

THE SANDSTONE QUARRIES
OF THE APOSTLE ISLANDS

By

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A HISTORICAL NARRATIVE

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I. INTRODUCTION

This report attempts to narrate in detail the history of the Apostle Islands sandstone quarries. This illustrated, detailed historical narrative will provide interpretive information on one of the major resources of the Apostle Islands National Lakeshore for use by staff in developing programs and media for visitors and will serve as the basis for a publication suitable for a popular audience and for sale at lakeshore headquarters.

The scope of the research was limited primarily to analyzing and assembling existing information in the way of the research carried out by Kathleen Lidfors and other staff members of the Apostle Islands National Lakeshore in preparing the cultural resources management plan for the Apostle Islands quarries and my own research conducted in preparing my doctoral dissertation on the sandstone architecture of the Lake Superior region.

Field inspections and searches of mineral records have identified four quarry sites on the shorelines of three islands from which nine companies based in Ashland, Superior, Milwaukee, Minneapolis, and Chicago extracted fine-quality brownstone during a twenty-five-year period from 1870 to the mid- to late 1890s.

Newspaper accounts, census reports, historic photographs, and archaeological evidence gave information on the extraction techniques

employed by companies taking stone from the Apostle Islands. These ranged from blasting, to hand drilling and hoisting by man and horse power, to steam channeling and hoisting by steam-powered derricks. What is known of quarry operations on the Apostle Islands is compared with information chronicled in technical papers and historic photographs on the methods employed elsewhere for extracting, shipping, and finishing stone to speculate on or more fully to reconstruct quarry technology here. To date nothing has been discovered on Apostle Islands quarry companies comparable in scope to the maps, daybooks, correspondence, shipping, and employment records in the recently uncovered J. W. Wyckoff papers. Now at the Michigan Technological University Library Archives and Copper Country Collections, these trace the operation of the Portage Entry Quarries Company.

Surveys of extant buildings, historic photographs of buildings, and other architectural records have revealed nearly forty built wholly or largely of Apostle Islands sandstone in the cities and villages of the Chequamegon Bay area, the Lake Superior region, and the Midwest. Most in larger cities were important public buildings designed by recognized architects in prevailing high styles of architecture. Many in the Chequamegon Bay locale were vernacular renditions designed by engineers, lesser-known architects, and craftsmen.

Examinations of public and private records and newspapers established the practical and romantic reasons people chose sandstone over brick or wood.

II. APOSTLE ISLANDS SANDSTONE

Reddish brown sandstone crops out along the shores of the Apostle Islands. This sedimentary rock is made up of sand-sized grains of quartz cemented together with iron oxide (which gives it the red color), calcite, authigenic quartz, and silica. Reddish brown sandstone from the Apostle Islands enjoyed prestige as a building material among architects, builders, and clients from 1870 until 1895, when the growth and prosperity of the region and the Midwest created a demand for substantial buildings.

Sandstone from the Apostle Islands belongs to the Chequamegon geological formation, which underlies all of the Apostle Islands southeast of a line from Sand Island to Devil's Island and is exposed at Houghton Point and on the shore cliffs south of Washburn. The Chequamegon formation and two other formations with similar properties--the Devil's Island and the Orienta--together are known as the Bayfield group, after the village on the mainland opposite the Apostle Islands and twenty miles north of Ashland. In turn, Bayfield was named for Captain Henry Bayfield (1795-1855) of the British Royal Topographic Engineers, who first carefully explored the sandstone of the Lake Superior region while conducting his trigonometrical survey of the region in 1822-23.

The Devil's Island formation, named for the island on which the formation is clearly visible, underlies the Chequamegon formation. The

Oriente formation, named for the quarry town on the Iron River thirty-five miles east of Superior, underlies the Devil's Island sandstone and the Western Plain from the line of outcrop of the Devil's Island formation, then along the south shore of Lake Superior north of the Douglas Range and into Minnesota.

The Bayfield group extends westward from the mouth of Fish Creek at the head of Chequamegon Bay, including the Apostle Islands, to the St. Louis River, which forms the border between Superior, Wisconsin, and Duluth, Minnesota, and then extends southwest into Minnesota. The sandstones of the Bayfield group underlie the lower ground along the entire lakeshore and form the basement rock of all the Apostle Islands. Their exposures are restricted almost entirely to the shores of the lake on the mainland and the Apostle Islands.

The Bayfield group is related to the Jacobsville formation. The Jacobsville formation occurs on the Keweenaw Peninsula of northern Michigan, southeast of the Keweenaw fault. It extends eastward along the shore of Lake Superior to Sault Ste. Marie and Sugar Island and probably constitutes the bedrock over much of the bottom of Lake Superior in that area. Together, the Bayfield group and the Jacobsville formation occur in a belt that underlies the land and the lake for nearly four hundred miles extending from Sault Ste. Marie to Duluth (Figure 1).¹ They crop out from Munising, Michigan, to the head of the lake.

Until the early twentieth century the reddish brown sandstone of the Lake Superior region was generally and popularly called Lake

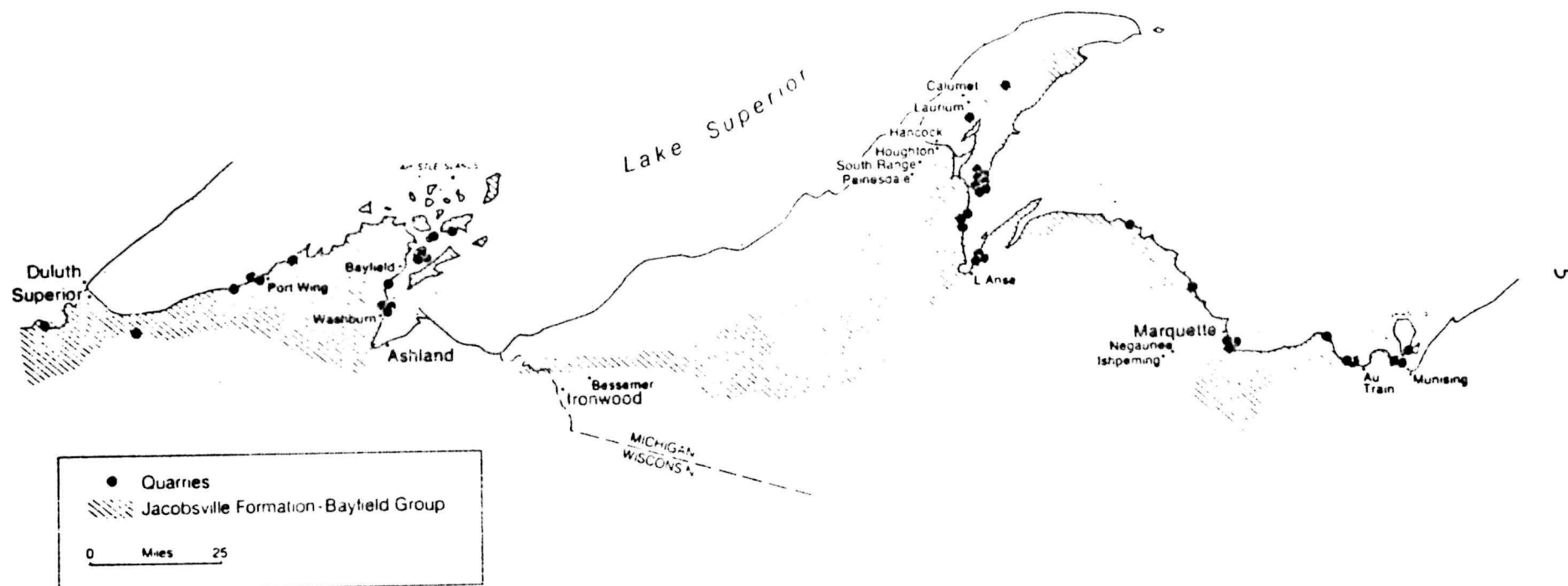


Figure 1. Map Showing the Distribution of Quarries in the Jacobsville Formation and Bayfield Groups.

Superior sandstone, brownstone, or redstone, and prefixed specifically by the name of the place in which it was quarried, as Bayfield, Portage Entry, Marquette, Basswood Island, and Port Wing sandstone.

III. EARLY EXPLORERS AND TRAVELERS

Nineteenth-century explorers, travelers, artists, and scientists demonstrated romantic and practical interests in the sandstone of the Apostle Islands (Figure 2) and southern shore of Lake Superior, assigning them various names and ages, describing their infinite variety and beauty, and predicting their economic value as a building material.

Henry Rowe Schoolcraft (1793-1846), authority on the North American Indian, scientist, and writer, hastily noted various physiographic and geologic features along the southern shore of Lake Superior as early as 1819, during exploratory expeditions under the authority of the secretary of war. Schoolcraft accompanied General Lewis Cass as a mineralogist and geologist on an expedition that passed along the southern shore of Lake Superior from east to west and crossed over to the Mississippi. Schoolcraft saw the need for scientific investigation to compile accurate information. He argued that federally sponsored surveys would "augment our sources of profitable industry" and "promote our commercial independence."²

Lieutenant James Allen accompanied Schoolcraft in a later expedition of 1832 to the Western Indian Country and noted the presence of sandstone. In his journal entry for 21 June, Allen wrote that upon leaving the encampment on Spirit Island (either Hermit or Basswood) the detachment passed the Apostle Islands, and twenty-five miles from



Figure 2. Hemlock Island Lake Superior, Ashland County

Reddish brown sandstone worn by the action of waves into fantastical shapes crops out along the shores of the Apostle Islands. These natural sandstone landmarks were admired and described for practical and romantic reasons by explorers, writers, artists, and scientists.

La Pointe, where the great Fond du Lac Bay begins, he observed the rocky bluff point of sandstone called the Detour. He mentioned the prominent points and perpendicular bluffs of red sandstone at times twenty to thirty feet high along the south shore at Birch Bark Point, also known as Middle Point, and elsewhere between La Pointe and Fond du Lac.³ During early explorations of this region, people may have recognized, but did not remark on, the value of sandstone as a building material.

Early mention of the economic value as a building material of the red Lake Superior sandstone on the Apostle Islands and along the south shore of the lake was made public in later reports of findings of scientific surveys and explorations of the region under the auspices of federal and state governments (Figure 3). This information was needed to assist in answering questions related to the sale of these lands and the disposal of public mineral lands.

On 1 June 1840, Douglass Houghton (1809-1845), pioneer geologist (Figure 4), set forth with two assistants, C. C. Douglass and Bela Hubbard, from Sault Ste. Marie in an open boat called a "Mackinac Barge" with two months' supply of provisions. Coasting along the southern shore of Lake Superior, they studied the geology and topography of the area and examined the location of the Wisconsin-Michigan boundary. At La Pointe they stopped for three days to gather provisions.

Both Houghton and Hubbard observed in passing the red sandstone of the region. In the report of his findings gathered during this

REPORTS
 OF
WM. A. BURT AND BELA HUBBARD, ESQs.
 ON THE
GEOGRAPHY, TOPOGRAPHY AND GEOLOGY
 OF THE
 U. S. SURVEYS OF THE MINERAL REGION
 OF THE
SOUTH SHORE OF LAKE SUPERIOR, FOR 1845:
 ACCOMPANIED BY A LIST OF WORKING AND ORGANIZED MINING COM-
 PANIES; A LIST OF MINERAL LOCATIONS; BY WHOM MADE.
 AND A
CORRECT MAP OF THE MINERAL REGION,
 DELINEATING THE TOWNSHIP AND SECTION LINES, AND THEIR
 CONNECTION WITH THE LOCATION LINES:
 AND ALSO, A
CHART OF LAKE SUPERIOR,
 DERIVED FROM THE DETROIT ASTRALATY SURVEY.
 BY J. HOUGHTON, JR. AND T. W. BRISTOL.



DETROIT:
 PRINTED BY CHARLES WELLCOX.

1846.

Figure 3. Frontispiece of Reports of William A. Burt and Bela Hubbard on the Geography, Topography and Geology of the U.S. Surveys of the Mineral Region of the South Shore of Lake Superior for 1845.

This frontispiece from the reports of a government-sponsored scientific survey of the mineral region of the south shore of Lake Superior contains an illustration of the sandstone cliffs and outcrops. Early reports such as this one mention the economic value of red Lake Superior sandstone as a building material.



Figure 4. Alvah Bradish, Douglass Houghton, ca. 1870.

This romantic, life-size memorial portrait shows the pioneer geologist standing in front of the Pictured Rocks on the rocky shore of Lake Superior. Houghton wears the loose summer coat, light pants with leather suspenders, and high-top boots of the outdoor geologist. His arm rests on the symbol of his profession, the geological hammer. The portrait was painted by Houghton's brother-in-law on the twenty-fifth anniversary of his accidental death by drowning.

expedition, which attracted the attention of geologists worldwide in the region's Precambrian iron and copper, Houghton discussed the value of the Lake Superior sandstone for building material:

A very good building stone may be obtained from many portions of the lower, or red sandstone formation, and though the cement of this rock is usually not very perfect, yet, frequently, such changes have taken place in the rock, that it has almost taken on the character of granular quartz rock, in which cases, its durability is very much increased. The strata of this rock are usually of a convenient thickness to admit of being easily quarried, and they are so regular that the stone will require but little dressing.⁴

Houghton observed that the Lake Superior sandstones were comprised of a Lower Red Sandstone and an Upper Gray Sandstone. He noted the location and depth of the formation and the composition of the rocks.

To what was known of the mineral riches of the region and to Houghton's statement, Bela Hubbard (1814-1896), assistant geologist for Michigan, predicted a future market for the sandstone of the Lake Superior region as a building material, when "the solid and durable shall be regarded as chief requisites to good architecture," and added, "There is in its building-stones a wealth that is hardly yet begun to be realized. No more beautiful and serviceable material than the easily-worked and variously-tinted sandstones is found in the West. . . ."⁵ Despite their enthusiasm for the value of sandstone as a building material, both Houghton and Hubbard must have recognized the problems attendant to profitably working the deposits in a wild and unsettled country so far from the market.

In 1847-48 David D. Owen (1807-1860), United States geologist for Wisconsin, and assistants, J. G. Norwood, A. Randall, and Charles

Whittlesey, examined for the United States Department of Treasury the public lands along the Wisconsin coast of Lake Superior to determine the mineral and agricultural value of the land in the Chippewa Land District. They were the first competent geologists to examine the sandstone of the Apostle Islands and the south shore. Owen noted the gentle southeasterly dip of the sandstone strata there.

Owen thought the red sandstone of the Apostle Islands suitable for building material. Specifically of the rock-bound shore at Point Detour, he stated:

The ledges are composed of red sandstone with marly deposits. Of the former there is about fifteen to twenty feet exposed above the water level. The lower bed is some seven to nine feet thick and regularly jointed; it would make a fine building material. The color is pleasant--not too red; it reminded me of the rock obtained at the quarry on Bull Run, in the new red sandstone formation on the Potomac, in Maryland.⁶

From the uniform appearance of the sandstone he had observed, Owen concluded that all of the Apostle Islands probably were composed of the same formation. Owen described the appearance of the sandstone formation on the Apostle Islands as "undulating red marl banks, either argillaceous or siliceous, that extend nearly to the water, and are surmounted by thick woods of birch, pine, hemlock, aspen, and cedar."⁷ In view of the state of the science of geology then and the wilderness conditions of the region, Owen provided amazingly accurate information.

Charles Whittlesey (1808-1886), who was a member of Owen's 1847 expedition, described in a later exploration of 1860 for the Wisconsin Geological Survey the red sandstone of the Apostle Islands. He said its color is generally red because of the presence of iron oxide, and

where this is lacking it is gray or dull white and in places mottled with gray and red. He described the structure of the formation based on observations of the outcrops of the Apostle Islands and Chequamegon Bay. From estimates and measurements on shore, Whittlesey judged the thickness to be no less than 15,000 feet.⁸

Throughout the nineteenth century, scientists, artists, and writers described in pictures and in words the wild picturesqueness of the rocky cliffs along the south shore of Lake Superior. The resemblance of these natural phenomena to noble architecture fascinated the romantic impulses of authors before and after people had tamed and settled this wild area and had begun to exploit its resources.

John Wells Foster (1815-1873) and Josiah D. Whitney (1819-1896), United States geologists, studied the geology of the Lake Superior region in 1850, examined the sandstone for three hundred miles from Grand Sable to Fond du Lac, and expanded on the earlier ideas of Houghton and Hubbard. The two geologists wove into their two-volume scientific report an awe and reverence for the majesty of this wild landscape. They lamented that "none of our artists have visited this region, and given to the world representations of scenery so striking."⁹ They illustrated profusely their own work with tinted lithographs printed by Ackerman of New York depicting such natural sandstone landmarks as Monument Arch on Isle Royale, and Miner's Castle, Sail Rock, the amphitheatre, the Grand Portal, and the Chapel at Pictured Rocks. They noted that the action of the waves had caused the sandstone cliffs to assume fantastic shapes and described them in

architectural terms--cornices, caverns, gothic doorways, towers, walls, arches, and gateways.

Charles Lanman (1819-1895), writer, explorer, and artist, toured the Great Lakes basin in the 1840s and wrote in the 1850s about the difference between the eastern and western sandstones, which he had observed in the rocky bluffs at the Pictured Rocks and in the sandstone cliffs that extend for two miles on the mainland just west of the Apostle Islands. The former, "solid walls of whitish sandstone," he observed, have been "striped with various colors by mineral drippings." The latter "are composed of a deep red sandstone." He described their wild and rugged picturesqueness and their resemblance to arches, doorways, and caverns.

A cluster of rocks similar to the above [Pictured Rocks] is found westward of the Apostle Islands. These, however, are composed of a deep red sandstone, and are only about one hundred feet high, extending along the shore for about two miles. The arches here are almost numberless, and exceedingly picturesque and almost singular, and you may wind your way among them in a canoe without the least danger provided you have a steady hand and sufficient nerve.¹⁰

Forty years after Lanman's romantic accounts, Sam S. Fifield of Ashland described in much the same manner the rocky features of the Apostle Islands. Writing for the Ashland Press on 21 December 1895, he likened the sandstone to "wonderful caverns shaped by the ceaseless waves . . . magnificent grottoes and halls . . . supported by grand arches and columns . . . vaulted chambers, supported by numerous pillars and arches. . . ."

In 1857 J. Disturnell (1801-1877) compiled and published a traveler's and settler's guide to the lakes of North America and said

the sandstone cliffs contributed to the "most picturesque and lovely appearance of the Twelve Apostle Islands."¹¹

Whether admired for romantic or practical reasons, the spectacular roddish brown sandstone cropping out along the Apostle Islands and the Lake Superior shoreline was noted and interpreted by everyone who saw it.

IV. TECHNOLOGY

The quarries on the Apostle Islands opened with the demand for stone for the Milwaukee County Courthouse. Following the development of the Basswood Island quarry, shrewd midwestern and eastern speculators discovered other quarries on Hermit and Stockton islands. Eventually, nearly fifty quarry sites developed by some seventy companies were clustered at Bayfield, Marquette, and Portage Entry and scattered along the lakeshore in the Bayfield group and the Jacobsville formation. The outcrops of Bayfield sandstone on the shores of the Apostle Islands yielded large quantities of stone and stood next to ready facilities for transportation by water.

Companies quarried Apostle Islands sandstone as dimension or mill stone, ton stone, and rubble stone. Of these the most marketable and costly was dimension stone (Figure 5). Dimension stone was removed in extra-large blocks that typically measured eight feet by four feet by two feet in size. The blocks were sawn or scabbled and sold by the cubic foot to builders and contractors who cut them into the shapes and sizes specified by their intended position in a particular building. Some companies operated sawmills that cut the stone into such architectural components as square or rectangular blocks known as ashlar and window sills. Ton stone was broken out in rough, angular, irregular blocks and sold by the ton in pieces weighing from one-half to three

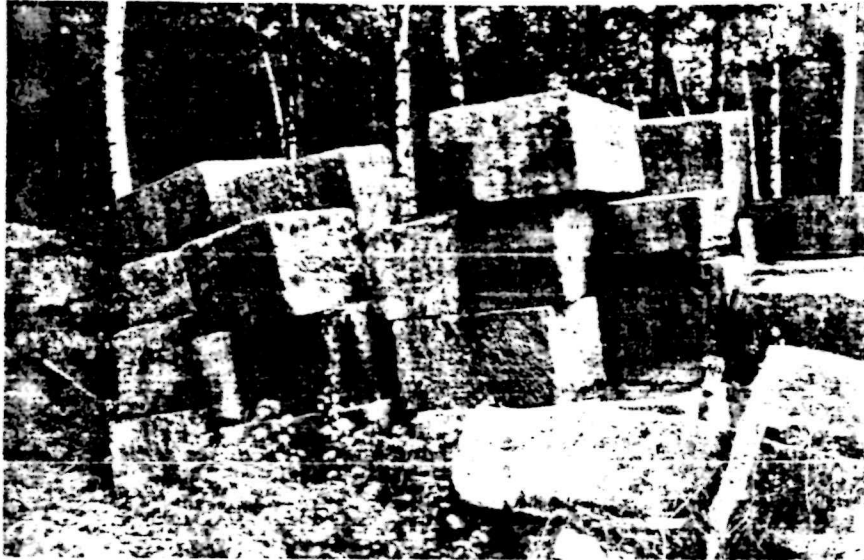


Figure 5. Dimension Stone, Excelsior Brownstone Company Quarry Site, Hermit Island, 1984.

This shows today the dimension stone quarried by the Excelsior Brownstone Company Quarry as it was piled for shipment ninety years ago.

tons. Rubble stone was created in removing dimension stone or removing the overburden and was sold cheaply by the cord in pieces manageable by one or two men. It was used in building cribs, breakwaters, piers, and foundations. Sometimes it was discarded altogether.

Stone was classified according to its color and suitability for building. Stone free of white blemishes and uniform in color was graded Number One (hereafter referred to as No. 1); stone not sufficiently free from white to grade as No. 1 was graded as No. 2; stone whiter than the others was graded No. 3.

Opening a quarry required the removal of the overburden of glacial drift and shale rock which could cover the sandstone deposit to a depth of up to fifty feet (Figure 6). In this operation unskilled workers broke up solid portions of the overburden by blasting with gunpowder placed in drill holes and by wedging it off. They carted the rubble away. If the sandstone deposit did not stand out in cliffs, workers next excavated by blasting or by cutting long narrow channels in the rock in order to free a narrow space for the quarry face.

The cost of removing the overburden was a decisive factor in determining the practicality of opening a quarry at a particular site. It varied with the extent and nature of the overburden, its proximity to the water, and the facilities available for its disposal. The Basswood Island Quarry was covered with a twenty-foot-thick overburden. All Apostle Islands quarries had the advantage of being at water's edge. Here rubble was tossed aside into cribs for docks and shipped elsewhere for breakwaters and foundations.

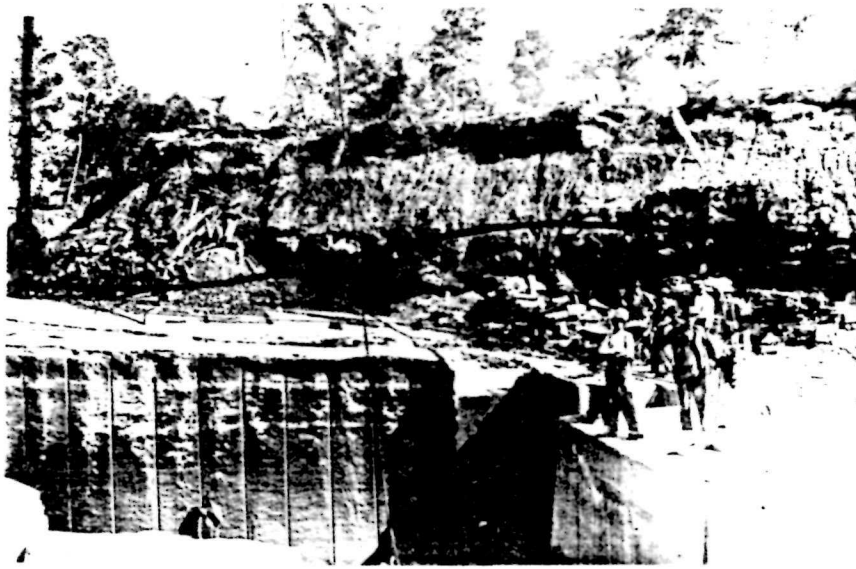


Figure 6. Kerber-Jacobs Redstone Company Quarry, Red Rock, Michigan, ca. 1895.

This shows the overburden and the sandstone deposit.

The work of removing the overburden often took place in the winter. However, the quarries operated seasonally for eight months from April to November. This allowed stone to be removed in a reasonably dry condition without excess moisture or frost, and thereby ensured good weathering.

Once the quarry had been stripped of the overburden, workers opened the quarry. On the side that the quarry was to be opened, they drilled two parallel channels, about four feet apart, and parallel to the depth of the bed. Then they broke out a portion of the stone between the two channels and removed a key so as to create a space in which to move other stones as they were broken apart. Quarrymen blasted this break or wedged it out with plugs and feathers (Figure 7). That is, either they drilled deep holes and charged them with heavy blasts of powder to break the stone apart and move it slightly on its bed, or they drilled two or three holes at right angles to the channels and then cracked or loosened the stone with plugs and feathers. With the latter method two thin, half-round pieces of soft iron that tapered to a point at one end and were called feathers were placed in a series of holes along the line where they wanted to break a line. The split was made by driving a small wedge-shaped piece of steel called a plug into each pair of feathers and moving along the line striking each wedge in its turn until a strain caused the stone to fall apart. A derrick lifted out the key.

With the key removed quarriers could begin extracting the building stone. This was accomplished by a method of channeling and wedging.

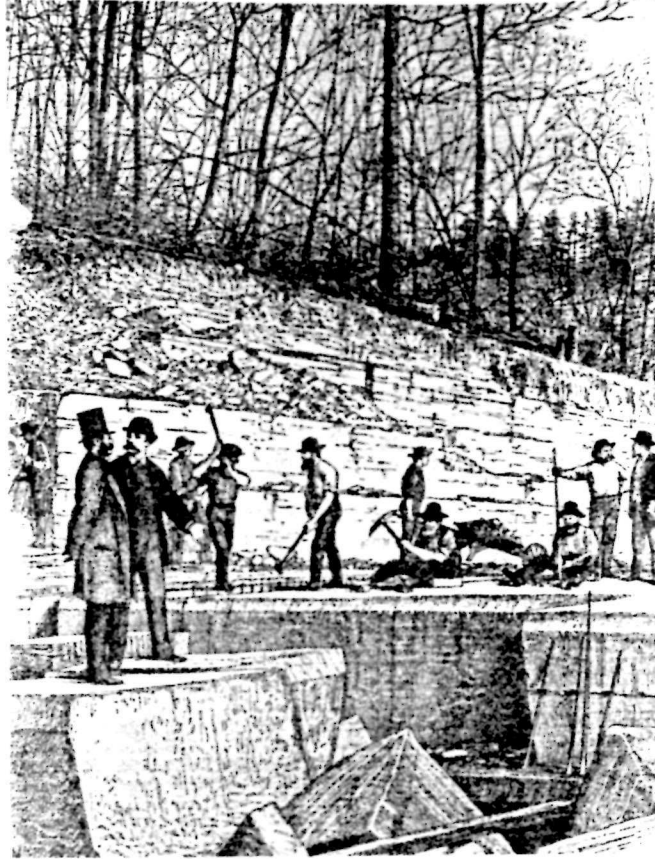


Figure 7. Quarrying Sandstone by Channeling and Wedging.

This illustrates the method of quarrying sandstone by channeling and wedging. The end of the quarry on the left of the picture is cut off by a channel about two feet in width, and the back of the quarry is cut off by a similar channel, so that a block could be detached by a row of wedges parallel to the first channel. Two men are driving a row of wedges, each striking an alternate wedge as he moves forward. Two others are cutting with picks grooves for rows of wedges. In the right foreground is shown the manner of splitting the blocks with the stratification.

They removed stone by cutting channels transversely to the face, drilling a series of holes parallel to the face, and then cracking the stone out with wedges in the same manner in which they had removed the key. The large blocks freed from the quarry were broken into sized blocks by placing a series of iron wedges in a lengthwise groove where a break was desired and striking them repeatedly and successively with sledgehammers. Derricks hoisted the stone directly onto ships or onto tramcars that carried the stone to the dock (Figures 8 and 9). Each block was numbered and measured at dockside. This information was inscribed on the block and noted in a memorandum.

All Apostle Islands quarry companies except the Bass Island Brown Stone Company at the Breckenridge quarry employed steam drills (Figure 10) and steam hoists to extract stone. (At the Breckenridge quarry stone was blasted out.) In the 1890s the Ashland Brown Stone Company and the Superior Brownstone Company acquired Wardwell channeling machines (Figure 11), which had been invented in 1863 by George J. Wardwell of Rutland, Vermont. This was a locomotive machine driven by steam power that moved over a steel rail track placed on the quarry bed. It carried a single gang drill which was raised and lowered by levers and cranks on one side, or two such drills, one on each side. The lifted drill dropped with great force and rapidly creased a channel into the rock. The machine ran backward and forward over the rock while its cutters delivered their strokes. These cut channels in the rock. The machinery employed at Apostle Islands quarries in the 1890s probably included a gadding machine. The gadding machine undercut and



Figure 8. Quarriers and Machinery, Portage Entry Quarries Company, Jacobsville, Michigan, ca. 1895.



Figure 9. Quarriers and Tramcar, Portage Entry Quarries Company, Jacobsville, Michigan, ca. 1895.

This shows a tramcar loaded with dimension stone.

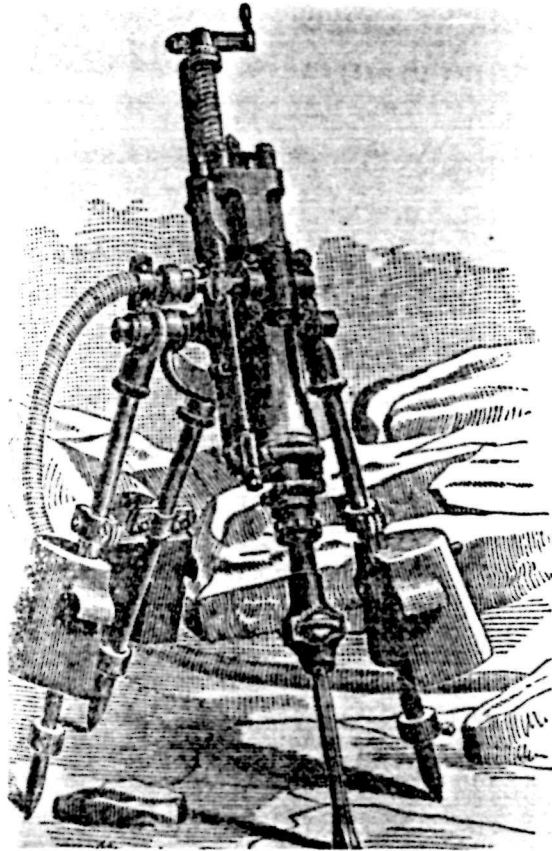


Figure 10. Eclipse Rock Drill.

This simple form of the steam drill was used widely for quarrying. The drill was fastened to the piston and could be inclined at any angle.

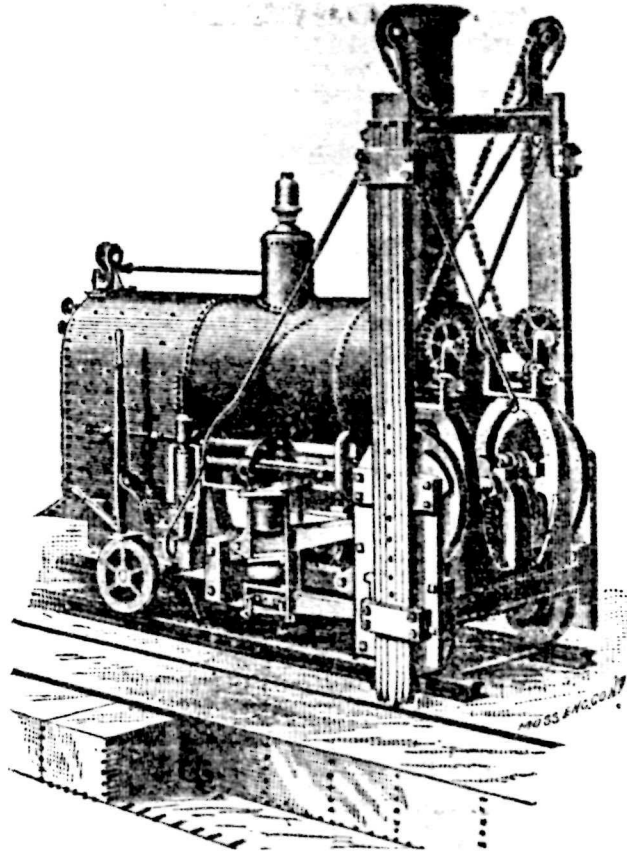


Figure 11. Wardwell Channeling Machine.

This shows a double-gang Wardwell channeler mounted on a steel-rail track on the bed of the quarry. It cut channels from four to six feet deep and two inches wide.

released the block after the channeler had done its work. This machine stood on a platform on trucks which ran on a track. To the boiler, which formed the main support of the machine, was secured a perpendicular guide bar. A drill was attached to this. By raising, lowering, and swiveling the drill, its operator could bore a series of perpendicular holes in any direction. Channelers and gadders replaced plugs and feathers as a method for quarrying.

Skillful quarriers took advantage of the systems of natural planes, seams, or cracks of the rocks. Sandstone joints usually run nearly perpendicular to the planes of bedding and descend vertically at similar distances. They tend to intersect in two directions. The first, called "dip joints" or "end joints," runs with the direction the strata and is inclined from the horizon or the dip or inclination of the rock. The second, called "strike joints" or "back joints," runs transversely at a right angle and conforms in direction to the strike of the rift. Aided by the natural joints of the rock, quarrymen could wedge off large blocks easily.

The stone was finished to the desired texture by saws (Figure 12) and hand implements (Figure 13). Most commonly, workers gave sandstone a rock-faced finish, which is the natural face of the rock just as broken from the quarry or slightly trimmed down by a pitching tool, or they gave it a sawed-face finish. Often they finished sandstone with hand implements that textured the surface into finishes known as pointed face, ax-hammered face, patent hammered, brush hammered, square

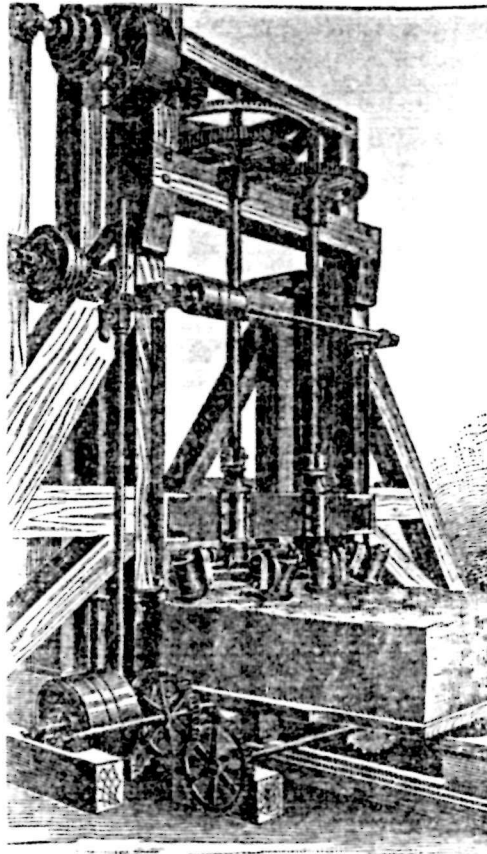


Figure 12. McDonald Stone Cutting Machine.

Stone was sawn by means of a smooth blade of soft iron set in a frame and fed with sharp sand and water. Modern stone saw mills set gangs of saws in a single frame.

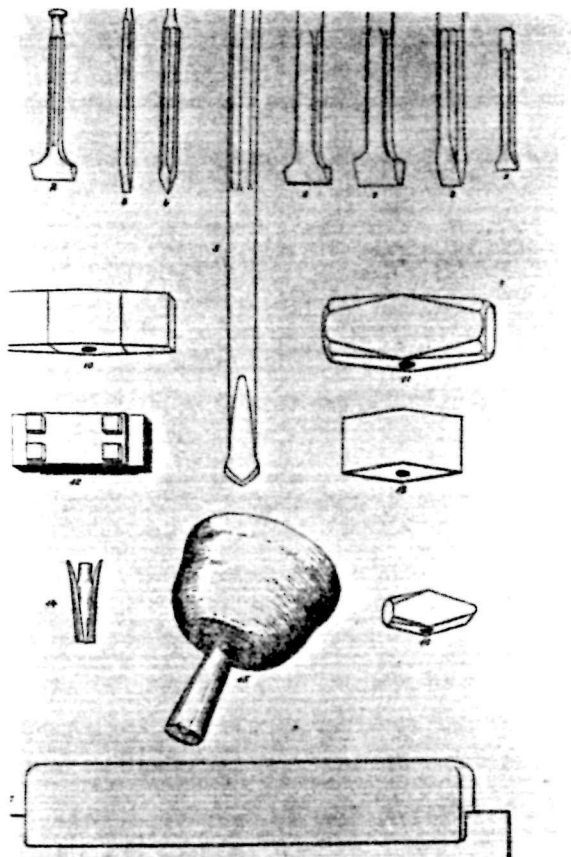


Figure 13. Tools Used in Cutting Stone.

Illustrated at the top are chisels, in the center hammers, below a grub saw. Figure 14 shows the wedge or plug. Plugs used for splitting stone were two or three inches in length; those used in quarrying for splitting off large blocks were a foot or more in length. Holes for plug and feather splitting could be made with the hand drill shown in Figure 5.

drove, and tooth chiseled (Figure 14). Lathes and chisels turned posts and columns.

Apostle Islands sandstone possessed the strength, durability, and beauty necessary to meet the construction requirements of substantial architecture. It resisted the effects of fire better than most stones and the effects of freezing and thawing as well as most sandstones. It withstood the extreme temperature changes of the northern climate, retaining solar heat in the winter and insulating against it in the summer. Rich in color and homogeneous in structure, it was easily worked, easily adapted to required dimensions, and easily dressed and carved in any fashion. Builders used Apostle Islands red sandstone in all kinds of rubble and ashlar masonry and in all parts of buildings, but found it particularly suited to coursed ashlar walling and rock-faced work. Like other stones, Apostle Islands sandstone was a noble building material capable of projecting symbolic meaning. Its primary liability was in the presence of gray spots and the seamy nature of inferior stone when not carefully selected.

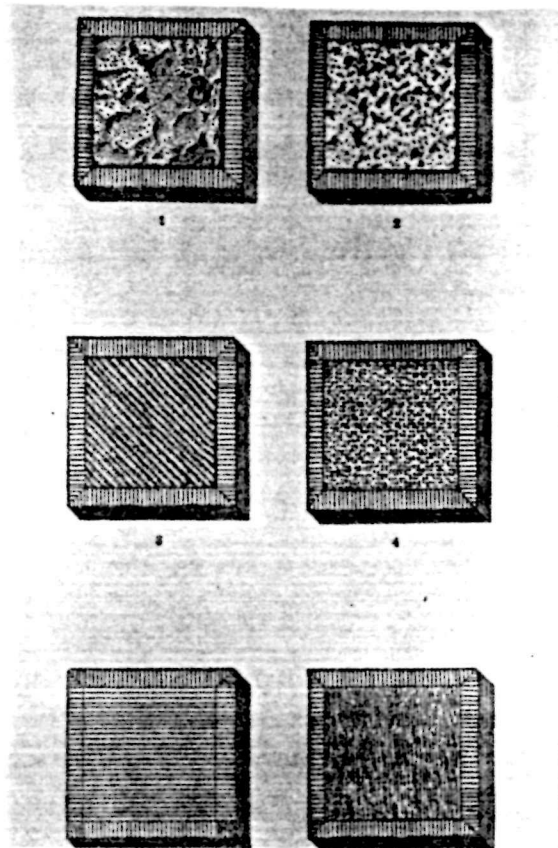


Figure 14. Types of Finish.

This illustrates the various finishes possible with hand processes of dressing stone: (1) rock face, (2 and 3) pointed face, (4) tooth chiseled, (5) square drove, (6) patent hammered. After a block was broken from the quarry bed it could be trimmed to the desired size and shape by means of hand implements. Stone was finished at the quarry site, the stone yard, or the building site.

V. THE SANDSTONE QUARRIES OF THE APOSTLE ISLANDS

Basswood Island (Bass Island)

There are two quarry sites on Basswood Island. The primary one, known as the Bass Island Brownstone Company Quarry (Figure 15), is located near the southwestern tip of the island. It was purchased by a group of investors from St. Paul and Kentucky originally, in the fall of 1854, soon after the La Pointe Treaty of 30 September 1854 between the United States and the Chippewa nation of Lake Superior and Mississippi. At this time the St. Mary's Falls Ship Canal at Sault Ste. Marie, Michigan, which would aid greatly in the transportation of the resources of the Lake Superior region to market below, was nearing completion. Two years later Henry Rice of Minnesota began the Bayfield Land Company and founded Bayfield.

With the purchase and subsequent deed assignments, George Becker of St. Paul, and Boriah Magoffin, John C. Breckenridge, and Paul Rankin of Kentucky, held one-quarter interest each in the party's total acquisition. The total acquisition included lots in Sections 3 and 4 of Township 50 North, Range 3 West (hereafter referred to as T50N R3W). In July 1868 Becker sold his one-quarter interest to a Mr. Sweet of Milwaukee and in the fall of 1869 Rankin sold his to John Breckenridge and a new investor, James Beck. The Bass Island Brownstone Company



Figure 15. Bass Island Brownstone Company Quarry.

Quarry was opened on Lots 1 and 2, Section 4, and the Breckenridge Quarry on Lot 3, Section 4.

Bass Island Brownstone Company Quarry
(Lots 1 and 2, Section 4, T50N R3W)

The quarry site extends along the shore for approximately 1,300 feet and runs inland some 500 feet. The main quarry is a large, irregularly shaped opening some 200 feet long and 25 feet deep. Stone at this site occurred in three layers. Underneath three or four feet of clay soil lay fifteen feet of rubble. Beneath the bed of rubble and beneath two feet of worthless white, soft argillaceous material lay more than seven feet of No. 2 sandstone.

Bass Island Brownstone Company, 1868-70. Sweet (undoubtedly Alanson Sweet, a stone mason, politician, builder, and promoter of railroads and plankroads) acquired his interest in the quarry in 1868, after he and a group of other Milwaukee men had prospected the Chequamegon Bay area for fifteen months to locate quality building stone for the proposed Milwaukee County Courthouse.¹² Sweet and other prospectors had selected the Basswood Island site, and Sweet acquired George Becker's one-quarter interest for \$1,000. After the Board of Supervisors of Milwaukee County had approved the use of Basswood Island brownstone in the courthouse, a group of Milwaukee and Chicago investors organized a company to extract and ship the stone. Early in 1870 a George O. Sweet conveyed his interest in the land and in the partnership to the remaining partners who would develop the quarry company. (The relationship of George O. Sweet to Alanson Sweet is unclear, but

it is likely that they were related, with the former acquiring his interest from the latter.) The members of the new company were Daniel L. Wells of Milwaukee and George P. Lee, Robert H. Strong, and Edwin C. French of Chicago. Wells (1808-1902) had earned a fortune speculating in mineral and timber lands.¹³ The others were stone merchants in Chicago.

Strong, French and Company, 1870-73. In the spring of 1870, Strong, French and Company began quarry operations. This was the first of three campaigns to extract stone from Lots 1 and 2 in Section 4. Strong, French and Company continued quarrying stone on Basswood Island until October 1873, when the financial panic and a lawsuit affecting portions of the title to the land and equipment closed down their operation.

The company employed forty workers in the spring and summer of 1870, twenty-five that fall, and ten to fifteen that winter. At first workers cleared timber and stripped the surface of three feet of soil, installed machinery, and built docks. That season the stone was removed manually. In spite of the demands of other work required to prepare the site, 2,000 tons of stone were shipped to Milwaukee. By March 1871 workers had prepared more fully the quarry surface and installed machinery that improved greatly the efficiency by which the stone was removed: two horsepowered and two handpowered derricks, steam drills capable of drilling in five minutes' time a hole three inches in diameter by six feet in depth, and other fixtures. And they laid tracks to the main derrick from all parts of the quarry so as to

permit the conveyance of the stone from the quarry bed by car to the dock.

The Bayfield Press of 29 July 1871 described the technique used for removing stone from Basswood Island. With pick axes workers cut through trenches to shape blocks "four feet wide and rods long." Using a steam drill they cut these into eight-foot-long blocks. Derricks raised blocks into position where workers smoothed or dressed them before loading them on ships from the side of the quarry which served as a dock.

Dean E. Monaghan, a forty-three-year-old Irish immigrant with eighteen years of experience at different quarries, acted as superintendent or foreman and ran the quarry for Strong and French from its opening in 1871 until its closing in 1873. Monaghan was in charge of overseeing all operations.

The owners of Strong, French and Company managed the quarry operations by making on-site inspection visits and by corresponding with the quarry superintendent who acted as the company's agent. After the Chicago Fire, in October 1871, Wells and French, the owners of the company, instructed Monaghan by telegram to keep the quarry open that winter to get out stone for the anticipated Chicago market. As the season began in June 1872, the owners visited the site and told Monaghan to hire fifty more workers.

During the field season Strong, French and Company employed from forty to seventy laborers, a blacksmith, and an engineer. The work force was reduced to ten in the winter when they prepared for the

upcoming season by cutting wood for the steam drill, surfacing the ledge, removing and reinstalling derricks, repairing and extending tracks, and enlarging docks.

According to the Bayfield Press, Strong, French and Company extracted fifty to sixty tons of sandstone a day in May, June, and August 1871. It shipped stone in four-hundred- to six-hundred-ton loads on the company-owned brig Starlight to Milwaukee and Chicago. Until August 1871 stone was shipped exclusively to Milwaukee to complete the order for the Milwaukee County Courthouse. From September 1871 until the quarry closed in October 1873, stone was shipped to Chicago, where it was used in the rebuilding of that city. Occasionally stone and rubble were marketed locally. A barge-load of rubble was shipped to Bayfield for building foundations for such structures as the Bayfield School. In 1870 Strong, French and Company shipped 2,000 tons, and in each of the succeeding years, 1871, 1872, and 1873, at least 3,000 tons.

The Bayfield Press for 18 October 1873 reported simply that "work has been suspended at the Bass Island quarry, and all the laborers discharged owing to the financial crash." On 17 May 1873 the Press said that the Basswood Island quarry would not be worked this season but, in fact, a small crew was employed that summer. Operations ceased for an additional reason: a legal dispute over titles to land and equipment.

Cook and Hyde, 1883-88. For nearly ten years after Strong, French and Company closed its operation in 1873, and during the slow recovery

period following the Panic of that year, the Basswood Island brownstone quarry remained virtually idle. In July 1882, two months after the building committee of the vestry of St. Paul's Episcopal Church in Milwaukee has selected the plans for the church prepared by Edward Townsend Mix, Edwin Hyde, a cut-stone merchant and contractor, traveled with Mix to Basswood Island to complete arrangements for shipping the stone to Milwaukee. Thus began the second major campaign to quarry stone on Basswood Island. The need for stone for St. Paul's and the upturn in the economy in the early 1880s created a demand for Apostle Islands stone. The anticipated completion of the railroad to Bayfield would present an alternative to transportation of the stone by water.

On Basswood Island Mix and Hyde dealt with Joseph McCloud, an island resident who acted as caretaker of the quarry and agent for Milwaukee and Chicago owners, after Strong, French and Company had ceased quarrying in 1873.

To begin to fill the order for St. Paul's Church, McCloud probably turned to stockpiles of sandstone left from Strong, French and Company's operations. And he may also have sent to Milwaukee stone extracted by an unnamed firm that reportedly leased the site in 1879 and removed a fair amount of stone for a few years. Some of the stone for the church may even have come from Sand Island, according to a local newspaper account. The Bayfield Press for 5 August 1882 reported that a Milwaukee vessel had taken on stone for "the new Episcopal Church there" from a quarry on Sand Island.¹⁴ Or, perhaps a Mr. Maxwell, who, according to a Bayfield Press account of 26 August 1882, came to

Basswood Island with a crew from Cleveland and worked the quarry until the winter freeze, may have supplied some of the stone for St. Paul's.

In 1883 Cook and Hyde leased the Basswood Island quarry from its Milwaukee and Chicago owners and operated it from May of that year until March 1888 to supply stone for their yards in Milwaukee and Minneapolis. For forty years, from 1858 to 1898, Edwin Hyde (1828-1909), in partnership with Thomas D. Cook, dealt in cut stone in Milwaukee and Minneapolis and had a contracting business in Milwaukee. Hyde had immigrated to this country from England in 1857 and had worked in Chicago for a year before moving to Milwaukee. Cook and Hyde were among the largest contractors, builders, and consumers of Lake Superior red sandstone in the Northwest. To supply their market, the firm quarried stone on Basswood Island from 1883 to 1888 and at a sixty-acre site adjacent to the Bayfield Brownstone Company quarry on the mainland in Bayfield County from 1886 to 1889. They purchased ninety-six acres on Hermit Island in 1884 with the intention of opening a quarry there.

Cook and Hyde leased Lot 1 from Robert Strong, Daniel Wells, Edwin French, George Lee, and Edwin Walker, who still held title to the land after a lawsuit.¹⁵ Lot 2 may have been leased from Beriah Magoffin.

Cook and Hyde made some capital improvements at the quarry. In December 1883, workmen built a long, low, rambling log structure, probably a boardinghouse for workers. In the summer of 1884 they extended the dock to accommodate boats with twelve-foot draughts when loaded and installed two new steam drills and one steam derrick.

F. C. Bailey of Milwaukee managed for Cook and Hyde the quarry operation on Basswood Island from 1883 through 1885. Each year he arrived on the island in April and stayed through November. Edwin Hyde and Thomas Cook made periodic visits themselves to check on activities at the quarry. While in the area they prospected for new quarry sites and bid on local construction jobs. In June 1883 Hyde was in Bayfield to prepare a construction bid for the Bayfield County Courthouse. In July 1884 both Mr. and Mrs. Hyde visited Bayfield, and in October 1885 Cook visited on matters related to the quarry. In July 1886 R. W. Lee of Chicago, one of the owners of the quarry, visited. A Mr. Weill was the manager of the quarry in 1886.

By 1883 the completion of the Chicago, St. Paul, Minneapolis and Omaha Railroad to Bayfield made possible shipments by rail as well as by water. Although Cook and Hyde continued to ship most of the stone by boat in six-hundred-ton loads to Milwaukee, they also shipped stone inland by rail to Madison, Minneapolis, Iowa, and elsewhere.

Cook and Hyde furnished stone for St. Paul's Episcopal Church (1882-91), T. A. Chapman's Dry Goods Store (1884-85), and the Plankinton Building (1887) in Milwaukee; the Germania National Bank (1884) in St. Paul; and the Bayfield County Courthouse (1883-84) in Bayfield. The firm probably shipped more tonnage in 1884 than in any other year.

The firm's lease expired in 1888, before the season opened, and it did not renew it. Instead, in 1889, Cook and Hyde sold to Frederick Prentice their lands, buildings, equipment, and machinery on

the islands and the mainland (Figure 16). The firm explained its view to Prentice on 30 March 1889 as it accepted the purchase offer:

. . . as we only went into the quarry business to furnish first-class stone for our yards in Milwaukee and Minneapolis, and your quarries are so well prepared to furnish first-class stone on short notice, we have decided to accept your proposition to purchase our quarries on the mainland and islands, with our channelers, steam derricks, powers, and all machinery at both quarries, and take stone of your company, and will make the deeds for the property out at once.¹⁶

Superior Brownstone Company, 1891-93. The third major effort to quarry sandstone on Basswood Island took place between 1891 and 1893, when a group of Ashland and Superior investors formed the Superior Brownstone Company and leased the quarry site from owners in Milwaukee and Chicago.

The Bayfield Press for 12 July 1890 remarked that the owners of the brownstone quarry on Basswood Island intended to place the property on a paying basis soon and expressed confidence in the soundness of investing in the large quantity of undeveloped stone at the site. Operations at the Basswood Island quarry resumed in 1890. Then workers from West Superior shipped 5,000 cubic feet of stone and extracted and made ready for shipment twice that amount. This season's work probably anticipated the establishment and activities of the Superior Brownstone Company.

In April 1891 James H. Rogers, George H. Barr, and Freeborn C. Bailey filed with the secretary of the state of Wisconsin articles of incorporation. They stated the business and purpose of the Superior Brownstone Company of Ashland as follows:

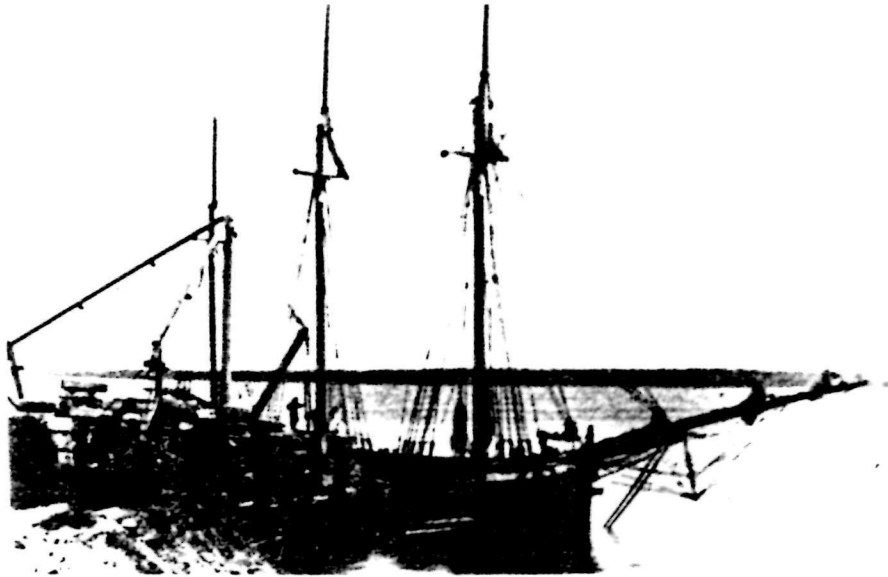


Figure 16. Basswood Island Quarry, 1889.

To purchase, acquire, hold, lease, mortgage, sell and convey lands containing or supposed to contain Timber, Stone, Slate or other valuable deposits; to work and operate same with any necessary machine, either patented or otherwise; and to buy, construct, lease, hold, or sell any and all necessary buildings, docks and other improvements, and to dispose of the products of such Lands. To carry on a general mercantile business in connection with the foregoing objects, and to do and perform any act or thing, and exercise any and all powers necessary, convenient, or incident to the business and purposes above specified.

The Superior Brownstone Company leased the quarry from Daniel L. Wells of Milwaukee, George P. Lee, and a Mr. Singleton of Chicago, who had acquired by 1891 the interests of Strong, French, and Walker in the quarry land.

With the election of officers, James H. Rogers, formerly cashier of the Keystone National Bank in Superior, was named president and treasurer; G. H. Barr, former manager of the Prentice Brownstone Company, secretary; and F. C. Bailey, a quarryman with forty-five years of experience, some as superintendent of the Cook and Hyde quarry operations on Basswood Island and some as superintendent of the Prentice Brownstone Company, superintendent.

The Superior Brownstone Company opened offices in Ashland and docks at Ashland, West Superior, and Duluth. From these docks the stone was sold locally or shipped inland by rail. It was sawn by the Superior Cut Stone Company of Superior.

The company had a capital stock of \$35,000, some of which was spent on making improvements at the quarry. New machinery arrived in July 1891. By 11 July men were operating the quarry while adding to the facilities. The installation of a self-revolving steam derrick in August enabled men to load a vessel in half the time ordinarily needed.

The local newspaper noted the company had good equipment, four steam derricks and the machinery to use them, a revolving derrick, and a tug. They employed twenty-five. At the time the quarry closed, in 1893, the facilities on hand included two engines, two channelers, three steam derricks, and one hand derrick.

The Superior Brownstone Company produced 310,000 cubic feet of stone in 1892. Although less than half the quantity extracted by the two highest producing companies in the Chequamegon Bay area that year--the Prentice Brownstone Company at Houghton Point and the Ashland Brown Stone Company on Stockton Island--output of the Superior Brownstone Company ranked third among the seven area companies.

The Superior Brownstone Company supplied stone for the Methodist Episcopal Church (1891-92) in Duluth; the Bristol Block (1891-93?) in Ashland; the Waterman, Breunig and Auger blocks (1893) and three schools (1893) in West Superior; and the John H. Allen House (1892) and the Peter Bowlin House (1892) in St. Paul. It shipped stone inland for buildings in St. Louis, Missouri; Manitowoc, Wisconsin; Lincoln, Nebraska; and Rockford, Illinois.

The Superior Brownstone Company operated profitably and successfully until the economic depression of 1893, when it curtailed operations. For the next few years, until work ceased altogether, the only work at the quarry was the stripping of the surface and the use of the broken stone for rubble.

Breckenridge Quarry
(Lot 3, Section 4, T50N R3W)

The Breckenridge quarry site is on the east coast of Basswood Island, 2,000 feet north of the Bass Island Brownstone Company Quarry. It is on land (Lot 3, Section 4, T50N R3W) assigned in 1892 to John Breckenridge to settle a legal dispute over title to land and equipment among the joint owners of a tract embracing most of Basswood Island. Here exist two openings a few hundred feet apart. The smaller has two beds. The larger has several ledges with drill marks visible in the rock faces. The quarry face is composed of two beds, both comparatively free of white spots. The upper bed is seven feet thick, the lower from four to six feet thick. Small clay pockets occur in bands that run through the center of both ledges. The color is uniform.

Bass Island Brown Stone Company, 1890. The only attempt to quarry stone at the Breckenridge quarry site occurred briefly in the early 1890s, when a group of Superior investors leased the site and extracted stone with blasting. On 9 July 1890 Cambreton Leach of Superior, representative of investors in the soon-to-be-formed Bass Island Brown Stone Company, leased for fifteen years from M. C. Breckenridge and other heirs of John Breckenridge Lot 3 for the purposes of searching for and quarrying building stone.

On 27 October 1890 James S. Ritchie, Walter C. Brooks, and Cambreton Leach filed with the secretary of the state of Wisconsin articles of organization for the Bass Island Brown Stone Company. The purpose of the company was to purchase or lease stone quarries; open, develop, and operate them; and carry on the usual incidental business.

Its place of business was Superior, Wisconsin, and its capital stock \$45,000.

The lease to the Bass Island Brown Stone Company established royalties and timber rights and required that the lessee produce as much dimension stone and "as little rubble stone, rubbish and waste as possible." The lease established other special conditions. If the royalties fell below stated amounts between 1890 and 1894, the lessors could terminate the lease. Moreover, the quarry had to be opened within ten days of the signing of the lease.

The Bass Island Brown Stone Company blasted out with powder a considerable amount of sandstone and made two or three shipments of broken stone. Work was abandoned soon, however. The quarries could not be worked successfully by blasting because this technique shatters and breaks the stone. This rubble was useless for nearly everything but rip rap for breakwaters. The Bass Island Brown Stone Company lacked the means to fully develop the quarry with power equipment and machinery. The Breckenridge heirs probably terminated the lease because the company failed to produce the dimension stone necessary to furnish the required royalties.

Hermit Island (Wilson Island)

Excelsior Brownstone Company Quarry (SE1/4, Section 13, T51N R3W)

The Excelsior Brownstone Company quarry (Figure 5) is on the southeast side of Hermit Island. The quarry is along the shoreline and consists of two openings. Sandstone crops out along the lakeshore on

either side of the quarry, exposing several ten-foot-thick beds. The smaller opening is the southernmost one. It is irregular in shape, with a 180-foot-long face and nearly 20-foot depth. It has four benches. The larger opening is a few rods north of the first.

The sandstone on Hermit Island is a lighter brown color than the sandstone on Basswood or Stockton islands. Some of the stone is mottled with white and some contains clay pockets. The stone here is not entirely No. 1 grade. Stone from both openings is quite similar in appearance.

Excelsior Brownstone Company, 1891-93, 1893-97. At the conclusion of their most profitable season, in 1884, and after L. F. Bailey, superintendent of their Basswood Island quarry, had tested the stone and found it free from clay pockets and agates, Cook and Hyde bought ninety-six acres on the northeast end of Hermit Island in a brief attempt to establish a quarry here. In March 1885 they sent D. B. Hadway and John D. Conely of Milwaukee to the island with a crew of ten to begin building a large dock, boardinghouses, stables, and the like, and contemplated installing a new channeling machine. Within two weeks, however, Cook and Hyde abandoned the scheme to open a quarry here because the stone did not meet their expectations.

In 1889 Frederick Prentice, operator of the Prentice Brownstone Company quarry (Figure 17), one of five quarries opened on the mainland between Washburn and Bayfield after the railroad reached the area in 1883, decided to expand his operation and open a quarry on Hermit Island.



Figure 17. Prentice Brownstone Company Quarry, Houghton Point.

The following describes the Prentice Brownstone Company's quarry at Houghton Point at a time when six or eight quarries operated on the islands and mainland about Chequamegon Bay: "A visit to the quarries shows a scene of great activity and life. The clearing of the forest, the blasting and grubbing of stumps, the stripping of the earth from the surface to lay the stone bare, the work of the machinery in cutting the stone from its solid bed, and loading it on the cars, and all other operations necessary from first to last, gives employment to a large army of men and horses, and already the foundation has been laid for quite a town at the quarries. There is a general supply store, blacksmith shops, boarding houses, and other lines of business will soon follow." (From a promotional brochure printed by the Prentice Brownstone Company.)

In August 1890 E. E. Davis of Ashland began prospecting for the location of the quarry on Hermit Island. Prentice purchased for \$8,500 the Hermit Island land from Elias F. Drake of St. Paul in October 1890. Drake had bought it for \$3,500 two years earlier from Julius Austrian of St. Paul and members of the Aaron Leopold family of Chicago. Leopold and Austrian, frequent speculators in land of the Lake Superior region, in turn, had acquired their interests from earlier speculators in 1870 and 1885, respectively.

Two years earlier, Prentice had begun developing the largest and most ambitious quarry operation in the Chequamegon Bay area on a 764-acre site (Section 27, T49N R4W) with one mile of shoreline at Houghton Point, three miles south of Washburn, he had bought thirty years before. In 1888 the Prentice Brownstone Company was formally organized by a group of Ashland and New York City investors, led by Prentice. Incorporators were Edwin Ellis, Eugene A. Shores, Cassius M. Hamilton, and George H. Barr. The company had a capital stock of \$1,250,000.

Prentice conducted business on a large scale. At the quarry at Houghton Point he employed 250 workers, eleven steam channelers, twelve derricks, and a large sawmill. The quarry yielded 383,887 cubic feet of stone in 1889 and 623,334 cubic feet in 1890. Typical of Prentice's expansiveness was his scheme to extract from the quarry and exhibit at the 1893 World's Columbian Exposition in Chicago a monolith obelisk. The monolith was to be a monument to Ashland brownstone as well as a monument to Frederick Prentice. Measuring 113 feet in height, exceeding that of the quarried Egyptian obelisk, this solid brownstone

monolith was first planned to be taken from the Excelsior Brownstone Company quarry but was, in fact, extracted from the Prentice quarry and readied for shipment. The project was never brought to completion because of the lack of funds to ship and set up the awesome monument. Four twenty-five-foot monoliths, however, in addition to a life-size statue of a Chippewa chief, a Wisconsin badger, and bas reliefs of heads of some blacks--all carved in brownstone--were shipped by Prentice to the World's Fair. The Ashland Press for 31 December 1892 proudly proclaimed that for the Ashland fairgoers "the familiar sight of brownstone will greet them everywhere."

The quarry on Hermit Island began operations on 2 May 1891. The first shipment of stone left Hermit Island for Buffalo on 17 June 1891. In the first year Prentice spent \$80,000 on making improvements at the quarry, and within a short time he had spent \$150,000 in all. Machinery at the site included an engine, channelers, and steam derricks. On a high promontory near the quarry, Prentice built for himself and his family a rustic summer cottage veneered with cedar bark (Figure 18). As was stated earlier, Prentice purchased Cook and Hyde's real and personal property on the island and the mainland in March 1889. The machinery and equipment from this acquisition no doubt were installed at the Houghton Point and Hermit Island quarries. Prentice employed one hundred men on Hermit Island and built a village of cottages. The first year, three vessel cargoes and five barges of stone were taken from the island.



Figure 18. Frederick Prentice Summer Cottage, Hermit Island, 1891.

However, by 1893 the Prentice Brownstone Company was on the verge of bankruptcy. To raise money, presumably to cover debts and to meet expenses necessary to continue to operate, Prentice reorganized the corporation and conveyed his real estate holdings to the company. The Excelsior Brownstone Company then attempted to sell bonds to raise funds necessary to continue business.

Thus, on 1 June 1893 Prentice conveyed to the Excelsior Brownstone Company lands which he and his wife owned. These lands included all of Hermit Island except the 50-acre site of his cedar-bark summer cottage and surrounding park, 304 acres on Stockton Island, 227 acres on Hemlock Island, and nine lots in Ashland containing the large stone dock.

On 21 June 1893, three weeks later, S. S. Fifield, Edwin Ellis, F. E. Goddard, and L. C. Tobias filed articles of incorporation for the Excelsior Brownstone Company of Ashland. Its stated business and purposes were as follows:

quarrying, manufacturing, handling, shipping and selling brown stone, buying and selling all lands necessary for the carrying on of said business, and doing all things necessary and proper for the carrying on of the same, also cutting and manufacturing lumber and timber, and doing all and everything necessary to improve its property.

The capital stock was \$1.8 million.

The very next day, on 22 June 1893, the Excelsior Brownstone Company authorized the Board of Trustees to issue bonds in the amount of \$300,000 for the purchase and improvement of company lands, and for the carrying out of company purposes. The bonds were backed by a mortgage of the lands Prentice had recently conveyed to the Excelsior

Brownstone Company. Also included were the steam tug Minnie Karl, the scow Napoleon I,

all the brownstone situated and being at Wilson's Island, which had been quarried thereat, all tools, engines, derricks, and other machinery used in the quarrying business at said Wilson's Island, all the brownstone lying and being upon a dock of said company at Ashland, Wis., also 2 derricks, 1 engine and boiler and steam hoisting power, and all other tools used in the handling and shipping of stone, 2 forges, and all other tools, iron and stock in trade of the blacksmith shop of said Wilson's Island, 2 sail boats and 1 row boat, 1 team of horses and 2 wagons and harnesses.

Production at the Excelsior Brownstone Company quarry reached 220,000 cubic feet of stone per year for the period 1893 to 1895. By 1897 operations had ceased.

Frederick Prentice and the Excelsior Brownstone Company relinquished by default on mortgage payments title to all of Hermit Island to the estate of Elias Drake. The land was sold at a referee's auction for \$10,000.

In 1902 W. G. Maginnes of New York City purchased for \$7,250 the Prentice quarries on the mainland and Hermit Island which had been held in receivership for ten years.

Stockton Island (Presque Isle)

Ashland Brown Stone Company Quarry (Lots 3 and 4, Section 4, T51N R2W)

The Ashland Brown Stone Company quarry (Lots 3 and 4, Section 4, T51N R2W) is on the south shore of Stockton Island (Figure 19). Two quarry openings exist: a large one on the water and a smaller irregular opening, slightly inland, which was worked earlier and then abandoned in favor of the shoreline site. The upper portion of the quarry,

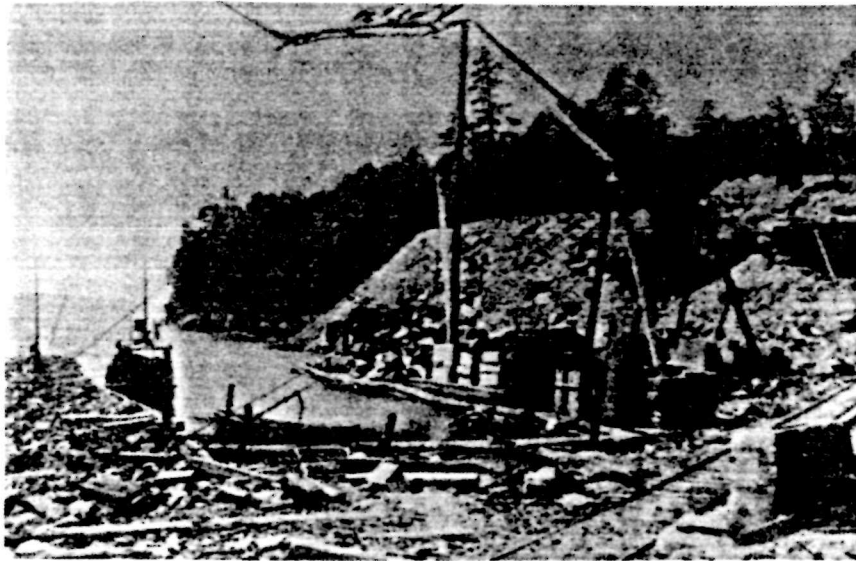


Figure 19. Quarry Bay, Stockton Island.

comprising six benches, is mottled and streaked with white. The lowest twelve feet include the hardest and most uniformly textured and colored stone. The middle beds are mottled in certain areas with white streaks and spots. No. 1 grade stone could be obtained with sorting and grading from nearly all the benches. Very little stripping was required to reach the bed of stone.

Ashland Brown Stone Company, 1886-97. Stone was extracted from the quarries on Stockton Island by the operations of the Ashland Brown Stone Company under two consecutive ownerships--the first by Ashland owners from 1886 to 1889-90, the second by Chicago owners from 1890 to 1897.

For a brief time earlier, in 1871, a man named Tyler, a subcontractor to Willard, Mercer and Company of Duluth, and a man named Healy quarried cords of rubble stone on Stockton Island for the repair and building of piers at Ontonagon, Michigan, and perhaps for the construction of a store at Oneonta near Duluth. They took the stone from a site on the south shore toward the west end of Stockton Island, most likely Lots 3 and 4, Section 4, T51N R2W, which they probably leased from Silas M. Moore of Cook County, Illinois.

In June 1886 John F. Knight (1836-1903), an Ashland lumberman, lawyer, and politician, and William F. Vilas (1840-1908), a Madison lawyer, United States Senator, and cabinet member, purchased, respectively, Lots 3 and 4 and Lots 1 and 2 of Section 4, T51N R2W.¹⁷ Knight and Vilas frequently collaborated in investments. The following year, Knight and Vilas purchased the remaining tracts in Section 4.

John H. Knight and D. S. Kennedy of Ashland and William Knight filed articles of incorporation for the Ashland Brown Stone Company on 4 October 1886. The purpose of the corporation was stated broadly as follows:

to purchase, lease, open, quarry, cut, maintain and operate stone quarries, black smith and machine shops, boarding houses, ware-houses, wharves, docks, tramways, steam boats, barges, tugs, and all kinds of water craft; to construct houses and buildings of all kinds, bridges, piers and to carry on and do all kinds of mason and other works as it may have a right to do and to bring and prosecute actions and proceedings there fore; to lay out and plat city, town and village sites and to buy, sell and deal in some part thereof to operate and deal in farms and gardens; to buy, hold, raise, breed and deal in livestock of all kinds; to purchase, subscribe for and deal in the stock of other corporations to such as is now or may hereafter be permitted or allowed by the laws of the state of Wisconsin; to buy, sell, lease and deal in all kinds of property, real, personal and mines to avail itself of all the benefits, rights and privileges of any franchise or franchises granted or which may hereafter be granted to any business which the corporation may carry on; and generally to do and perform all such acts and things as may be found convenient or proper in carrying on, conducting and managing a general stone quarrying, stone cutting, mercantile, trading, manufacturing, transportation, shipping and forwarding business at Ashland County, Wisconsin and at any and all other places in the United States as may be expedient and lawful.

The capital stock was \$50,000 and the general offices were in Ashland. William Knight, brother of John Knight, served as general manager of the Ashland Brown Stone Company.

William Knight selected a lakeshore site which offered unequalled advantages for shipping by water, stripping material, and disposing of rubble. Knight opened the quarry as soon as the thaw permitted boats to reach it in 1886. On 15 May the tug Favorite towed to the island a scow loaded with men and supplies. That summer the newspaper reported rapid progress in the development of the quarry: In July two new steam

derricks and a steam engine and boiler with hoisting apparatus for the derricks were installed and a Wardwell channeling machine had been ordered; in August two patent cars for removing rubble were added; and by November an immense amount of first-class building stone stood at dockside ready for spring shipment. In 1887 the company spent \$4,000 on equipment improvements and machinery, employed twenty, and extracted 25,000 cubic feet of stone. It anticipated spending \$6,500, operating two steam channel machines, and producing nearly 100,000 cubic feet of stone in 1888.

Stone extracted by the Ashland Brown Stone Company on Stockton Island under William Knight's supervision was used in the Vaughn Library Building (1887) and the Knight Block (1889-92) in Ashland.

In February 1890 the Ashland men sold the Ashland Brown Stone Company to G. A. and J. G. Bodenschatz, stone merchants in Chicago.¹⁸ For \$40,000 the Bodenschatzes acquired Lots 3 and 4, the tug Favorite, two scows, and all the machinery, tools, derricks, and other personal property on the premises and owned by the company.

In March 1890 G. A. Bodenschatz, president of the Ashland Brown Stone Company, E. H. Brown, secretary and manager, and Frank Bell, foreman, visited Stockton Island. They inaugurated sweeping changes to enable the company to extract more stone more efficiently and economically. They built a dock at Bayfield and leased one in Ashland from the Western Central Railway from which stone could be transferred from boat to train, thereby extending the shipping season by ninety days and permitting winter shipment by rail. They built an addition to the

quarry dock providing 400 feet of frontage with 22 feet of water depth and a slip for safe mooring in rough weather. They abandoned the quarry opening and cut a new opening directly on the water. They added new machinery to bring the total inventory to four steam channelers and five thirty-ton steam derricks. They constructed a new tug, the J. W. Ward.

Monies raised by increasing the capital stock probably paid for the improvements. At a special meeting on 10 September 1891, the stockholders of the Ashland Brown Stone Company voted to increase the capital stock from \$50,000 to \$100,000.

The Ashland Brown Stone Company shipped 250,000 cubic feet of stone in 1891-92, 200,000 cubic feet in 1892, 175,000 cubic feet in 1893, 230,000 cubic feet in 1894, 285,000 cubic feet in 1895, and 240,000 cubic feet in 1896. In 1897 operations ceased (Figure 20).

Stone extracted during the Bodenschatzes' operation was used to build the Telephone Building (1891), the Joseph L. Hudson Company Department Store (1891), and the Schmidt Block (1894) in Detroit and the Duluth Breakwall (1895).

Nine companies extracted Bayfield sandstone from four sites on three of the Apostle Islands (Basswood, Hermit, and Stockton) for over twenty-five years from before 1870 until 1897. They shipped the stone easily and cheaply by water and, beginning in 1883, by rail to the Midwest's important commercial, trade, and industrial centers and used it locally. The years of operation followed economic cycles. Activity



Figure 20. Ashland Brown Stone Company Quarry, Stockton Island.

This shows the quarry soon after the Ashland Brown Stone Company ceased operations in 1897. Left behind were various pieces of equipment including a tram car used to transport the stone from the quarry to the dock (seen on the left) and derricks (seen in the center).

rose in the early 1870s, 1880s, and 1890s, but fell off with the economic declines of 1873, 1893, and 1897. The period of greatest activity took place from 1887 until 1896. Then four companies quarried sandstone on three islands--the Superior Brownstone Company and the Breckenridge operation at two sites on Basswood Island, the Excelsior Brownstone Company on Hermit Island, and the Ashland Brown Stone Company on Stockton Island. In these years production exceeded in average 200,000 cubic feet per year at the Ashland Brown Stone Company, for example.

Quarry companies and quarry lands were owned, developed, and managed by investors in the state of Kentucky, in the large midwestern cities of Milwaukee, Chicago, and St. Paul, and in the local cities of Ashland and Superior. Many owners of quarry companies were stone merchants and contractors in their resident cities. Strong and French and Bodenschatz had stone yards in Chicago. Cook and Hyde had stoneyards and a contracting business in Milwaukee and Minneapolis. The Superior Brownstone Company had stone yards at Superior. Companies without stone yards quickly established them. Frederick Prentice opened stone yards in Chicago and New York City. Knight opened stone yards in Ashland. Although no company quarried at more than one island location, Frederick Prentice of the Excelsior Brownstone Company and Cook and Hyde extracted stone on the mainland as well as on the islands.

The sandstone was plentiful, but men to operate the quarries and funds to prepare the quarry site, purchase and install machinery and equipment were not. Companies brought in crews and foremen from their

resident cities below. The constant need for funds for development and capital improvements required directors to gain the approval of stockholders to restructure and reorganize to increase capital stock, to mortgage assets and sell bonds, or to sell out to other investors.

Quarry production on the Apostle Islands paralleled economic and social circumstances in the cities in which the stone was marketed. People and cities needed to replace frontier structures with solid and substantial buildings appropriate to their new economic and social stature. Apostle Islands sandstone furnished a beautiful, strong, and durable material with which to build them.

VI. SELECTED BUILDINGS OF APOSTLE ISLANDS SANDSTONE

For thirty years, from 1870 to 1900, the economic prosperity and social success of the commerce and industries of the Lake Superior region and the Midwest created a demand for solid, substantial buildings faced with Lake Superior sandstone. From the quarries of the Apostle Islands in the Chequamegon formation of the Bayfield group came stone for churches, banks, commercial blocks, houses, a city hall, and a courthouse in the large midwestern cities of Milwaukee, Chicago, Detroit, Cincinnati, and St. Paul. From these quarries on Basswood, Hermit, and Stockton islands was extracted stone for schools, commercial blocks, a courthouse, and a fraternal hall in the local villages and smaller cities of Bayfield, Ashland, Superior, and Duluth. These stone structures reached a height of popularity between 1880 and 1895 as they replaced earlier wooden and masonry buildings, and created a sense of permanence and place in once-frontier communities.

People chose sandstone for practical and for romantic reasons. It was available in large quantity, extracted easily in large blocks, shipped cheaply by water, and promoted aggressively. It was carvable (Figure 21), durable, and fireproof. Buildings of Bayfield sandstone symbolized solidity, security, stability, permanence, and success. When built with Apostle Islands brownstone in the wild, rugged landscape



Figure 21. Barber and Barber, Marquette County Savings Bank,
Marquette, 1891-92.

The detail of a foliated carving at front entrance demonstrates the
carvability of the Bayfield and Jacobsville sandstone.

of the Lake Superior region, architecture achieved unity, harmony, and robustness.

Milwaukee County Courthouse, Milwaukee, 1869-73 (destroyed 1976)

Basswood Island: Strong, French and Company

The Milwaukee County Courthouse (Figure 22) established the reputation of Lake Superior sandstone as a safe, durable, and fashionable building material. Using red Bayfield sandstone taken from Basswood Island in this important public building affirmed the faith of politicians, scientists, and engineers in the high quality of the stone.

As was noted earlier, (Alanson?) Sweet, Daniel L. Wells (1808-1902), a capitalist, businessman, and congressman, and other Milwaukee prospectors had selected a quarry site (Section 4 T50N R3W) at the south end of Basswood Island, after searching for fifteen months along the bay and the lake in the vicinity of the Apostle Islands for suitable stone for the Milwaukee County Courthouse. Investors purchased land and hired workmen to prepare the site, erect docks, and install machinery. Together they developed the first brownstone quarry in northern Wisconsin and helped launch the industry in the Lake Superior region.

The Milwaukee County Board of Supervisors had decided in the late 1860s to build a new courthouse to replace the county's plain wooden Greek Revival pioneer courthouse, built in 1843 and enlarged in 1846 (Figure 23). Not only did the people of Milwaukee County need a new

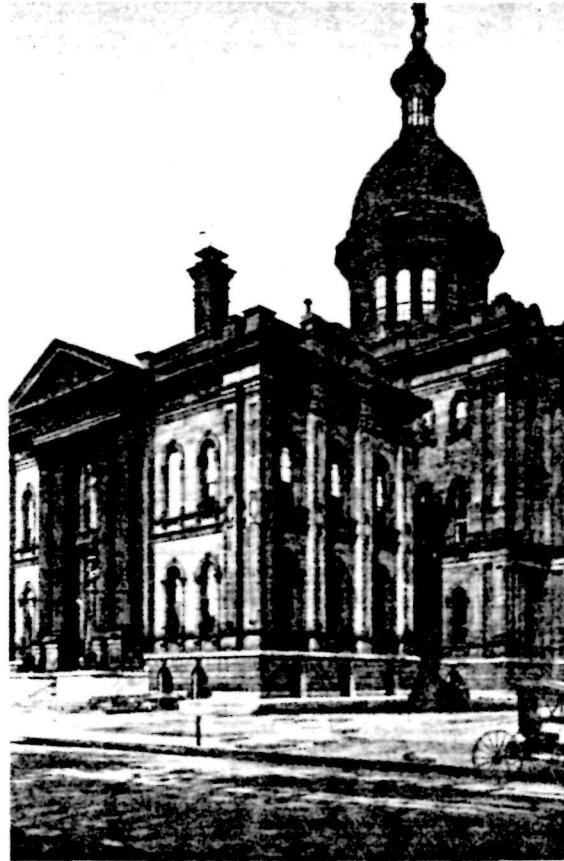


Figure 22. Leonard A. Schmidtner, Milwaukee County Courthouse, Milwaukee, 1869-73, Destroyed 1976.

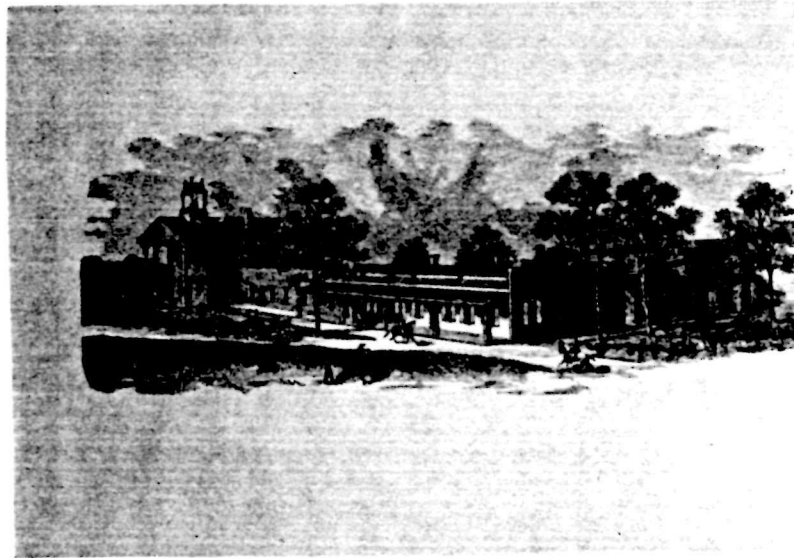


Figure 23. Juneau and Martin, Milwaukee County Courthouse,
Milwaukee, 1843, 1846, Destroyed.

courthouse, they wanted one whose appearance and quality would honor them all.

In July 1868 the Committee on Public Buildings reviewed plans for the new courthouse prepared by Leonard A. Schmidtner, which showed a large Renaissance Revival-style structure, approximately 210 feet by 130 feet in plan, executed in pressed brick with stone ornamentation. Two-story wings flanked a three-story central portion, and paired Corinthian-columned porticos adorned all four sides of the building. A dome resting on a circle of columns surmounted by a gilded figure of Justice topped the courthouse roof. The supervisors felt that public opinion favored building the structure in stone. Schmidtner claimed that facing the entire building in stone, whether Illinois white stone or Lake Superior brownstone, would cost little more than pressed brick and stone ornaments--and Lake Superior brownstone would be cheaper than Illinois white stone.

In September the Committee on Public Buildings recommended to the Board of Supervisors the use of Lake Superior free sandstone for the new courthouse. A special petition signed by prominent citizens and recorded in the September 1868 Proceedings of the Milwaukee County Board of Supervisors called for this stone because it would be "the cheapest, most durable, and most attractive for such a building."

Many questioned the wisdom of using Lake Superior brownstone for the construction of so important a public building. So the board appointed a special committee, including Charles K. Wells, Joseph Porth, and H. J. Degeunther, to employ two or more competent persons to

examine the quality of Lake Superior red sandstone and to report on whether it was a proper and fit material. The committee reports submitted to the board in March 1869 included the joint report of Gindele, Chesbrough and Baur of Chicago, a firm comprised of a stone cutter and former president of the Chicago Board of Public Works, a civil engineer, and an architect, respectively; the joint report of Wheeler and Farquahar of the U.S. Engineers Office at Milwaukee; and reports from Increase A. Lapham (1811-1875), a civil engineer and geologist and then Wisconsin's foremost scientist (Figure 24); D. J. Whitmore, chief engineer of the Milwaukee and St. Paul Railway; N. Merrill, proprietor of a marble works in Milwaukee; Peter White, a Marquette banker and "a reliable and trustworthy man"; Professor James Hall of Albany, New York, a nationally recognized scientist and geologist; and William R. Sill, former chief engineer of the La Crosse and Milwaukee Railroad. It included as well the results of stress tests and chemical analysis conducted on the stone at the Smithsonian Institution. Thus, with sufficient testimony of scientists, engineers, stone masons, scholars, and respected citizens that the stone was sound, the board selected Lake Superior brownstone from Basswood Island for the Milwaukee County Courthouse.

The cornerstone for the Milwaukee County Courthouse was laid on 7 September 1870. Completed of Milwaukee brick veneered with Basswood Island sandstone in 1873 at a cost of \$650,000, the courthouse served until 1976, when it was destroyed to make way for a new courthouse. From the day it opened until its razing over one hundred years later,



I. A. Lapham

Figure 24. Increase A. Lapham (1811-1875).

Increase A. Lapham, a well-known geologist and civil engineer who was regarded as the foremost scientist in Wisconsin, was consulted by the Milwaukee County Board of Supervisors about the suitability of Basswood Island sandstone for the Milwaukee County Courthouse. Lapham examined the stone and reported that ". . . I cannot but recommend that the contract contemplating the use of the Lake Superior sandstone be carried out, care being taken to select the best of the stone and to see that they are properly placed in the wall."

the Milwaukee County Courthouse was declared a Wisconsin building [italics mine] because its massive walls and columns were of Lake Superior red sandstone from Basswood Island.¹⁹

Tribune Building, Chicago, 1872 (destroyed 1902)

Basswood Island: Strong, French and Company

After Strong, French and Company completed its order of Basswood Island brownstone for the Milwaukee County Courthouse (1869-73) in June 1871, it began to direct regular shipments of the material to Chicago. Thus, on 8 October 1871, the eve of the Great Fire that swept through Chicago laying ruin to 18,000 buildings, rendering 100,000 homeless and 300 dead, and destroying more than \$200 million in property, Chicago stone yards held good supplies of Basswood Island stone. To get stone out for the Chicago market, quarriers Strong, French and Company operated through the winter of 1872-73. In the wake of the Fire, Chicago builders sought durability above all else in materials. The Apostle Islands sandstone had won its acceptance in the Milwaukee County Courthouse. Moreover, its reddish brown color appealed to the emerging taste for highly colored, durable stone. To this market, for the Tribune Building and others, went shiploads of stone from Basswood Island.

The Fire destroyed the first Tribune Company Building, a brand-new four-story structure built on the southeast corner of Madison and Dearborn streets of cast iron and Niagara limestone dug out of the Illinois and Michigan Canal. Immediately the Tribune Company took

steps to build on the same site "a more elegant and comodius [sic] structure" (Figure 25). To plan the new building, the company called on Edward Burling (1819-1892), the designer of the fire-ravaged structure. Burling, one of the first professional architects to practice in Chicago, then was associated in partnership with Dankmar Adler (1844-1900). Burling and Adler created a simple, five-story commercial block and ordered it constructed of durable, dressed Lake Superior red sandstone quarried on Basswood Island. On 9 October 1872, just one year after the Fire, the Tribune Company began publishing its newspaper in the new \$250,000 building.

St. Paul's Episcopal Church, Milwaukee, 1884-91

Basswood Island: Cook and Hyde

Early in 1882, the building committee of the vestry of St. Paul's Episcopal Church, Milwaukee's pioneer Episcopal parish, which had organized in 1836, invited five prominent architectural firms to submit designs for a new church at the northeast corner of East Knapp and North Marshall streets (Figure 26). On 13 May 1882 the committee selected the plans for an impressive Richardsonian Romanesque-style (Figure 27) church of red Lake Superior sandstone prepared by Edward Townsend Mix (1831-1890) (Figure 28) on the condition that he make some revisions.²⁰ Mix's competitors included Ware and Van Brunt of Boston, Howland Russell of Milwaukee, and Richard Upjohn and Henry G. Harrison of New York City. With the news he had won the commission, Mix and



Figure 25. Burling and Adler, Tribune Building, Chicago, 1872, Destroyed 1902.



Figure 26. Edward Townsend Mix, St. Paul's Episcopal Church, Milwaukee, 1882-90.

This view of the south front from the south east of St. Paul's Episcopal Church details the walls built of randomly coursed rock-faced red Basswood Island sandstone in the Richardsonian Romanesque manner. The three-quarter engaged angels with trumpets on the frieze of the tower on the left resemble those on Richardson's Brattle Square Church in Boston.

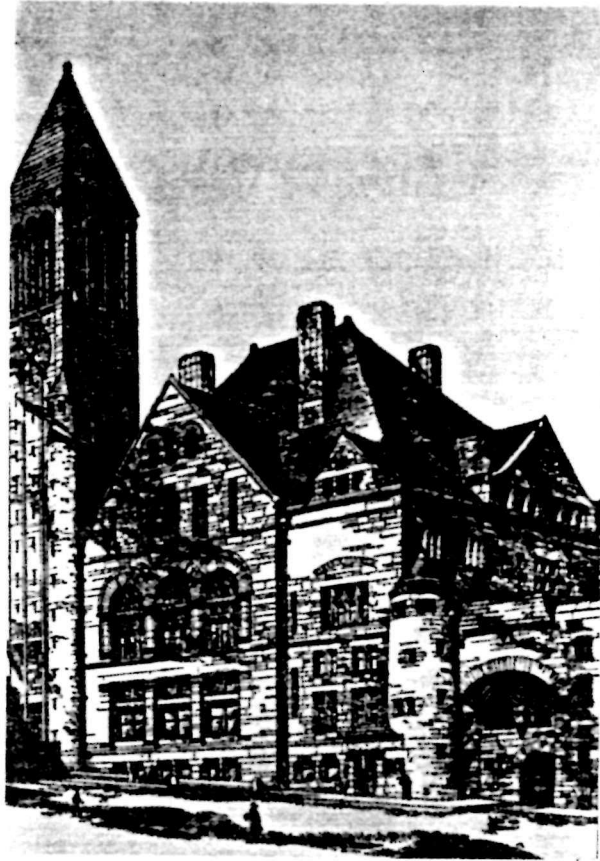


Figure 27. Henry Hobson Richardson, City Hall, Albany, 1880.

In this study for the City Hall at Albany, New York, and in other designs Richardson massed towers, porches, and round arches in rock-faced masonry and borrowed motifs from French Romanesque architecture. Richardson gave his name to the solid, massive, round-arched style of architecture popular in America in the late nineteenth century. Midwestern versions of the Richardsonian Romanesque featured rusticated foundations, low broadly arched windows and openings, brown and red stone, and foliated ornamentation.



Figure 28. Edward Townsend Mix (1831-1890).

This eastern-trained Milwaukee architect called for reddish brown Bayfield sandstone from Basswood Island for St. Paul's Episcopal Church, T. A. Chapman Department Store, and the Plankinton Block in Milwaukee in the 1880s. Cook and Hyde, Milwaukee's eminent stone merchants, furnished the sandstone for the projects.

Edwin Hyde, Milwaukee's eminent stone merchant and contractor, set out for Basswood Island to select themselves the stone for the church.

Mix based his design for St. Paul's Church on Henry Hobson Richardson's unexecuted design for Trinity Church, Buffalo, which was published in the Architectural Sketch Book for July 1873. The dimensions of the church are 140 feet by 84 feet. At the southwest corner rises a lofty tower with four carved stone angels with trumpets on its corners (a motif derived from Richardson's Brattle Square Church in Boston). The walls are rock-faced, deep red Basswood Island sandstone. Mullions and tracery are yellow sandstone; colonettes flanking three main entrances and columns on the west porch are polished granite.

The sandstone was freighted from Basswood Island by Hibbard and Vance, cut by Cook and Hyde, and laid in the walls by John G. Jones. F. A. Purdy, under the supervision of Mix and Company and a Mr. Loehner of New York, carved the four stone angels ornamenting the tower.

Excavations for the foundation of St. Paul's began in the fall of 1882. A celebration for the laying of the cornerstone took place on 17 June 1884, and services were first held in the still-unfinished church on 12 October 1884. In 1884-85 the chapel was completed, in 1888-89 the southwest-corner tower completed, and in 1890 the cream-colored brick parish house completed. The Episcopalian community consecrated the church on 11 November 1891. The project cost \$230,000. This splendid church for a pioneer parish, adorned with rich, colorful Tiffany glass windows and built of rugged Basswood Island sandstone to

the designs of a popular local architect, symbolized Milwaukee's identity and pride. The necessity of obtaining first-class red Lake Superior sandstone for its walls and towers brought Cook and Hyde to Basswood Island.

As St. Paul's Church neared completion, Cook and Hyde continued to ship Bayfield sandstone from Basswood Island to their stone yards in Milwaukee. With a special order of this brownstone which had been transported by rail, a Milwaukee merchant would add ornamental color to his new department store.

T. A. Chapman's Dry Goods Store, Milwaukee, 1884-85 (destroyed)

Basswood Island: Cook and Hyde

Within a week after T. A. Chapman's dry goods store was destroyed by fire on 24 October 1884, Milwaukee's merchant prince decided to rebuild on the same site on the southwest corner of Grand (Wisconsin) Avenue and Milwaukee Street. Timothy A. Chapman called on Edward Townsend Mix, who had designed in 1872 the store that burned, to create a modern commercial-style store. The building would stand four stories in height, and extend for 76 feet on Wisconsin Avenue and 210 feet on Milwaukee Street. Cook and Hyde built it plain, solid, and substantial of iron and cream-colored Milwaukee brick trimmed with terra-cotta and with brownstone from their quarry on Basswood Island. In the cornice line pediment above the main entrance was placed a figure of a phoenix to symbolize the resurrection and immortality, we can assume, of the building and the business. T. A. Chapman Company Dry Goods Store,

completed in 1885, was considered a model of architectural design and beauty and set a standard for later commercial buildings.

Timothy Appleton Chapman (1824-?) was one of a group of Yankee-born businessmen who led the economic, political, and social activities of Milwaukee in the second half of the nineteenth century, before the German-immigrant group contended for the position. A native of Gilead, Maine, Chapman moved to Milwaukee in 1857, after serving as a clerk in a Boston dry goods store and then established his own business in partnership with his brother. In Milwaukee he worked in the same trade, first with a man named Bassett, and then opened his own store at this site in 1872. These easterners in Milwaukee patronized Edward Townsend Mix and Cook and Hyde.

Plankinton Block, Milwaukee, 1885-86 (destroyed by 1916)

Basswood Island: Cook and Hyde

In 1885-86 one of Milwaukee's most successful businessmen built a commercial block of rock-faced Basswood Island red sandstone on the corner of Grand (Wisconsin) Avenue and Second Street (Figure 29). John Plankinton commissioned Edward Townsend Mix to design the office, bank, store, and hotel in what the Milwaukee Sentinel for 1 November 1885 termed the "modified classical" style of architecture. It stood five stories in height and measured 70 feet by 140 feet in plan. As construction began, the newspaper predicted the Plankinton Block would rival in attractiveness and ornamentation the Chapman Block, which had



Figure 29. Edward Townsend Mix, Plankinton Block, Milwaukee, 1885-86, Destroyed by 1916.

opened the year before. The prime corner space within the block, approachable through a pedimented entrance flanked by polished and carved granite columns, held the newly incorporated Plankinton Bank.

Born in Delaware in 1820, John Plankinton lived in Pittsburgh twelve years before moving to Milwaukee in 1844. Here he established a butcher business and in 1864 associated in partnership with Philip D. Armour. Armour, Plankinton and Company operated meat packing houses in Milwaukee, Chicago, Kansas City, and New York. With his profits Plankinton speculated in real estate and established a reputation for "constantly improving the city by erecting new and substantial buildings."²¹ This Basswood Island brownstone block, demolished before 1916, was the culmination of these investments and served as a monument to an enterprising Milwaukee businessman.

In building St. Paul's Church, Chapman's Department Store, and the Plankinton Block of solid Basswood Island sandstone, Thomas Cook, Edwin Hyde, Edward Townsend Mix, and their eastern-born clients collaborated in the 1880s to give Milwaukee a substantial, successful, and durable appearance.

Old Bayfield County Courthouse, Bayfield, 1883-84

Basswood Island: Cook and Hyde

The first Basswood Island sandstone building erected in northern Wisconsin was the Old Bayfield County Courthouse (Figure 30). Now the National Park Service headquarters for the Apostle Islands National Lakeshore, it stands in a public square on the highest plateau in the



Figure 30. John Nader, Old Bayfield County Courthouse, Bayfield, 1883-84.

center of the village of Bayfield, overlooking the Bayfield harbor and the Apostle Islands. Designed by John Nader of Madison, and constructed by Cook and Hyde of Milwaukee during the summer and fall of 1883 and the spring and summer of 1884, the courthouse was completed and turned over to the county in July 1884. The Bayfield County Board of Supervisors, comprised of Bayfield businessmen, commissioned the erection of this solid brown Bayfield sandstone public building on the most prominent site in town at a time when Bayfield was about to lose to nearby Washburn its preeminence as the principal deep-water port on Chequamegon Bay.

The Old Bayfield County Courthouse is a symmetrically arranged, rectangular, two-story public building on a raised foundation. It measures some seventy feet in width by fifty feet in depth. Built of rough-cut, variegated Basswood Island sandstone laid in even courses, and trimmed with smooth-cut pieces of the same sandstone, it stands massive and solid in the center of one full block surrounded by open park space. Pedimented central pavilions project slightly from all four facades. A hip roof with deck, originally surmounted by a square cupola containing a clock on all four faces and a bell, tops the structure. Steps lead to entries in the center of all but the rear facade. The arched south entry, originally the main entry, is surmounted by a fanlight and stone cornice and flanked by stone pilasters. Windows, segmentally arched on the ground and first stories, and round arched on the second story, increase in height as the building rises from the basement to the second story. The word "Bayfield," carved in

bold letters in the central front pediment, accentuates the building's noble majesty.

Originally, offices for the register, treasurer, clerk, judge, sheriff, and district attorney flanked a central corridor that ran the full depth of the building on the first floor; the courtroom and rooms for the judge, jury, and witnesses occupied the second floor; and the jail and a boiler room took up the basement. The building was heated with steam and supplied with water from a spring in the hill north of the building.

On 14 February 1883 fire destroyed the first Bayfield County Courthouse, a frame structure built by a local carpenter builder ten years earlier. Within days the people of Bayfield agitated for a new courthouse, and the Bayfield Businessmen's Association and the Bayfield County Board of Supervisors quickly met to plan a new building. From the first it was clear to businessmen and politicians that a courthouse executed in native brown sandstone would best symbolize the aspirations of the people of Bayfield. The businessmen urged the county board to build immediately on the public square a courthouse and a jail costing no more than \$20,000.

That spring, several members of the businessmen's association were elected to the county board on their "courthouse" campaign platform. The new county officials included Frank Boutin, Sr., a fish dealer and lumberman; William Knight, Indian agent, banker, investor, and horticulturist; Fred Fischer, a timber speculator and merchant; and Robinson D. Pike, a lumberman, sawmill operator, real estate investor,

and owner of a nearby, yet to be developed, brownstone quarry. Pike served as chairman of the newly elected board.²² These businessmen board members saw in the courthouse project an opportunity to promote the growth and development of Bayfield and its quarry industry.

Bayfield businessmen perpetually struggled to secure the investment of outside capital in their town in the West because the development of its resources required money. But eastern and urban investors needed assurances that their investments were sound. The businessmen seized the opportunity to demonstrate the stability of Bayfield through the construction of a prominent, solid, and substantial courthouse of native Bayfield sandstone. Pike, in particular, advertised the area's newly developing sandstone industry through the construction of a public building of fireproof stone from local sandstone quarries.

One day after the fire, the board studied proposals for a new courthouse from several architects and conferred with others engaged in erecting public buildings. It solicited a sketch from Edward Townsend Mix, an eastern-trained and fully experienced Milwaukee architect, who specialized in public buildings, and who, for five years in the 1870s, as state architect for Wisconsin, had supervised the construction of state buildings. It corresponded with the Houston County, Minnesota, commissioners to inquire about the kind of courthouse that county was constructing. And it reviewed a plan from "a St. Paul architect." Finally, on 19 April 1883, presumably after reviewing his draft plans, it asked John Nader of Madison, an engineer and surveyor, to come to Bayfield to discuss the plans and construction of the building.

During his visit Nader assured the board that for \$20,000 the county could have "a handsome fireproof building." The Bayfield Press for 5 May 1883 elaborated further, stating that the court house would be

one that will not only be an ornament to the place and last for generations, but also be an advertisement for one of our chief resources--our brownstone, of which he [Nader] is outspoken in pronouncing the best building stone in the country, and in fact about the only really fire proof stone known, having stood the test of the Chicago fire where all others failed.

Within two weeks Nader had completed his plans. He proposed a rather tight and limited expression of the Italianate style of architecture, resembling that style only in its round-arched fenestration. Nader complied with the board's wishes by carefully calculating and designing a restrained, plain, and simple structure.

Nader (1838-1919) was born in Westchester, New York, and educated there and in Brooklyn. Before coming to Wisconsin in 1868, he designed and built marine fortification structures in the East. He served as assistant United States engineer in charge of the Wisconsin River Improvement, headquartered in Portage in the early 1870s, and as city surveyor for Madison from 1876 to 1880, and again from 1884 to 1887. Nader first identified himself as an architect in 1883, the very year he designed the Old Bayfield County Courthouse. Then, after designing his best-known work, St. Patrick's Church, constructed at Madison in 1888, he left Wisconsin for Virginia and New York City. The board viewed Nader as "a firm believer in the good qualities of Bayfield brownstone."²³

The first publicity of Nader's plans for the courthouse appeared in the Madison Democrat for 5 June 1883, which stressed the use of the native sandstone as a means of promoting the native resource and industry.

The county court house, a modest frame building, was consumed by fire last winter, and the commissioners decided to rebuild in stone and in this respect the county is unanimous and while supplying a necessity, to develop one of the sources of the country. The superior sandstone is located here in abundance, and will provide the north with building material for several years.

The board examined, discussed, and approved the plans, all on 21 May 1883.

One month later the board awarded the contract for the construction of the courthouse to Cook and Hyde of Milwaukee, operators of the quarry on Basswood Island. The rough-cut native brown sandstone for the courthouse was taken from Pike's Quarry at Van Tassell's Point, and the cut stone from Cook and Hyde's quarry at Basswood Island. Construction began in the summer of 1883 and was completed by July 1884. The project cost approximately \$31,000.

Around this time, Ashland and Washburn emerged as rival deep-water ports on Chequamegon Bay of Lake Superior and challenged Bayfield's position. The completion of the Wisconsin Central Railroad to Washburn in 1883 established Washburn's claim as the principal port on Chequamegon Bay. Within ten years Washburn was designated the county seat, and Bayfield County built a new Bayfield sandstone courthouse there.

The success of the courthouse in expressing the values of Bayfield were evidenced in the comments of visitors to Bayfield. Investors from St. Paul and New York City, assessing Bayfield's prospects for

commerce, business, and tourism in December 1883, thought the site, material, and architectural appearance of the courthouse reflected "taste, economy, and practical sense" in the construction of public buildings.²⁴ The editor of the Lumberman visited Bayfield in February 1885 and called the new courthouse the most noticeable improvement to the town since his last visit:

I must say it is the finest one I have seen in the Northwest and does infinite credit to the town and country. . . . It was built in the highest portion of the town, of the Bayfield brown sandstone, and from the tower overlooks the whole bay and all of the islands and lake as far as the eye can reach, as well as the opposite shore, with Ashland in plain view.

On the twenty-ninth anniversary of the settlement of Bayfield, the Bayfield County Press for 28 March 1885 reflected on the community's accomplishments. It thought the use of native brownstone in the Old Bayfield County Courthouse of particular importance to Bayfield's identity. The Press proclaimed proudly,

Now we boast the most stately structure in Northern Wisconsin, Bayfield County courthouse . . . rendered still more a source of pride from the fact that its component elements are native to our county. This leads us also to call to mind that within a very few years our brown stone has come into favorable notice and bids fair to rival all of the best known kinds of stone for building purposes.

The prominent location, the large size, and the native Basswood Island brown sandstone building material distinguish the simple, straightforward Old Bayfield County Courthouse. In this stone building its planners hoped to affirm Bayfield's position as a center of industry, commerce, and government in Chequamegon Bay. For these planners, the prominent stone courthouse symbolized the permanence of Bayfield as

the county seat and promoted the recognition of her developing sandstone industry.

Bayfield County abandoned this courthouse in 1892, when it moved the seat of county government from Bayfield to Washburn. Subsequently the building served as a town hall, school, community center, and quarters for prisoners of World War Two. In 1978, under the provisions of the Public Buildings Cooperative Use Act of 1976 (Public Law 94-541 [S. 865]), the Bayfield Heritage Association acquired the building and rehabilitated it to accommodate the headquarters of the Apostle Islands National Lakeshore. The Old Bayfield County Courthouse was the second building in the nation to be rehabilitated under this law, which directs federal agencies to use buildings of historic, architectural, or cultural significance when meeting their space needs. Funds from the Economic Development Administration and the Upper Great Lakes Regional Commission paid, in large part, for the cost of rehabilitation. The Bayfield Heritage Association leases the building to the National Park Service.

Germania Bank Building, St. Paul, 1888-90

Basswood Island: Cook and Hyde?

St. Paul men knew of the attributes and economic value of Bayfield sandstone in the 1880s. A group of them, including Henry M. Rice and Elias F. Drake, had admired its qualities in the Old Bayfield County Courthouse and seen the ease with which it could be extracted and shipped from the Basswood Island quarry, during a business trip to

Bayfield and the Apostle Islands in December 1883. The people of St. Paul had seen the stone exhibited in their city at that very moment, when Cook and Hyde sent a specially prepared carload of Basswood Island sandstone there to demonstrate how it surpassed all others in quality and value. Later, Elias F. Drake invested in the Bayfield quarry industry. In 1885 he bought one-half interest in Pike's quarry at Van Tassell Point, and in 1888 he purchased from Julius Austrian of St. Paul Hermit Island land, which he sold to Frederick Prentice in 1890. Thus, it was no surprise when the Bayfield Press for 19 April 1884 announced that Cook and Hyde would furnish stone for the new German National Bank in St. Paul (Figure 31).

In 1888 the directors of the Germania Bank, who included former Minnesota Governor Alexander Ramsey, finally acted on their decision to build a bank building on the southwest corner of Wabash and Fifth streets. Uncertain of how large a bank they wanted to build and how much it would cost, they solicited from architects two different sets of plans and designs--one with 50 feet of frontage, the other with twice that much. Eleven architects submitted proposals that varied greatly in style and cost. The directors selected the design prepared by J. Walter Stevens (1857-1937).

An eastern-born architect, Stevens had resided in St. Paul for nearly ten years by 1888 and was achieving recognition for his plans for some of the city's important warehouses and factories. Stevens's plans for the Germania Bank Building called for a Richardsonian Romanesque-style commercial structure, whose two primary facades would



Figure 31. Walter Stevens, Germania Bank Building, St. Paul, 1888-90.

be faced with rusticated Bayfield red sandstone. The secondary facades would be yellow brick. He arranged the building with shops on the first floor, the Germania Bank on the second, and offices on the upper floors.

Cook and Hyde had ceased operations on Basswood Island in 1888. The order for stone may have been filled by their mainland quarry or by the Bayfield Brownstone Company. Lauer Brothers Construction Company, noted for its skill in handling stone work, erected the structure at a cost of \$150,000. Workmen laid up walls of random rock-faced Bayfield sandstone resting at the base on large solid sandstone blocks. All was trimmed in sandstone with carved columns, smooth cut panels, and checkwork. When completed in 1890, people admired the beautiful proportions, rich tone of the materials, and the quiet but effective ornamentation. Aside from city hall, the Germania Bank Building was the most prominent structure in its quarter of the city and quickly was occupied by desirable tenants. Today the Germania Bank Building is known as the St. Paul Building.

First Methodist Episcopal Church, Duluth, 1891-92 (destroyed)

Basswood Island: Superior Brownstone Company

Builders in Duluth, Superior, and St. Paul found supplies of Basswood Island sandstone readily available to them at the Duluth and West Superior docks of the Superior Brownstone Company. Duluth Methodists built in 1891-92 a church of this stone on the southwest corner of Third Street and Third Avenue West. Designed in a Richardsonian

Romanesque style of architecture by Weary and Kramer, architects of Akron, Ohio, who specialized in church architecture, the First Methodist Episcopal Church was constructed by David Myers of Wooster, Ohio, under the supervision of McMillan and Radcliffe of Duluth, of randomly coursed rock-faced Basswood Island brownstone with a slate roof and stained glass windows. The large church measured 90 feet by 127 feet in plan and seated 2,200. It equalled in size, scale, and grandeur the First Presbyterian and Pilgrim Congregational churches in Duluth. The local newspaper called the First Methodist Episcopal Church imposing in appearance, commodious in size, convenient in arrangement, and artistic in finish.

Duluth's stature, enhanced by the Methodist Church, was also recognized in the brownstone industry. The Duluth Weekly Herald for 27 January 1892 noted that "Duluth is also the shipping headquarters for the quarries near Portage Entry [Michigan] 200 miles away and last season over 500,000 cubic feet of redstone was landed from them on one local dock and shipped thence all over the West."

John H. Allen House, St. Paul, 1892; Peter F. Bowlin House, St. Paul, 1892 (destroyed 1938); and John R. Paul House, La Crosse, 1893 (destroyed)

Basswood Island: Superior Brownstone Company

In 1892 John H. Allen, a wholesale grocer and director of the National German American Bank, built a large house of Basswood Island sandstone from the Superior Brownstone Company quarry at 335 West

Summit Avenue in St. Paul. J. Walter Stevens, a prominent local architect, designed the rectangular, two-and-one-half story, Queen Anne style house of randomly laid rusticated red sandstone. This massive house with its crisp rectilinear character befitted the stature of a prominent St. Paul wholesaler and banker.

Similar to the Allen House in massing and design were the Peter F. Bowlin House (Figure 32) at 760 West Summit Avenue in St. Paul and the John R. Paul House at 1133 Cass Street in La Crosse, Wisconsin. Bowlin built his house in 1892 of Basswood Island sandstone, after plans prepared by Clarence H. Johnston, Sr. (1859-1936), a Minnesota native who had studied architecture at Massachusetts Institute of Technology and designed many major public buildings, churches, and houses in St. Paul beginning in 1886.

John Paul, a Scottish-born lumberman and banker, had his house built of Basswood Island sandstone in 1893. Archie Donald, a skilled Ashland stone mason, cut and finished the stone for the Paul House. The Ashland Daily Press for 22 July 1893 described the process. Donald skillfully and carefully sawed the stone and then rubbed it together, making "the finest stone finish that can be procured."

Of the three houses cited, only the Allen House remains as testimony of the accomplishments of the earlier business and civic leaders who succeeded at this time. All built of Apostle Islands sandstone to the plans of local architects, resulting in solid, massive structures with little ornamentation. Like the earlier New England colonists' homes, these houses used in a straightforward manner readily available



Figure 32. Clarence H. Johnston, Sr., Peter F. Bowlin House, St. Paul, 1892, Destroyed 1938.

local materials. In all instances, the buildings received sympathetic treatment by designers and craftsmen who undoubtedly understood the character and quality of Bass Island sandstone.

Masonic Temple, Ashland, 1895-96

Hermit Island: Excelsior Brownstone Company

Second Street in Ashland ought to be "a solid mass of brownstone blocks," thought some local boosters as the quarry industry peaked in the 1890s, and no Ashlander satisfied "unless he has his own brownstone front."²⁵ Logically, in 1891, when the Ashland Masons made a decision to build within three years, they decided to build their temple either of solid brick or of brownstone.

The Masonic Temple Block (Figure 33) stands at the southeast intersection of West Second Street and Sixth Avenue West diagonally across from the brownstone Ashland Post Office (1892-94) in the commercial district of the city. This three-story commercial block with a corner tower has 50 feet of frontage on West Second Street and 134 feet of frontage on Sixth Avenue West. The first story displays twelve courses of rough-cut brownstone and a round-arched main entrance that springs from flanking clusters of brownstone columns; upper stories are of Menominee pressed brick trimmed with brownstone. A moulded brownstone coping tops the building. The first floor contained two stores, the second offices, and the third the Masonic rooms and hall.

Charles McMillan of Duluth designed the Masonic Temple. The Excelsior Brownstone Company furnished all of the stone except the



Figure 33. Charles McMillan, Masonic Temple, Ashland, 1895-96.

cornerstone. It may be no coincidence that two charter members of the Ashland Masonic Lodge--Edwin Ellis and Samuel S. Fifield--were also incorporators and officers of the Excelsior Brownstone Company. The three-foot-square, three-ton cornerstone was contributed by the Ashland Brown Stone Company, cut by Archie Donald, and laid on 15 July 1895.

The Masonic Temple was dedicated on 3 January 1896 as a place where all the brethren of the order could meet for hospitality, cheer, and comfort. It seemed a handsome building in the "center of a new, vigorous and advancing civilization."²⁶

Detroit Chamber of Commerce, 1894

Hermit Island: Excelsior Brownstone Company

Soon after organizing on 5 January 1892, the Detroit Chamber of Commerce recruited 700 members, sold \$100,000 worth of stock, and launched a project to build an exchange hall worthy of the city, its businessmen, and their interests. Of designs for the building submitted competitively by twelve Detroit architects and one Chicago architect, the officers and trustees selected the classical revival scheme prepared by Spier and Rohns. Frederick H. Spier (1855-?) and William C. Rohns, well-known Detroit architects, frequently employed stone in their buildings.

The desire of the architects to work with stone, the familiarity of the Chamber officials with the attributes of Lake Superior sandstone, and the promotional efforts of the Excelsior Brownstone Company in Detroit influenced the decision to clad the first stories of

the Detroit Chamber of Commerce (Figure 34) with Hermit Island brownstone. The strongest of these influences was exerted by the officers and trustees of the Chamber. Russell A. Alger, David Whitney, Thomas Palmer, and others had speculated in the timber and mineral resources of the Lake Superior region. Surely they preferred red Lake Superior sandstone for so fine and important a building and one that would represent trade and commerce in Detroit.

Benjamin Hyde of Chicago began constructing the building in the spring of 1894. One year later the Chamber moved from its temporary quarters in the basement of the Campau Building to its thirteen-story brick and brownstone building on the northeast corner of State and Griswold streets. The structure and the site cost \$500,000. The Board of Trade occupied space in the building. Many commended the Chamber for building so large and handsome a structure in such hard times.

Knight Block, Ashland, 1889-92 (destroyed 1974)

Stockton Island: Ashland Brown Stone Company

In the midst of a rush of building activity in the fall of 1889, John H. Knight, a stockholder in the Ashland Brown Stone Company, began to build a large commercial block on the corner of Second Street and Ellis Avenue in Ashland. Built of Stockton Island brownstone at a cost of \$100,000, the Knight Block (Figure 35) demonstrated the social and economic progress of Ashland and the importance of one of its foremost citizens and advertised the product of the Ashland Brown Stone Company.



Figure 34. Spier and Rohns, Chamber of Commerce, Detroit, 1894.



Figure 35. Conover and Padley, Knight Block, Ashland, 1889-92, Destroyed 1974.

Knight commissioned Conover and Porter, architects of Madison and Ashland, to draft plans for the three-and-one-half-story, Richardsonian Romanesque block, the upper stories of which would contain the Knight Hotel.²⁷ The building had 140 feet of frontage on Second Street and 100 feet on Ellis Avenue. From each street an entrance and flight of stairs led to the upper floors. The plan divided the first floor into eight spacious, well-lighted stores, each with its own fireproof vault; the second floor into offices, all with modern conveniences and eight with fireproof vaults; and the third and fourth floors into large social halls and other rooms.

Pen and Sunlight Sketches of Duluth, Superior and Ashland, an illustrated pamphlet published in 1892 to promote these three Lake Superior communities, described the attributes of the Hotel Knight.

By all odds the most elegant, most complete and most popular hotel in Ashland, Wisconsin, is the magnificent Hotel Knight, which was first opened to the public Jan. 4th, 1892. This magnificent hotel is located at the corner of Second street and Ellis avenue, in the most central part of the city. . . . The Hotel Knight is practically fire proof, and is strictly first class in every respect. It is furnished with every modern convenience, elevators, baths, electric lights, and has steam heat in every room. There are sample rooms, music hall, wine and billiard rooms in connection, and every appointment is excellent in its details. The building cost over \$200,000 and the furnishings were put in at a cost of \$20,000. The structure is five stories in height, and is built of brown stone. It measures 140 x 100 feet in dimensions and in design is ornate and massive. The guest rooms number fifty, and are all furnished equally comfortably; while the cuisine is equal to that of the best hotels in the West. The rates are from \$2.00 to \$3.00 per day, and every guest receives the greatest care and attention.

The Superior Daily Leader observed the opening of the Hotel Knight on 4 January 1892. It called it "the finest building in Ashland," noting that the brown sandstone block stood as "a tribute to one of

Ashland's foremost citizens, in whom every Ashlander, regardless of party, takes pride." Thus, in erecting a large, solid, Richardsonian Romanesque style commercial block and hotel building of locally quarried brown sandstone, John Knight declared his position and pre-eminence among the men of northern Wisconsin and advertised the product of his quarry. This building contributed to the importance of Ashland, and from it the townspeople derived a sense of value and pride.

J. L. Hudson Company Department Store, Detroit, 1891

Stockton Island: Ashland Brown Stone Company

One of several buildings constructed of Apostle Islands sandstone in Detroit in the 1890s was the J. L. Hudson Company Department Store (Figure 36). In 1891, ten years after Joseph L. Hudson had started his mercantile business in rented quarters on the first floor of the Detroit Opera House, the company built an eight-story department store on Farmer Street and Gratiot Avenue in Detroit to meet the needs of increasing business. Mortimer L. Smith (1840-1896), the son of one of Detroit's pioneer architects, designed a Richardsonian Romanesque structure in red brick trimmed with Stockton Island brownstone.

The building was both solid and light in appearance. The exterior expressed the openness and flexibility of the interior for displaying merchandise and for permitting the free flow of customers. Low arched arcading spanning three bays and terminating at the sixth level reinforced the dominant horizontal character and contained large expanses



Figure 36. Mortimer L. Smith, J. L. Hudson Company Department Store, Detroit, 1891.

of glass to admit ample natural light for the displays within. Sixteen iron columns per floor supported the structure.

Schmidt Block, Detroit, 1894-95

Stockton Island: Ashland Brown Stone Company

In 1894-95 Traugott Schmidt and Company, dealers in raw furs, built a five-story office block on Monroe and Beaubien streets in Detroit. Designed in a Richardsonian Romanesque style of architecture by Donaldson and Meir, one of the city's leading architectural firms, the block was built of red sandstone quarried by the Ashland Brownstone Company on Stockton Island. John M. Donaldson (1854-1941), who had studied at the Ecole des Beaux Arts, was associated with Henry J. Meier (1858-1917) in 1880.

Traugott Schmidt (1830-1897), the German-born son of tanners, established in 1853, in Detroit, a fur-trading and fur-processing business that grew into one of the largest in the Midwest. Schmidt prospered from his business and from banking and real-estate investments. Appropriately, Schmidt built the office building for his raw fur business of a preferred material--red Lake Superior sandstone.

The selection of Apostle Islands brownstone for the Schmidt Block may be attributable to Schmidt's familiarity with that building material from his earlier travels on the lakes from Detroit to Wisconsin and the Lake Superior region to buy furs and hides from trappers and Indians. He probably noticed the outcropping of red Lake Superior sandstone along the shores. While working in the office of

Henry C. Koch in Milwaukee from 1877 to 1879, Henry J. Meier had seen the recently completed Milwaukee County Courthouse. For client and architect together, the choice of Apostle Islands brownstone was predictable.

Cincinnati City Hall, 1888-93

Stockton Island: Ashland Brown Stone Company (questionable)

In 1888 the Cincinnati City Board of Supervisors commissioned Samuel Hannaford (1835-1910), a capable and prolific Cincinnati architect, to design their city hall (Figure 37). The result was a massive, towered and turreted, Richardsonian Romanesque structure, built bold and powerful of Missouri granite, buff-colored Amherst, Ohio, sandstone, and elaborately carved Wisconsin brownstone.

The brownstone came from the Bayfield group and was quarried either by the Ashland Brown Stone Company at Presque Isle or by the Prentice Brownstone Company at Houghton Point on the mainland in Bayfield County. The records are unclear as to who furnished the stone for the Cincinnati City Hall: The Bayfield Press for 14 April 1888 reported that the Ashland Brown Stone Company had the contract for stone for a new city hall in Cincinnati but noted in 28 July 1888 that the Prentice brownstone quarry at Houghton Point had a contract to furnish "5 carloads of stone for City Hall at Cincinnati"; the Prentice Brownstone Company claimed in its promotional literature to have furnished the stone and supplied statements from the architect and city

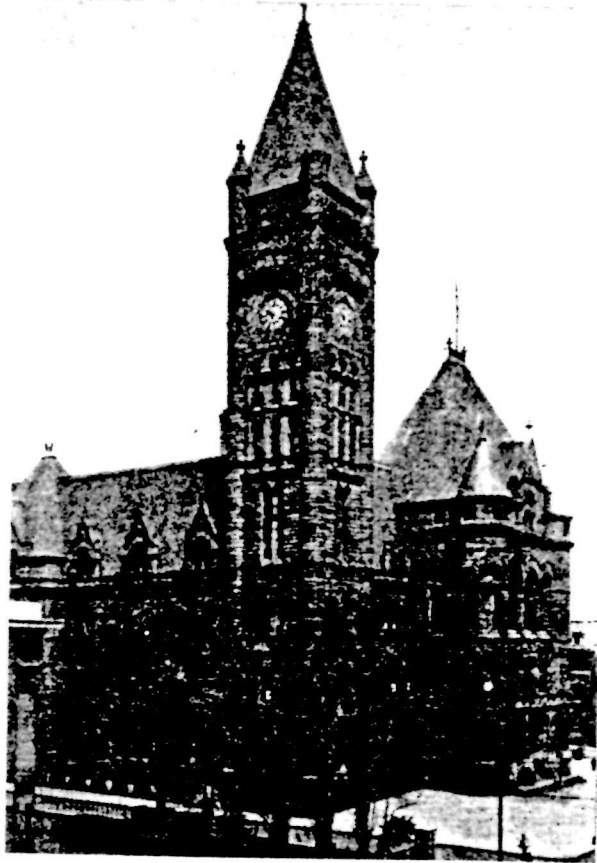


Figure 37. Samuel Hannaford, Cincinnati City Hall, Cincinnati, 1888-93.

officials on their satisfaction with its durability, elegance, and beauty. There is no quarrel, however, that Wisconsin furnished the brownstone. The booklet entitled "Dedication of the New City Hall" (1893) stated only that Wisconsin furnished the brownstone. Most likely the stone came from the Prentice Brownstone Company quarries at Houghton Point. Called by some "the most magnificent" in the country, the Cincinnati City Hall was dedicated in 1893 and cost \$1.5 million.

CONCLUSION

Buildings of Apostle Islands sandstone flourished in the Lake Superior region and in the Midwest from the 1870s until 1895. Solid and substantial sandstone buildings succeeded because of the interaction of the social, cultural, economic, and environmental factors present in life here at that time.

Sandstone architecture attained favor because the growth and prosperity of cities and villages created a demand for all kinds of substantial buildings, and the red sandstone was easily procured and transported. After a series of devastating fires had destroyed buildings and entire districts in many young places, their residents turned to sandstone as a fireproof material with which to rebuild. With the rush of building activity in the 1880s appeared the popular Richardsonian Romanesque style of architecture. It was uniquely suited for interpretation in Apostle Islands sandstone. Builders found that red sandstone buildings in high-style or vernacular renditions possessed the ability to convey symbolic meaning.

The imposition of a commercial, industrial, and technological society on once-frontier cities created a need for buildings. The population of Milwaukee, for example, more than tripled in twenty years from 20,051 in 1850 to 71,440 in 1870. It tripled again in twenty years to 204,468 in 1890. The population of Chicago increased tenfold

in twenty years from 29,963 in 1850 to 298,977 in 1870. Ashland, Washburn, Superior, and Duluth expanded in the 1880s and 1890s, when the construction of railroad lines and docks facilitated shipping of iron and lumber from nearby mines and forests, and flour and wheat from the wheatfields of the West. With growth and prosperity, many midwestern builders constructed their architecture with Apostle Islands sandstone.

Great fires that razed large districts in Chicago in 1871 and in Washburn in 1888, and razed buildings in Bayfield in 1883 and in Milwaukee in 1884, inspired village and city councils to adopt fire codes and to enact ordinances that required all structures within certain prescribed boundaries in the central portions to be constructed of brick or sandstone. The need to build with a fireproof masonry material greatly increased the demand for Apostle Islands sandstone.

In the Chequamegon Bay area, enterprising quarrymen erected sandstone buildings as advertisements for their developing industry on the islands and the mainland. John H. Knight, investor in the Ashland Brown Stone Company, built in Ashland the Knight Block (1889-91) of stone from his quarry on Stockton Island. Throughout the region quarrymen, prominent citizens, and members of businessmen's clubs promoted the use of the local material in major public buildings. Bayfield businessmen and politicians chose Basswood Island and Bayfield sandstone for the Bayfield County Courthouse (1883-84).

Between 1885 and 1900 the Richardsonian Romanesque style of architecture made its influence felt on the Midwest. Its massive,

ponderous stone forms brought a form and style particularly appropriate to expression, 'in fact, almost begging for expression, in red Apostle Islands sandstone, and uniquely capable of declaring symbolically the wishes, dreams, and fears of the generation that then had reached maturity here. The style was named for Henry Hobson Richardson (1838-1886), whose designs for buildings borrowed motifs from the medieval French Romanesque and employed a picturesque massing of towers, porches, arches, and buttresses in varied colors and textures of Connecticut brownstone and Hallowell granite. The midwestern practitioner, however, used a simplified version of the Richardsonian Romanesque that featured rusticated foundations, low, broadly arched windows and openings, brown and red stone, and foliated ornamentation. Solid, stable, and secure stone buildings symbolized and expressed a sense of permanence and belonging in an environment of uncertainty and impermanence. But additional motives associated with the desire for permanence and stability found expression in red sandstone architecture.

Establishment of territory and protection of status quo, aggrandizement of self and place, profit making, a desire for respectability, local pride and optimism, utility, thrift, good sense, and other purposes motivated institutions and individuals to build with Apostle Islands sandstone. Local governments established and protected their territories with red sandstone courthouses, federal buildings, and town halls. Men proclaimed their social stature with red sandstone houses, commercial blocks, and banks. Townspeople saw the reputation of their

communities derived from the collection of sandstone architecture built by their residents and institutions. With solid and substantial sandstone buildings, bankers solicited and held depositors, landlords secured tenants for commercial space, religious groups declared the values of their institutions and the social position of their members, chambers of commerce denied economic decline, and townspeople created a sense of place. Sandstone architecture symbolized permanence, solidity, and belonging and lifted up the spirits of those who beheld it.

The quarry industry declined in the late 1890s. After the depression of 1893, employment and production at the quarries fell off, supplies on hand were sufficient to fill orders, and many quarries became idle. The deposits were a great distance from large markets. Midwesterners embraced the fashion for whiteness and academicism made visible at the World's Columbian Exposition in 1893 in Chicago, and lighter-colored natural stones had gained favor. Artificial stone, concrete, and brick displaced natural stone. These materials cost less and could be handled more rapidly and easily than natural red sandstone. Moreover, brick manufacturers mounted a successful campaign against stone.

Sandstone relinquished its preeminence to brick in the Midwest in the 1890s. Whereas Chicago had twenty brick yards in 1870, it had fifty-three in 1880. Milwaukee's Great Industries, published by the Association for the Advancement of Milwaukee in 1892, listed manufacturers of cream-colored brick and excluded from listing cut-stone dealers. Then, too, the appearance in the mid-1880s in Chicago of

steel skeletal construction in larger buildings was a factor in the shift from stone to brick. This type of construction required a lighter material to clothe the skeleton. The buildings of Apostle Islands sandstone stand as testimony to a great natural resource and the confidence of speculators who developed the quarry industry in the last quarter of the nineteenth century.

FOOTNOTES

¹The Jacobsville formation is named after the village at the entry to the Portage River on the Keweenaw Peninsula, some fourteen miles northeast of Houghton, where red sandstone was quarried. John Henry Jacobs (1847-1934), a pioneer in the development of the Lake Superior sandstone industry, gave his name to the village.

²H. R. Schoolcraft, On the Number, Value, and Position of the Copper Mines on the South Shore of Lake Superior, 17th Cong., 2nd sess., S.Doc. 5, 1881. pp. 7-28.

³Lt. James Allen, Journal of an "Expedition into the Indian Country" to the source of the Mississippi, made under authority of the War Department in 1832, p. 28, in House Ex. Doc. 323, 23rd Cong., 1st sess. p. 7-68.

⁴Douglass Houghton, Fourth Annual Report of the State Geologist, Michigan, House Doc. 27, 1841.

⁵"Lake Superior in 1840," paper read before the Detroit Pioneer Society, January 1874, in Bela Hubbard, Memorials of a Half-Century in Michigan and the Lake Region. (New York and London: G. P. Putnam's Sons, 1888, rpt., Gale Research Co., Detroit, 1878), p. 50.

⁶D. D. Owen, Report of a Geological Reconnaissance of the Chippewa Land District of Wisconsin, S. Exec. Doc. 57, 30th Cong., 1st sess., 1847, v. 7, p. 54.

⁷Ibid.

⁸Charles Whittlesey, "The Penokee Mineral Range," Proceedings of the Boston Society of Natural History, vol. 9, 1863, pp. 235-244, reprinted in part in Geology of Wisconsin. Survey of 1873-1879. vol. 3 (Madison: Commissioners of Public Printing, 1880), p. 220.

Charles Whittlesey, a Connecticut native and a graduate of the United States Military Academy, was employed by the United States government from 1847 to 1851 to conduct a mineralogical and geological survey of the Lake Superior region and the Upper Mississippi. Later he worked as a mining engineer in Michigan, Wisconsin, and Minnesota and, in 1858, worked on the geological survey of Wisconsin. Earlier, in 1837, as assistant geologist of Ohio under William W. Mather, he had taken charge of the topographical and mathematical parts of the survey which identified the rich coal and iron deposits of eastern Ohio (James

Grant Wilson and John Fiske, eds., Appleton's Cyclopaedia of American Biography, vol. 6 [New York: D. Appleton and Co., 1889], p. 496).

⁹J. W. Foster and J. D. Whitney, Report on the Geology and Topography of a Portion of the Lake Superior Land District, in the State of Michigan (part 1, Copper Lands: U.S. 31st Cong., 1st sess. House Ex. Doc. 69, 1850; part 2, The Iron Region, Together with the General Geology), U.S. 32nd Cong. Spec. sess., Senate Ex. Doc. 4, 1851; Ibid., pt. 2, p. 124. In fact, Albert Bierstadt (1830-1902) visited the Apostle Islands in 1878, and reportedly sketched Grand Arch on the extreme western point of Sand Island, and later used it as the subject of one of his landscape paintings (Sam S. Fifield, "Beautiful Isles of Chequamegon," Ashland Press, 25 December 1895. The painting may be On Lake Superior--Sand Island, 1886?, in Gordon Hendricks, Albert Bierstadt, Painter of the West [New York: Harry N. Abrams, 1974], illus., p. 284). Bierstadt visited the Wisconsin Dells and the Lake Superior region in the summer of 1886.

¹⁰Charles Lanman, Adventures in the Wilds of the United States and British American Provinces (Philadelphia: John Moore, 1856), pp. 1; 103-104.

¹¹J. Disturnell, A Trip Through the Lakes of North America: Embracing a Full Description of the St. Lawrence River, Together with All the Principal Places on Its Banks, From Its Source to Its Mouth: Commerce of the Lakes, etc. Forming Altogether a Complete Guide for the Pleasure Traveler and Emmigrant (New York: J. Disturnell, 1857), p. 75.

¹²Alanson Sweet (1804-1891) moved from Owasco, New York, to Milwaukee in 1835, and later to Kansas and Illinois. Sweet promoted many early plankroads and railroads, traded in grain, and was active in politics (Dictionary of Wisconsin Biography [Madison: The State Historical Society of Wisconsin, 1960], p. 344). In Milwaukee he built homes, stores, ships, and the first steam elevator; on the lakes he built many lighthouses. By trade Sweet was a stone mason (A. T. Andreas, History of Milwaukee, Wisconsin [Chicago: Western Historical Co., 1881], pp. 1176-77).

¹³Daniel Wells, Jr. (1808-1902) was a speculator, businessman, and congressman. Born in West Waterville, Maine, Wells speculated in Wisconsin land in 1835 and moved to Milwaukee the following year. Through investments in lumbering, transportation projects, and banks, he earned a fortune estimated at \$15 million and a reputation as the wealthiest man in Wisconsin (A. T. Andreas, History of Milwaukee, Wisconsin [Chicago: Western Historical Company, 1881], p. 369).

¹⁴The Bayfield Press of 2 July and 3 September 1881 stated that Louis Lederly, superintendent of the Light House Construction Department, had cleared ten acres and had opened a red-sandstone quarry on

Sand Island to furnish stone for the lighthouses on Passage Island and Sand Island in Lake Superior and Belle Isle in the Detroit River. At the present time there is no clear archaeological evidence that a quarry was located on Sand Island.

¹⁵Ten years earlier, a legal dispute over land and equipment led to a court settlement, which reassigned land among the contestants. In 1872 Beck, Breckenridge, and Magoffin filed a complaint against Strong, French, Lee, and Walker. A commission was appointed by the U.S. Circuit Court, Milwaukee, which produced a Report of Court dated 21 February 1872. The settlement assigned the land as follows:

to James Beck lots 4, 8, 12 (1/8 value); to John Breckenridge lots 3, 7, 10 (3/8 value); to Beriah McGoffin lots 2, 5, 6, 9, 11 (2/8 value); and to Robert Strong, Daniel Wells, Edwin French, George Lee and Edwin Walker lots 1, 13 (2/8 value)

After the settlement, the quarry site on Lot 1 remained in the same hands as before. (See James Beck, John C. Breckenridge and Beriah Magoffin vs. Robert H. Strong, Daniel L. French, George P. Lee and Edwin Walker, U.S. Circuit Court, Milwaukee, 21 February 1872 and Judge Andrew C. Miller, Decree of Partition, 26 February 1872.)

¹⁶The Prentice Brownstone Company (a promotional booklet for the company), n.p., 1891?, p. 16.

¹⁷Born in Kent County, Delaware, John Henry Knight (1836-1903) graduated from the Albany, New York, Law School in 1859, and fought in the Civil War, before accepting a one-year assignment at the Chippewa Indian agency at Bayfield in 1869. Once in Bayfield he worked for several years as register of the land office. In 1880 Knight moved to Ashland and founded the Superior Lumber Company, which eventually controlled one of the largest timber tracts in northern Wisconsin. He served as local attorney for the Wisconsin Central Railroad, as organizer of the Ashland and Superior Railroad, and as mayor of Ashland.

¹⁸Bodenschatz and Earnshaw Stone Company was listed as a stone yard and dealer at 350 S. Fifth Avenue in Chicago in 1882. (See the Lakeside Annual Directory of the City of Chicago [Chicago: The Chicago Directory Co., 1882], p. 302.)

¹⁹Frederic Heath, "The Milwaukee County Historical Society," Wisconsin Magazine of History, December 1947, p. 180.

²⁰Edward Townsend Mix (1831-1890) was born and raised in New Haven, Connecticut, the son and grandson of sea captains. He studied architecture in the office of Major Stone, a student of Ithiel Town, one of the early professional architects in New Haven, and was apprenticed for six years to Richard Upjohn, a New York architect who was a leading proponent of Gothic Revival architecture. Mix came to

Milwaukee in 1856, after a brief period of practice with W. W. Boyington. A specialist in public buildings, Mix produced a wide variety of buildings, ranging from Victorian designs to Gothic Revival renditions, and was noted for his church architecture.

²¹A. T. Andreas, History of Milwaukee (Chicago: Western Historical Company, 1881), p. 1149.

²²A pioneer, businessman, and village official, Robinson Deerling Pike (1838-1905) led the settlement and development of Bayfield. Born in Meadville, Pennsylvania, the son of Elisha Pike, he arrived with his family at La Pointe on Madeline Island in 1855 to homestead and operate on Pike's Creek a small water mill built by the North American Fur Company ten years before but later abandoned. In 1856 Pike participated with Henry M. Rice and others in the founding of Bayfield. In the 1870s he established a shingle and saw mill; in the 1880s a planing mill, dockage facilities, boating business, and a sandstone quarry company. He promoted logging camps, better roads and docks, electricity and telephones. People regarded Pike as progressive, energetic, and forceful, and identified him with all moves to build up the community and surrounding country (Robinson Deerling Pike File, Northland College, State Historical Society of Wisconsin Area Research Center, Ashland, Wis.; History of Northern Wisconsin, pp. 83-85; Bayfield County Press, 18 August 1905).

²³Bayfield Press, 13 December 1884.

²⁴Ibid., 8 December 1884.

²⁵The Prentice Brownstone Company (a promotional booklet for the company), np, 1891?, p. 16.

²⁶Ashland Weekly Press, 4 January 1896.

²⁷Allan D. Conover (1854-1929) and Lew F. Porter (1862-1918) had opened a branch office in Ashland in 1887, the same year they had established their architectural and engineering firm in Madison. Both men had studied at the University of Wisconsin; Conover taught civil engineering there and, in fact, instructed Frank Lloyd Wright and was his first employer. In 1890 an English immigrant named Horace P. Padley joined the firm, taking charge of the Ashland office. Conover, Porter and Padley became "the most successful architects in Northern Wisconsin" and designed, among other Ashland buildings, the First National Bank (1887), Security Savings Bank (1889), County Jail, County Poor House, Vaughn Block (1887), Breen Block, and many houses. At Washburn they designed the Washburn State Bank (1889).

APPENDIX

Appendix Table A1.--Quarry sites in the Apostle Islands.

Quarry Location	Company	Dates
Lot 1	Bass Island Brown Stone Co.	1868-70
SE SW S4 T50N R3W	Strong, French & Co.	1870-73
Basswood Island	Cook & Hyde	1883-88
	Superior Brownstone Co.	1891-93
Lot 3		
SE SW S4 T50N R3W	Bass Island Brown Stone Co.	1890
Basswood Island		
SE S13 T51N R3W	Excelsior Brownstone Co.	1891-93
Hermit Island	Excelsior Brownstone Co.	1893-97
Lots 3 & 4	Ashland Brown Stone Co.	1886-90
S4 T51N R2W	Ashland Brown Stone Co.	1890-97
Stockton Island		

Appendix Table A-2.--Quarry companies in the Apostle Islands.

Company/Individual	Capital Stock	Stockholders	Main Office	Incorporation Date	Quarry Location	Comments
Ashland Brown Stone Co	\$ 50,000	John H Knight William Knight D S Kennedy	Ashland WI	1886	Lots 3 & 4 S4 T51N R2W Stockton Island	1890 sold to Bodenschatz
Ashland Brown Stone Co	\$ 100,000	G A Bodenschatz J G Bodenschatz E H Brown	Chicago IL	1890	Lots 3 & 4 S4 T51N R2W Stockton Island	1897 suspended operations
Bass Island Brown Stone Co		Alanson Sweet Daniel Wells	Milwaukee WI	1868	Lots 1 & 2 SE½ SW¼ S4 T50N R3W Basswood Island	
Bass Island Brown Stone Co	\$ 45,000	Walter C Brooks Cambreton Leach James S Ritchie	Superior WI	1890	Lot 3 S4 T50N R3W Basswood Island	Blasted out stone but abandoned work after 2 or 3 shipments
Cook & Hyde		Thomas D Cook Edwin Hyde	Milwaukee WI	1883	Lots 1 & 2 SE½ SW¼ S4 T50N R3W Basswood Island	1883-88 leased site from R W Lee of Chicago 1890 sold machinery and equipment to Prentice
Excelsior Brownstone Co		Frederick Prentice	Ashland WI	1891	SE½ S13 T51N R3W Hermit Island	1893 reorganized
Excelsior Brownstone Co	\$1,800,000	Edwin Ellis S S Fifield F E Goddard L C Tobias	Ashland WI	1893	SE½ S13 T51N R3W Hermit Island	1897 experienced financial difficulty and ceased operations
Strong, French & Co		Robert H Strong Daniel L Wells George P Lee Edwin C French	Chicago IL	1870	Lots 1 & 2 SE½ SW¼ S4 T50N R3W Basswood Island	1873 ceased operations
Superior Brownstone Co	\$ 35,000	Freeborn C Bailey George H Barr James H Rogers	Ashland WI	1891	Lots 1 & 2 SE½ SW¼ S4 T50N R3W Basswood Island	1893 ceased operations

Appendix Table A-3.--Checklist of buildings of Apostle Islands sandstone.

Quarry	Company	Date	Building Location	Building	Architect	Contractor	Portion Built of Sandstone
Basswood Island	Strong, French & Co	1869-73 (destroyed 1976)	Milwaukee WI	Milwaukee County Courthouse	L A Schmidtner		Veneer
Basswood Island	Strong, French & Co	1871-72 (destroyed 1902)	Chicago IL	Tribune Office	Burling & Adler	Gindele	Walls
Basswood Island	Strong, French & Co	1871	Bayfield WI	School			Foundation
Basswood Island		1872	Ashland WI	Dyke & Parson Mill			Foundation
Basswood Island	Cook & Hyde	1882-90	Milwaukee WI	St Paul's Episcopal Church	E T Mix	Cook & Hyde	Rock-faced walls
Basswood Island		1882	Bayfield WI	Ervin Leighy Building			Foundation
Basswood Island	Cook & Hyde	1882	Ashland WI	Sam Fifield House			Foundation
Basswood Island	Cook & Hyde	1882	Ashland WI	Ashland School			Foundation
Basswood Island	Cook & Hyde	1883-84	Bayfield WI	Bayfield County Courthouse	John Nader	Cook & Hyde	Cut-stone work
Basswood Island	Cook & Hyde	1884-85 (destroyed)	Milwaukee WI	T A Chapman Department Store	E T Mix	Cook & Hyde	Trim
Basswood Island	Cook & Hyde	1887 (destroyed by 1916)	Milwaukee WI	Plankinton Bank Building	E T Mix	Cook & Hyde	Entire structure
Basswood Island	Cook & Hyde	1884, 1888-90	St Paul MN	Germania Bank Building	J W Stevens		Two primary facades
Basswood Island		1890	Milwaukee WI	Forest Home Cemetery Chapel	Ferry & Clas		
Basswood Island	Superior Brown-stone Co	1891-93 (destroyed 1973)	Duluth MN	First Methodist Episcopal Church	Weary & Kramer	David Myers	Entire structure
Basswood Island	Superior Brown-stone Co	1892 (destroyed 1938)	St Paul MN	Peter Bowlin House	C H Johnston Sr		
Basswood Island	Superior Brown-stone Co	1892	St Paul MN	J H Allen House	J W Stevens		Wall covering
Basswood Island	Superior Brown-stone Co	1893 (destroyed)	La Crosse WI	John Paul House			Wall covering
Basswood Island	Superior Brown-stone Co	1892	West Superior WI	Fifth Ward School	Barber ?		
Basswood Island	Superior Brown-stone Co	1892	West Superior WI	Eighth Ward School	Carl Wirth ?		

Appendix Table A-3.--Continued.

Quarry	Company	Date	Building Location	Building	Architect	Contractor	Portion Built of Sandstone
Basswood Island	Superior Brown-stone Co	1892	West Superior WI	Ninth Ward School	Carl Wirth ?		
Basswood Island	Superior Brown-stone Co	by 1893	Sheboygan WI	High School			
Basswood Island	Superior Brown-stone Co	by 1893	Ashland WI	Bristol Block			Front facade
Basswood Island	Superior Brown-stone Co	by 1893	Manitowoc WI	M LS & W RR Depot			
Basswood Island	Superior Brown-stone Co	by 1893 1909 ?	Ironwood MI	M LS & W RR Depot			
Basswood Island	Superior Brown-stone Co	by 1893	St Louis MO	House Washington Ave			
Basswood Island	Superior Brown-stone Co	by 1893	St Louis MO	Block of houses Vernon Ave			
Basswood Island	Superior Brown-stone Co	by 1893	Lincoln NE	Parker Block			
Basswood Island	Superior Brown-stone Co	1890s	West Superior WI	Waterman Breunig & Agen Blocks			
Basswood Island	Superior Brown-stone Co		Rockford IL	Farewell Memorial Parish House			
Basswood Island		1895	St Paul MN	St Paul Dispatch Building			Trim
Hermit Island	Excelsior Brown-stone Co	1895	Detroit MI	Chamber of Commerce Building	Spler & Rohns		First story & trim
Hermit Island	Excelsior Brown-stone Co	1895-96	Ashland WI	Masonic Temple	Charles McMillan	Archie Donald Nicholas Mueller	First story & trim
Stockton Island	Ashland Brown Stone Co	1887	Ashland WI	Vaughn Library Building			Trim
Stockton Island	Ashland Brown Stone Co	1888-93	Cincinnati OH	Cincinnati City Hall	Samuel Hannaford		Trim
Stockton Island	Ashland Brown Stone Co	1889-92 (destroyed 1974)	Ashland WI	Knight Block	Conover & Padley		Wall covering
Stockton Island	Ashland Brown Stone Co	1891	Detroit MI	Telephone Building	Donaldson & Meier		Trim
Stockton Island	Ashland Brown Stone Co	1891 (destroyed by 1924-29)	Detroit MI	J L Hudson Co Department Store	Mortimer L Smith		Trim
Stockton Island	Ashland Brown Stone Co	1894	Detroit MI	Schmidt Block	Donaldson & Meier		

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The conditions under which the architecture of Apostle Islands sandstone was built are recorded in newspapers: Ashland Weekly Press, Bayfield Press, Chicago Tribune, Detroit Free Press, Detroit News, Duluth Weekly Herald, Madison Democrat, Milwaukee Sentinel, St. Paul and Minneapolis Pioneer Press, and Washburn News. The minutes of Boards of Supervisors of Bayfield and Milwaukee counties record in detail the construction of specific courthouses. Local histories

contain information on sandstone buildings and the people who built them: A. T. Andreas, History of Milwaukee, Wisconsin (Chicago, 1881) and History of Chicago From the Earliest Period to the Present Time, volume 2, From 1858 Until the Fire of 1871 (Chicago, 1885) and volume 3, From the Fire of 1871 Until 1885 (Chicago, 1886); and History of Northern Wisconsin (Chicago, 1881).