott	10	179,000	49	756,393
Fayette	20	157,000	41	333,881	Shelby	2	35,000	10	67,638
Floyd	7	173,500	26	286,882	Tama	12	118,200	31	287,904
Franklin	1	35,000	4	52,000	Taylor	4	40,800	16	138,726
Fremont	10	76,073	16	168,479	Union	5	62,000	21	184,508
Greene	6	78,650	21	102,235	Van Buren	9	108,500	40	292,461
Grundy	2	30,000	10	44,317	Wapello	11	101,945	36	326,520
Guthrie	9	80,200	18	148,134	Warren	9	79,500	34	229,968
Hamilton	7	45,700	13	82,340	Washington	9	100,000	21	320,384
Hardin	10	139,500	25	219,182	Wayne	5	33,300	17	116,572
Harrison	7	66,500	22	139,035	Webster	5	63,000	17	120,480
Henry	11	126,000	38	340,224	Winneshiek	18	174,593	47	454,517
Howard	7	60,000	12	103,865	Woodbury	7	105,500	25	179,410
Iowa	7	78,500	27	180,747	Worth	2	40,000	10	71,500
Jackson	20	169,000	40	496,999					



DOWN BY THE OLD MILL STREAM