

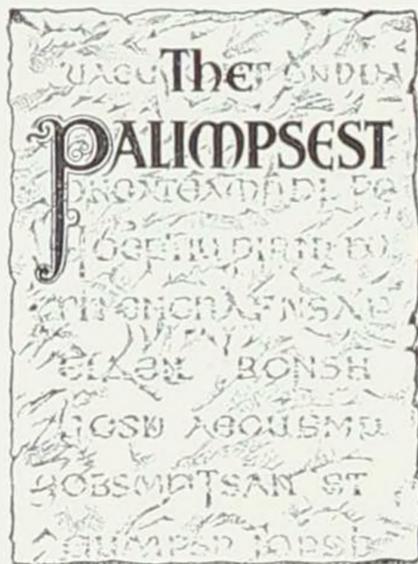
The
PALIMPSEST



STATUE OF CHIEF KEOKUK

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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 records 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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Cover

Front — Statue of Keokuk overlooking the Mississippi in Rand Park at Keokuk.

Back — Inside: Wagon and railroad bridge connecting Keokuk, Iowa, with Hamilton, Illinois.

Outside: The lock, power plant, and dam completed at Keokuk in 1913.

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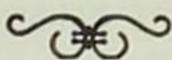
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Crossroads of Empire

Next to Black Hawk, Keokuk was probably the greatest Indian in Iowa history. Powerful in physique, brave of heart, and courageous in battle, Keokuk was one of the most brilliant orators and able leaders produced by the red men in North America. His name is proudly borne by an Iowa City and an Iowa county, while scores of streets and townships bear his name.

The city of Keokuk is one of the most strategically situated towns in Iowa. Located at the junction of two great rivers — the Mississippi and the Des Moines — the site was recognized as a key point by French, Spanish, and English fur traders years before the Louisiana Purchase. The Indians called the present site of Keokuk *Puck-e-she-tuck*, or foot of the rapids; the white men were quick to hail it the "Gate City of Iowa."

There was ample reason for a flourishing town to grow at present-day Keokuk. The dangerous "Lower" or Des Moines Rapids, stretching from Keokuk to Montrose along the Mississippi, made

Keokuk a logical point for the transfer of cargoes during periods of low water. Keokuk was also the depot for the transfer of all goods up the Des Moines River as far as Fort Des Moines, later the capital of Iowa. This was a highly significant fact, for the most populous counties in Iowa prior to 1860 extended along the western shore of the Mississippi, and along both banks of the Des Moines as far as Polk County. Thus the richest cargoes of the Upper Mississippi and the Des Moines passed the bustling Keokuk levees.

Since Keokuk was of such strategic importance, it was natural that some of the earliest and greatest events in the story of transportation and communication took place at Keokuk. The first steamboat — the *Western Engineer* — arrived at the site of Keokuk in 1820, only to be repelled by the Rapids. The first log cabin for the transshipment of freight was used at Keokuk six years before the Black Hawk Purchase was opened to settlement. The first telegraph to reach Iowa entered at Keokuk in the summer of 1848. The effort to canalize the Des Moines River in the years prior to the Civil War was the only venture of its kind in the story of Iowa. The first railroad to reach the state capital was built up the populous Des Moines Valley rather than westward from the Mississippi. Truly, Keokuk has played a dynamic role in Iowa history.

The significance of Keokuk was recognized

from the start — some of the first ferries and bridges to cross the Mississippi were located there. The construction of the Des Moines Rapids Canal between 1869 and 1877 was one of the great engineering feats of that period. And the completion of the gigantic lock and power dam across the Mississippi in 1913 was the first and greatest project of this kind to harness the Father of Waters. Today blueprints have been drawn to eliminate the present bottleneck to navigation on the Upper Mississippi by enlarging the locks to double the size of any that have been built thus far on the mighty Father of Waters.

The story of Keokuk, its ferries and bridges, its canals and its power dams, is intimately associated with the development of the Hawkeye State.

WILLIAM J. PETERSEN

Some Historical Highlights

In 1820 Samuel C. Muir, a surgeon in the United States Army stationed at Fort Edwards (now Warsaw, Illinois), moved across the Mississippi to the foot of the Lower Rapids and built a log cabin for himself and his Indian wife. Dr. Muir was the first white man to settle on the present site of Keokuk. His cabin was located on Main and Water streets, where the Keokuk Municipal Waterworks plant now stands.

A few years later Dr. Muir moved to the Galena lead mines, leasing his claim and cabin to Otis Reynolds and John Culver, two enterprising steamboat captains of St. Louis. The growth of steamboating to the lead mines required the appointment of an agent at this point, and in 1827 Reynolds and Culver appointed Moses Stillwell to fill this position. Stillwell (died 1834) arrived at the Lower Rapids in the spring of 1828, accompanied by his family and Valencourt Vanorsdoll. These two men might be called the earliest permanent settlers in Iowa, since they both remained at this point until after June 1, 1833.

Stillwell erected two cabins near the foot of present-day Main Street. Three years later, five buildings of hewn logs were erected by the Amer-

ican Fur Company to house its agents, and for many years these were known as "Rat Row." Dr. Isaac Galland, who had built his cabin and school at the upper end of the Des Moines Rapids, came to Keokuk in 1837. Assisted by David W. Kilbourne, who had migrated from New York, Galland laid out the original town plat in 1837, filing it for record in 1840. Newly arriving traders and land speculators complicated the matter of title to some 119,000 acres of land which had been set aside by the government for use of the half-breeds. Eventually these titles were cleared by court decrees.

There are two versions of the adoption of the name Keokuk for the new settlement. According to Dr. Isaac Galland, the christening took place July 4, 1829, when Colonel George Davenport and a group of boatmen decreed that the name should honor the chief of the Sauk and Fox Indians. J. B. Patterson dates the christening as September, 1834, in John Gaines' saloon. Patterson bluntly states that he did not like Chief Keokuk, so voted against the name, but eight others present lifted their glasses of whisky to acclaim the new name.

By 1833 Jesse Creighton, a shoemaker, was teaching eight pupils in a school in his shop. In 1851, when the population had grown to over three thousand, agitation was started for a suitable school building to replace the one-story huts then in use. In the same year the Keokuk Independent

School District was organized. Today, the public school system is administered by a board of seven members, with jurisdiction over two high schools and six elementary schools. The parochial schools comprise a high school and three elementary units.

The first public sale of lots in Keokuk was held in 1837, one lot at the foot of Main Street selling for \$1,500. Business was centered first at the boat stores on the levee which supplied steamboats bound up and down the Mississippi. As boats were improved and carried their own provisions, the levee became the rendezvous for the men who operated the lighters, used in transferring freight from the boats when low stage of water over the Rapids made it impossible for them to make the trip. This meant that business expansion would move up the hill and begin the building up of Main Street, which, at the time the survey of 1837 was made, was described by D. W. Kilbourne "as being so thick with timber and underbrush that it was difficult to make the survey."

Catholics held the first service in Keokuk in 1832, and from this humble beginning have sprung three parishes. The first Protestant minister arrived in 1843; today many denominations of Protestantism are represented in Keokuk. St. John's Episcopal church, soon to celebrate its centenary, installed in 1855 "the first bell whose tones have been heard over a church of that denomination in Iowa."

Granted a special charter by the legislature in 1847, the city held its first election in January of 1848, choosing W. A. Clark as the first mayor. In 1910, citizens of Keokuk voted to install the commission form of government, under which the city is now governed by a mayor and two commissioners.

Brick buildings, many of them constructed from brick manufactured from clay deposits found in the city, began to appear in 1855, as the city enjoyed a boom period. In the panic of 1857, however, business came to a standstill, "and lots which sold for a thousand dollars, found no purchasers at the price of ten," one resident wrote. Recuperation from this depression was just setting in when the Civil War began. Keokuk became an armed camp and the gathering place of some 80,000 troops from Iowa, who embarked on steamboats there for the battlefields of the south. In its present Victory Park, the site of these embarkations, there is a bronze marker "Dedicated to All Those Brave Men and Women, Who Served their Country in Time of War." Five hospitals were established to care for the sick and wounded who were brought here by steamboat. Chief of these was the Estes House, built originally for use as a hotel.

From Keokuk, to lead Union troops, came General Samuel Ryan Curtis, General James C. Parrott, and Lt. Colonel William M. G. Torrence, pioneer school master of the town. Keokuk had its

quota of men in the Union ranks, just as it did in the Mexican War, the Spanish-American War, and in both World Wars. In World War I, part of its national guard unit saw service as members of the famous Rainbow Division. In World War II, Lee County Local Board No. 1, Selective Service System, with John L. Ward as chairman and Henry R. Leu as secretary, handled the vast machinery of the draft for south Lee county. An unidentified letter, published in Ohio, claimed that Keokuk figured even in the War of 1812 when a boatload of soldiers being sent from St. Louis to Wisconsin was attacked by Indians in the employ of the British. The battle occurred near the Illinois shore, in sight of the present city.

In order to provide a burial ground for soldiers who died in the hospitals, a plot of ground adjoining Oakland Cemetery was secured, and here the only National Cemetery in Iowa is located. It was enlarged during the 1940's, and military funerals for soldier dead brought back from the battlefields of Europe and the Pacific are held there.

In addition to furnishing military leaders for the nation, Keokuk history is filled with the names of those who served their nation in other capacities. Hiram Barney was collector of the port of New York. William Worth Belknap and George W. McCrary were Secretaries of War and George Williams was Attorney General. James C. Davis was Director General of Railroads, succeeding

William G. McAdoo. Justice Samuel F. Miller, named by President Lincoln to the Supreme Court, has been called one of the ablest interpreters of constitutional law since John Marshall. District Court Judge Henry Bank made legal history with his "original package" decision, which was upheld by the United States Supreme Court and has stood the test of time in all cases having to do with interstate commerce.

Literature of the nation and of the world has been enriched by the writings of Samuel L. Clemens, "Mark Twain," whose occupation as that of "antiquarian" is given in a city directory published by his brother Orion Clemens. Others in the literary field from Keokuk are Rupert Hughes and Cornelia L. Meigs. On the Keokuk Authors' Shelf in the Keokuk Public Library are the books of a score or more authors who claimed Keokuk as their home. The library was established in 1863 and became a free public library in 1894.

Ralph P. Lowe, governor of Iowa, lived for a time in Keokuk, his house being located at Third and Fulton streets, next door to the home of Gen. Belknap. Erie J. Leech was elected from Keokuk to be Grand Sire of the Sovereign Grand Lodge of Odd Fellows, in 1882. John N. Irwin was appointed territorial governor of Idaho and Arizona, and was also named minister to Portugal.

Keokuk audiences have thrilled to the performances of Ole Bull, Fritz Kreisler, and Ernestine

Schumann-Heink. Keokuk theaters have brought the great names of the stage. J. C. Hubinger built a mammoth amusement park in 1897, and in the huge Casino presented the Cherry Sisters as the Fourth of July attraction. Light opera and stock companies were billed for the Casino stage for several seasons. Two artificial lakes in the park provided bathing and boating, and there was space for a baseball field and race track. Keokuk always supported baseball and in 1875 was a member of the organization which afterwards became the nucleus of the National League.

Keokuk provided the grounds for the Iowa State Fair for four years, and one of the old buildings, the art hall, still is standing, used as a stock barn on a farm just outside the city limits. Physicians and surgeons in all parts of the country went to Keokuk Medical College, which was established in 1850. The first medical journal published west of the Mississippi was issued at Keokuk.

The appearance of the *Iowa Argus and Lee County Advertiser* and the *Keokuk Despatch* in 1846 marked the advent of local journalism.

Keokuk is, and has been, essentially a city of homes. Chivalry of the south, fire of the north, conservatism of the east, and progressiveness of the west have through more than a century forged the sinews of commerce, art, literature, and religion into the Gate City of the Hawkeye State.

FREDERIC C. SMITH

From Ferry Boat to Bridge

One of the first problems confronting the Iowa pioneers was the establishment of ferries — an age-old problem of river towns — how to get on the other side. Flat boats and canoes were used by the early settlers of Keokuk to transport passengers and goods between Illinois and Iowa. These were replaced in 1839 with the more comfortable ferry boats, but even the best of these craft were at the mercy of wind, waves, and shallow stages of water.

In 1839 David W. Kilbourne was given permission by the territorial legislature of Iowa to operate a ferry between Montrose, Iowa, and Nauvoo, Illinois. The same year, John Gaines and Otis Reynolds carried passengers on a ferry between the mouth of the Des Moines River and Warsaw, Illinois. In 1842 Robert Patterson acquired the right to operate a ferry from Keokuk to Hamilton, Illinois, and in 1848 Adam Hine began operation of a ferry across the Mississippi to the Illinois shore opposite Keokuk.

These ferries served the needs of Keokuk until the coming of the railroad era in the mid-fifties. Then a bridge became the topic of interest and the subject of numerous schemes. The first steps were

taken in 1855, when the Illinois legislature gave a perpetual charter to the Hancock County Bridge Company. Depression and Civil War intervened, however, before Keokuk could get her bridge. On January 15, 1866, the Keokuk and Hamilton Bridge Company was incorporated, under the general laws of Iowa, with a capital stock of one million dollars. H. T. Reid headed this company as president; Guy Wells was vice-president; George C. Anderson, treasurer; and J. H. Barker, secretary. Right of way over the islands off the Illinois shore was acquired, and in January, 1867, an agreement was made with the Des Moines Valley Railroad Company to purchase the charter and build the bridge.

The railroad's interest was to consolidate an east-west rail link with the Toledo, Peoria and Warsaw and the Peoria and Logansport railroads in Illinois. Grants were at once made by the city of Keokuk for track space and depots. This plan was more or less upset when a railroad was begun from Keokuk to Montrose, and then to Fort Madison and Burlington, completing a route from St. Louis. However, negotiations continued to the point where the railroads at last purchased the old charter and agreed to build the bridge. Ultimately the Pennsylvania Railroad acquired the interest, and Andrew Carnegie, president of the railroad and owner of the Keystone Bridge Company, became the first president of the Keokuk and Hamil-

ton Bridge Company, with Theodore Gilman of New York as secretary.

In May, 1868, the city of Keokuk granted the bridge company a right of way across the levee. First stone for the piers was laid August 12, 1869. Except for seasonal interruptions, due to high water, construction progressed. On Tuesday, March 28, 1871, the draw span was swung into place and "Keokuk and Hamilton shook hands over the new bridge." The finishing touches were completed rapidly, and plans were made for the first railroad crossing on April 10. "High winds" intervened, however, and it was not until April 18 that a "locomotive and train of cars" crossed from Keokuk to Hamilton. Two passenger coaches were attached to the locomotive, the "Iowa." On one of them was a passenger who must have looked back over the years to 1839 when he used to cross the river many times daily in his ferry boat. David W. Kilbourne, first to operate a ferry in the Keokuk area, was now, after thirty-two years, still in the transportation business. As president of the Des Moines Valley Railroad, he was an honored passenger on the first train to cross the new bridge.

On May 23, 1871, a formal test of the bridge took place. Five engines, an aggregate of 250 tons, were run onto the bridge and placed "in different positions on the various spans until they reached the opposite side"; the test was completed "by running them all over together."

Keokuk was proud of her bridge. Thirteen piers in all, including the pivot one for the draw span, were constructed of Sonora stone. The bridge boasted the longest draw span in the country at the time, and there were ten other spans in the whole structure. The over-all length was 2,192 feet, with railroad tracks down the center, a passage for vehicles on either side of the tracks, and five-foot walks for foot passengers on the outside, the total width being twenty feet. The west terminal was at the foot of Blondeau Street in Keokuk and the eastern one at the Hamilton, Illinois, depot. James S. Smith was the engineer in charge of construction, which employed 160 men.

Official opening to railroad traffic was on June 13, 1871, when the passenger train of the Toledo, Peoria & Warsaw Railroad, drawn by the locomotive "Canton," made the first trip. Messrs. Barry and Browning shipped the first car of grain, consigned to an elevator in Baltimore. The following day the entire bridge was thrown open to the public. On big boards at each terminal, the rates of toll were listed as follows:

Each foot passenger	5¢
Each hog or sheep	5¢
Each head loose cattle	10¢
Each yoke of cattle	25¢
Each led horse or mule	15¢
Each horse or mule and rider	15¢
Each vehicle drawn by one horse or mule	20¢
Each vehicle drawn by two horses or mules	25¢

Each vehicle drawn by three horses or mules	40¢
Each omnibus drawn by two horses or mules	50¢
Each wagon drawn by four horses or mules	60¢
Additional horse or mule or ox attached to wagon or other vehicle	15¢

As late as the day of the bridge opening, the railroads and the city council of Keokuk argued over the location of a depot, but the issue was decided that day when the city fathers, spurred, perhaps, by an editorial in the *Gate City*, granted a tract of land above the bridge for the depot. The editorial pointed out: "The bridge is open; the roads want to use it. Give them a place they ask and let business begin. Let Iowa and western shippers know that when they reach Keokuk, no ferries are in the way, but three railroads are competing for the carrying of trade to and from the east."

On June 20, 1871, the ferry boat *Keokuk* made her last trip. The *Gate City* declared: "Keokuk is the first place on the river to have a bridge across the Mississippi that will accommodate all kinds of travel."

The most serious accident to the bridge occurred the night of November 4, 1881, when the steamboat *War Eagle*, caught in the current of a fall flood, became unmanageable and swung stern foremost into one of the spans, damaging it and causing the boat to be beached just as it sank. The damaged span was replaced with a temporary

wooden one, which, after the rebuilt section was put in place, was taken apart and floated across the river to the slough at the Hamilton end of the dike where it was reassembled and is still in use, the only covered bridge in the vicinity.

With the advent of the automobile and the use by railroads of increasingly heavier equipment, it was found that the bridge was inadequate for all purposes, and efforts were made to have the bridge company improve its facilities. Perhaps to push the Keokuk and Hamilton Bridge Company into action, an independent company was formed in 1912 — the Inter City Bridge Company — and plans laid and Congressional support obtained for another bridge which would use the Keokuk Dam, then in construction, for railway traffic. Naturally, the Keokuk and Hamilton Bridge Company opposed this move, and Andrew Carnegie himself appealed to President Woodrow Wilson, who refused to intervene. The Carnegie forces claimed they had no money to improve their bridge, but C. R. Joy of Keokuk, president of the new venture, refuted their claims.

Finally, a Congressional committee agreed to visit Keokuk. Headed by Judge C. W. Adamson of Georgia, chairman of the House committee on interstate and foreign commerce, a group, which included Congressmen Fred Stevens of Minnesota, John Esch of Wisconsin, Dan Stephens of Nebraska, and Thetus Simpson of Tennessee,

came to Keokuk on January 12, 1914, to look over the situation. They were greeted at the Gate City by Major G. A. Hoffman of the Army Engineers, Congressman Charles A. Kennedy of Montrose, who had introduced a bill in Congress to use the Keokuk dam for railroad travel, and Thomas Wilkinson of the Upper Mississippi River Improvement Association. Despite the almost zero temperature of the day, the committee tramped over the properties in question and at the end of the visit Judge Adamson in a newspaper interview conceded that a bigger bridge was needed. Following more hearings, the Keokuk and Hamilton Bridge Company agreed to reconstruct, employing Ralph Modjeski, a noted engineer on such properties, to draw the plans. This work took more than a year, culminating with the opening of the new structure on August 19, 1916.

Piers had been rebuilt and strengthened to hold the 3,500 tons of steel out of which the thirteen spans were fashioned. A million board feet of lumber were used. An upper deck was built 56 feet above the normal water line, 62 feet above the low water mark. The bridge was lengthened to 3,500 feet, with 2,194 feet of approaches. The new draw span, which swung open and shut for the first time on March 26, 1916, was 382 feet long.

With the bridge modernized and able to handle all types of traffic, the city of Keokuk set about

the task of making it a free bridge. In 1941 an agreement was negotiated between Royall D. Edsell of New York, then president of the company, and Mayor John L. Ward of Keokuk, whereby the bridge would be toll-free after \$775,000 of first lien revenue bonds were retired.

Intervention of World War II, and the imposition of gasoline rationing, was expected to slow up traffic, thus delaying the important day, but despite these handicaps it was found that the bonds would be retired in seven years. The dream became a reality on January 13, 1949, when Mayor Frank A. Willmering cut the ribbon which had been drawn across the entrance, thus symbolizing the freeing of the bridge from tolls. Officials of Hamilton and other Illinois communities joined with Keokuk in celebration of the culmination of years of hope on the part of the two communities. The bridge affairs are now administered by a commission named by the mayor, and the structure has been rechristened the Keokuk Municipal Bridge.

FREDERIC C. SMITH

The Old Canal

The Des Moines Rapids in the Mississippi River at Keokuk were long a hazard to river navigation. For more than forty years engineers and boatmen pondered the problem of improving navigation in order to allow boats to pass over the nine miles of the Rapids in times of low water. These shoals were recognized as one of the greatest obstacles to efficient and economical transportation on the upper river between St. Louis and St. Paul. Even the canoes and pirogues of the early settlers had to be carried around the Rapids during extreme low water.

With the advent of the steamboat the problem became even more acute. Packets were stranded frequently on treacherous rocks and bars; many boats were sunk when holes were torn in their hulls. It was necessary, during low water, to unload freight carried by boats, either at Keokuk or Montrose, and lighter it over the Rapids. The lighters, built for low water navigation, were pulled either by horses walking along the shore, or by man-power. This was expensive and slow, so a simpler and cheaper method was demanded.

Surveys were begun as early as 1837 by the United States government. Robert E. Lee, then

a U. S. Army lieutenant, made the first survey. In 1849, Samuel R. Curtis, of Keokuk, incorporated a company to build a canal around the Rapids. While no work was actually done at this time, the idea was later carried out. In 1854, Lieutenant G. K. Warren of the United States Engineers made another survey, but this work was halted by the Civil War. Finally, in 1866, General J. H. Wilson drew up plans for the canal, and Congress appropriated \$200,000 for the project. In 1867 another \$500,000 was voted for canal construction, and on October 8 of that year construction was commenced at Galland, or, as it was called then, Nashville. Messrs. Henegan and Son of Mt. Vernon, Ohio, were awarded the contract.

Swedish and Irish laborers employed in the construction often locked horns. On June 25, 1870, reports of a bloody battle starting in a whiskey shanty brought a ban on the sale of liquor to the men. Several men were cut with razors and beaten in the fight. Earlier in the year, in March, Sheriff J. A. Bishop of Keokuk deputized a large posse to put down a disturbance caused by a strike against the government. Warrants to arrest the strikers "who had compelled anti-strikers to lay down shovel and hoe" were issued, the newspapers reported. To serve these warrants of arrest the sheriff summoned a posse of fifty men, mounted and armed. Eighteen strikers were arrested and sent to jail in Fort Madison. Work stoppages

were not without a ludicrous interlude, however, for on August 7, 1869, the workmen left their jobs and fled for their homes in terror, on the occasion of a total eclipse of the sun.

On August 22, 1877, the canal was officially dedicated, and the first boats passed through it. The achievement was hailed appropriately by a one-line caption in the *Gate City* of August 23: "CONSUMMATED." On the occasion of the canal opening, the paper reported that "the streets were alive with people, and flags were fluttering from a large number of public and private buildings." Government officials and representatives of the steamboat lines were special guests for the occasion. Commodore Davidson brought a delegation from St. Louis on the steamboat *Golden Eagle*. Early in the day, the committee in charge was apprised by telegram that the St. Louisans would be delayed, and, to add to the confusion, it was found that the gates of the lower lock were stuck and refused to move. The committee held a hurried consultation and decided that, rather than disappoint the crowd, the celebration would be staged if the packet *Northwestern* with important personages on board could be locked through.

"At half past two," the *Gate City* reported, "the *Montana* came sailing down the canal with flying colors, having passed through from the upper end. The *Louisa*, with the Fort Madison delegation on board, came down at three P. M."

During all this time workmen had been engaged in freeing the lower lock gates, so that "at five P. M.," the report continues, "the lower gates swung open and the Northwestern of the Keokuk-Northern Line, flying the Union Jack, with her lower deck guards and hurricane roof crowded with people entered the lower lock." Trouble with the valves used to fill the basin developed, but only momentarily. The lock filled in ten minutes and the first boat was locked through the lower entrance to the seven and six-tenths mile long canal. The bluffs were lined with cheering crowds, and the Chicago, Burlington & Quincy Railroad ran a three-car train, filled with people, over its tracks paralleling the big ditch.

Then, at six o'clock, the boats in formation, led by the *Montana*, steamed toward the middle lock. Cheering hundreds stood on the bank or rode in vehicles on the road which ran along the edge. The run was made by the boats in twenty minutes. As the *Northwestern* entered the lock, Henry Weyand "presented her with a handsome wreath of flowers. This was taken up on the hurricane deck and thrown over Major Amos Stickney," who was the engineer in charge of construction. Afterwards the wreath was draped over the boat's bell. On board the boat was U. S. Engineer, Col. J. N. Macomb, in charge of the upper Mississippi, and Montgomery Meigs, his assistant.

It was 7:30 o'clock when the boats reached the

upper, or guard lock. They then turned about for the return trip, taking in all three and a half hours for the round trip. By the time the *Northwestern* had again reached the lower lock the *Golden Eagle*, with the St. Louis contingent aboard, was being locked through. The two boats were connected by stage planks, and the formal reception, given by the city of Keokuk to the official party, began. Samuel M. Clark of Keokuk, as chairman of the executive committee, presided. He presented Judge Edward Johnstone, who made the first formal address, followed by Mayor John N. Irwin. James Brown of St. Louis replied for the boat interests. After other speeches were made, dancing followed in the boat cabins.

Mark Twain, who viewed the completed canal on one of his visits to Keokuk, described it as "a mighty work — this canal over the rapids. It is eight miles long, and three hundred feet wide, and in no place less than six feet in depth. Its masonry is of the majestic type which the war department usually deals in and will endure like a Roman aqueduct." This "majestic" masonry was of brown stone from the quarries of Wells, Timberman and Company at Sonora, Illinois. It formed an outer embankment against the encroaching river, 60 to 90 feet wide, 16 to 27 feet high. The two lift locks and the one guard lock were each 350 feet long and 80 feet wide on top. The first one was at Keokuk, the second two and a

half miles above, and the guard lock five and a tenth miles north of the middle one. The lower lock lift was ten feet, the middle eight feet. Massive lock gates weighing 110,000 pounds each were fitted on a sill. By a system of pulleys, chains, and wire ropes operated by a pump which forced water into hydraulic cylinders behind the wall of each gate, the locks could be operated by one man. The machinery was built in the Buckeye Foundry and Machine Works of Sample, McElroy and Company of Keokuk.

The engine house at each lock was twenty-seven feet, four inches square with a slate roof. Engines installed in these were twenty to thirty horse power. At the second lock, the government built its dry dock and ship yards for repair of boats. The original estimate of cost was \$2,530,000. Through delays and added construction, however, the total cost amounted to \$4,155,000. Congress appropriated a total of \$4,281,000 for the job. Broken down, the cost sheet showed the lower lock was built for \$725,000; the middle and guard locks, \$470,000; section work and excavation, \$1,900,000; channel excavation, \$475,000; and right of way and engineering costs, \$225,000.

Although he could not attend the opening ceremony, the Hon. George W. McCrary of Keokuk, Secretary of War, sent regrets in the form of a telegram in which he described the occasion as "one of deep interest to the whole country and

especially to the people of the Mississippi Valley."

For nearly four decades the old canal furnished safe passage for boats. In the winter it became a hugh skating rink, and in various sections ice fields were staked off, and ice cut and packed into houses built for that purpose. When these were filled, strings of wagons shuttled back and forth from the canal to Keokuk, to fill ice houses there. The canal even served as the "old swimming hole" in summer. Classes in this sport were organized each summer by Professor A. Schueler and Professor P. C. Hayden, both teachers of music. The goal for the pupils in these classes at the end of the season was to be able to "swim the canal."

But the Rapids, tamed for the time, were still to claim their victory — the old canal itself. The fall of water — over twenty feet — was being put to work by the development of the Keokuk water power project, and in the second week of June, 1913, the flood gates of the newly built dam were closed and the river covered the old canal.

Only two markers now remain to tell its history. One is the flashing buoy, which warns steamboat pilots of the sunken guard lock and wall, the other the brownstone bull nose of the first lock. In its deep well are housed the automatic instruments which measure the rise and fall of the Mississippi in Lake Keokuk as the water area above the dam is known today.

FREDERIC C. SMITH

Building the Keokuk Dam

The canal had permitted navigation of steamboats past the treacherous Des Moines Rapids; the bridge had linked Iowa and Illinois and provided a pathway over the river for the new mode of transportation — the railroad. A third step was yet to be taken at Keokuk — the harnessing and use of the water power generated by a twenty-two foot fall in the Mississippi over a distance of eleven miles. The great Keokuk Dam, one of the engineering marvels of the second decade of the twentieth century, was to complete the story of transportation and communication at the Gate City of Iowa.

Fire bells rang and the whistles of Keokuk factories added their voices to the din shortly after noon on February 2, 1905. Word had just come from Washington that the Senate had passed the bill authorizing construction of a dam at Keokuk. The House of Representatives had passed the bill on January 27, so that when President Theodore Roosevelt affixed his signature to the measure, February 9, preliminaries had been completed to bring about the culmination of the dream of generations of the people in Keokuk.

Lieutenant Robert E. Lee had first sensed the

hidden energy and had predicted in 1837 that these Rapids would one day become the site of a large power dam. The Nauvoo Mormons were said to have been conversant with the possibilities and had planned to convert the power to their use. In 1842, a small wing dam was erected by a man named Gates, who used the power to operate a gristmill. Other sporadic attempts were made over the years, but it remained for the Keokuk and Hamilton Water Power Company, headed by C. P. Birge of Keokuk, to bring about the fruition of the dream.

Congress had imposed a five year limit for beginning construction of the project. Just thirty days before this limit would expire, fire bells and whistles again were heard, this time acclaiming the arrival of Hugh L. Cooper with a group of engineers and workmen — the latter generally called Bohunks because of their foreign extraction — who began the work on the Illinois side of the river. Cooper, who had harnessed the Niagara River and had built other projects, believed in the Keokuk dam to the extent that he had invested his entire personal fortune in it. Contracts were signed with St. Louis interests to use the power if Cooper could find a way to transmit it. Later, eastern capitalists were attracted to the extent of investing; even foreign cash was attracted. It was at an international convention of the Young Men's Christian Association in Toronto, Canada, that

E. R. Ward, an investment banker and chairman of the religious work committee, confided to C. R. Joy of Keokuk, a member of the same committee, the momentous news that the project would be financed.

Keokuk homes were opened to engineers of all classes during the three long years it took for the building of the dam. The society pages of Keokuk's newspapers announced the weddings of more than a hundred Keokuk young women to these young visitors. "Water power people," as they were termed collectively by the local citizens, entered largely into the social and community life. Keokukians and these "visiting firemen" began to wear dress suits to the theater and to dinner, and new names blossomed regularly in the Keokuk social register.

Between July, 1910, and June, 1913, the dam was thrown across the river, a power house was constructed, and a new lock and dry dock built for the United States government. The last bit of concrete in the dam was poured on May 31, 1913. The old canal was flooded and the new Keokuk lock was commissioned June 12, 1913, when two of the largest boats on the upper Mississippi were locked through simultaneously. Electric current was delivered to St. Louis on the night of June 30 and July 1. Some weeks previously, Keokuk people had turned the switches in their homes and read their evening papers by the light of the new

current, the old power plant on the edge of the canal having that day been buried under the waters of the newly created lake.

August 25, 26, 27, and 28 were days of celebration for Keokuk and the community, with August 26 as the "big day," when Governor George W. Clarke of Iowa, Governor Edward Dunne of Illinois, and Lieutenant Governor Painter of Missouri symbolized the new union of their three states and "dedicated the work to the use of mankind." Congressmen from the tri-state area, as well as from other states up and down the river, came to assist in the speechmaking. There was a three-day regatta on Lake Keokuk with motor boats from all sections of the country there to compete for gold and glory. At night the skies were ablaze with fireworks displays.

Engineers, scientists, and writers from all over the world had come to Keokuk during the days of construction to observe and learn. Dr. G. Walter Barr, head of the public relations department of the power company, was the official guide on these occasions. Later, with megaphone strapped over his head, his hands free to gesture and point out the wonders of the building, the little doctor shepherded thousands of visitors over the two and a half miles of the works, suiting his "spiel" to his audience. Each year since it was built, the dam and power house attract many visitors. With the exception of six years, during the two World War

periods, when for security reasons it was necessary to bar visitors, people have come by automobile, by train, and by boat to see the great dam.

It is estimated that over 900,000 people have visited the plant, which in its entirety, including dam, power house, lock, sea wall, and ice fender, has a total linear measurement of 13,185 feet, or two and a half miles. The length of the dam including the abutments at each end is 4,649 feet, or eighty-eight hundredths of a mile. At the base it is 42 feet in thickness and at the top 29 feet. It is composed of 119 arched spans, so molded together that it is virtually one solid piece of concrete, which extends downward five feet into the bedrock, to which it is securely anchored. It rises 53 feet from its base, and there are enough materials in it to load a train 1,500 miles in length. The power house has a length of 1,718 feet and is 132 feet wide. The weight of any one of the fifteen generators in it is equivalent to twenty-five street cars, and yet, despite their size, the starting or stopping of a street car on the streets of St. Louis affects the speed at which they revolve.

Between the power house and the Iowa shore are the lock and dry dock. Four hundred feet long, 110 feet wide, with a lift of 40 feet, the lock was considered the last word in this type of building and was compared favorably with the Panama Canal construction, yet it is already outmoded by the new type of barge transportation, and efforts

are being made to secure from Congress appropriations to enlarge and rebuild it. A sea wall a quarter of a mile long protects the Chicago, Burlington & Quincy Railroad tracks, which closely border the lake. Some 2,500 men were employed on the construction. Two hundred eighty-nine tons of dynamite were used; 22,000 tons of steel, 8,000,000 feet of lumber, and 3,000,000 sacks of cement went into the completed units.

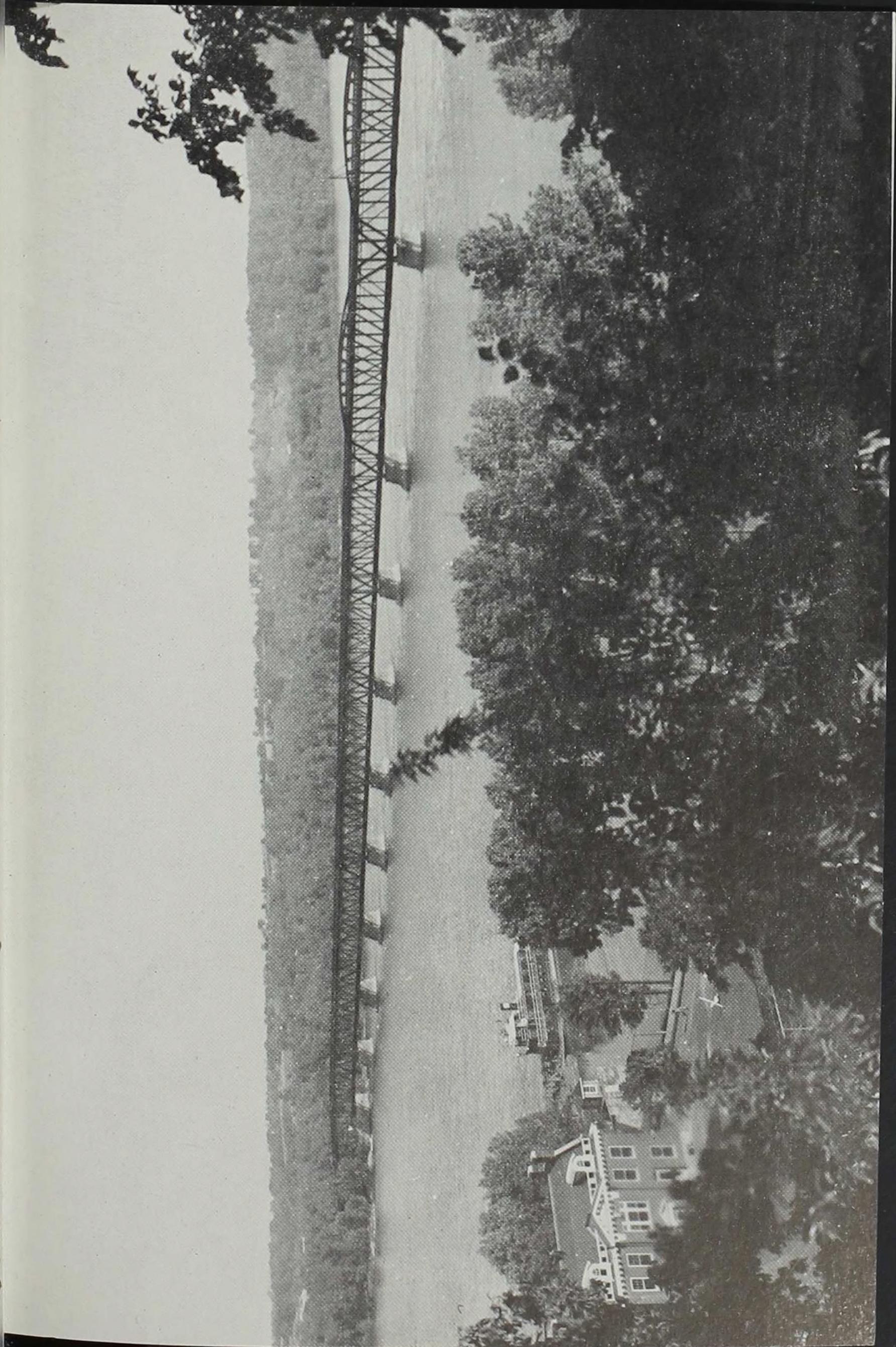
Dramatic incidents, such as the time that the engineers and laborers fought crashing ice and wind-driven waves to keep the angry river from destroying their work, were highlights in the construction period. During the first two summers ideal conditions for building prevailed, with no periods of high water. But the severely cold winter of 1912 brought the menace of ice to the project. This ice, from twenty-four to thirty inches in depth, broke in the rapids above the partially finished structure on the afternoon of Sunday, March 24, 1912. It came roaring against the cofferdams and newly formed concrete, but broke and crumbled even as it piled to considerable height, so that no damage was done. But early in April, winds of almost tornadic proportion whipped the river, which was at the unprecedented stage of 18.2 feet, into huge hungry waves which lapped and tore at the clay parapets topping the cribbing. Trainloads of sandbags were rushed to every exposed portion, and after an all-night battle in wind, rain squalls,

and darkness, the greedy waters were repulsed.

Two names are linked in the development of Keokuk's water power. Chief Engineer Cooper built the hydraulic installation, the dam, power house substructure, lock, dry dock, and sea wall. The power house proper, and all electrical installation and transmission lines were built by the Stone & Webster Engineering Corporation of Boston. Soon after the work was commenced, the plant was placed under the management of the Stone & Webster Management Association. Beginning July 1, 1913, when the plant known as the Mississippi River Power Company began operation, J. A. Trawlick was manager for the company. On October 1, 1914, he was succeeded by C. W. Kellogg, who later became president of the Edison Electric Institute. C. A. Sears succeeded Kellogg on February 21, 1919, managing the properties until December 1, 1925, when the plant was sold. L. E. Dickinson served as manager from December, 1925, to December, 1948. Paul L. Mercer is the present Works Manager.

Scenic driveways border the lake created by the impounding of water above the dam, on both the Illinois and Iowa shores. On the Iowa side there is a replica of the first schoolhouse in Iowa, built at Galland in 1830, while the highway in Illinois leads into the historic town of Nauvoo. Both roads afford delightful panoramas of the dam.

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