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A Cradle of Sandstone:
The Origins of Industry in Northern Ohio

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“The history of this growth will command the attention of all future generations.”

In his succinct statement in 1916, eminent geologist and historian George Frederick Wright recognized the significance of the rapid expansion of industry in nineteenth-century northern Ohio.¹ His prediction rings true a century later. The region once led the United States in several manufacturing fields, but little has been written about the origins of this success. An incredible story can be explored quite literally just under the surface. Indeed, northern Ohio’s industrial identity persists into the twenty-first century due to a transformation sparked by sandstone quarries. Substantial attention has been given to the local histories and technical functioning of the quarries themselves, but what impact did they have on the people and other industries around them?

In the 1840s, the industrial revolution spread to northern Ohio in the form of sandstone quarries that carried the region into the modern world, shaping its people and identity in the process. Resilient and hardworking people dug deep into the earth to cut

¹ G. Frederick Wright, *A Standard History of Lorain County, Ohio* (Chicago: The Lewis Publishing Company, 1916), 2.

and extract massive blocks of sandstone. The American ideals of liberty, self-reliance, and honest work were embodied in these early settlers and quarry laborers of northern Ohio. During its infancy, the region was rocked in a cradle of sandstone. This solid social and physical foundation provided by the quarries helped bring about and support one of the fastest growing and most powerful industrial centers in the world. Ohio would go on to play a significant role as it supported the Union through the perils of the Civil War and handily answered the crushing demands placed on American industries during the world wars of the twentieth century and beyond.

To the west of Cleveland, the cities of Amherst and Berea, two engines in the industrial vehicle that is northern Ohio, have intertwined origins as “quarry towns.” Their shared histories illustrate the direct effects of this stone excavation business. Starting in the 1840’s, this regional industry boomed for over a century before production and employment were reduced by the end of the twentieth century, leaving only a handful of active sandstone quarries in the northern Ohio of 2016. The quarries brought abundant economic and social benefits to northern Ohio that altered its society from agricultural to industrial.

The land that would become the state of Ohio was once a heavily forested wilderness that was inhabited by Native Americans for at least 15,000 years. By 1700, however, the area was severely depopulated partially due to the “conquering military sweep” of the gun-wielding and horse-riding Iroquois nations from the east.² Europeans and early American colonists knew this realm of rolling hills and ancient woodlands bordered by a Great Lake and a broad river as the Ohio Country. The 1787 Northwest

² George W. Knepper, *Ohio and Its People* (Kent: The Kent State University Press, 2003), 9-14.

Ordinance, passed by the Confederation Congress, placed this land within the Northwest Territory of the United States.³ This valued land was fought over by the British, French, Americans, and various allied native nations until the end of the War of 1812 when it was secured by the United States. When it became a state in 1803, Ohio lacked any real identity except as a pioneer land on the frontier of the east coast. That would change quickly with the arrival of industry in the coming decades.

In the early 1800s, scores of determined settlers arrived along the southern shores of Lake Erie in an attempt to continue the American experiment. Because most of northern Ohio was part of the Connecticut Western Reserve before 1787, many of the area's earliest white settlers were from New England. They not only brought with them the physical supplies needed to create new towns, but also the mental courage that was needed to blaze new westward trails over the rough Appalachians with their families or alone in an effort to achieve a better life. These people were firm believers in a prosperous future and sought to create a solid social foundation for the western borderlands of the young American republic. What they could not know was that a solid foundation was already physically present: the ancient sandstone foundations upon which part of the southern lakeshore rests.

The great geologic forces of time and pressure create the buildup of sandstone, a sedimentary rock. Sand particles compressed over hundreds of millions of years under other materials combined with a chemical action eventually form sandstone, a natural resource.⁷ The rock is found deep within the earth, but it is also sometimes visible above

³ Knepper, *Ohio and Its People*, 47.

⁷ Arthur Getis et al., *Introduction to Geography* (New York: McGraw-Hill, 2011), 52.

or just below the ground. Sandstone has been an extremely valuable asset to humanity. Since antiquity, sandstone has served as a popular building material for homes, temples, houseware, art, and countless other things. Sandstone oil lamps dating to 17,000 years ago have been discovered in the caves of Lascaux, France, the same site of the famous cave paintings.⁸ Some types of sandstone are resistant to weathering, making it a wise choice in construction. 1,800 years ago, a farming people from southwestern North America known as the Anasazi built intricate sandstone buildings into cliffs that still stand today, complete with windows and distinct rooms.⁹ Native Americans were the first to quarry and use the sandstone found in the area that would become Ohio. Sandstone walls of a fort existing at least 600 years ago have been recovered.¹⁰ The impact sandstone has had on human history continued in Ohio.

Ohio is naturally rich with some of the highest quality sandstone in the world. When examining a categorical geologic map of Ohio, one can identify a vein of sandstone known as “Berea Sandstone.” It runs like a huge hook north from Columbus in a narrow strip until widening into a great mass along the lakeshore before tapering again south of Cleveland. The main vein of Berea Sandstone is also referred to as “Amherst Stone,” “Buckeye Gray,” “Birmingham Buff,” “Berea Grit,” and “Blue Amherst,” among other names including simply “northern Ohio sandstone,” depending on the source. An Ohio Geological Survey report published in 1874 described this deposit and praised it for its durability, strength, color, and texture. The report continues: “These qualities are

⁸ Jane Brox, *Brilliant: The Evolution of Artificial Light* (Boston: Houghton Mifflin Harcourt, 2010), 9-10.

⁹ Jared Diamond, *1000 Events That Shaped the World* (Washington, D.C.: National Geographic Society, 2007), 63.

¹⁰ Barbara Adams and Richard Carlton, “Ohio’s Sandstone Industry,” *Ohio Geology Newsletter*, Spring 1982, 1-3.

rarely found in as great perfection combined in one stone, and are such as fully warrant the high reputation it enjoys.”¹¹

Because the United States was initially grounded in an agrarian economy, some of the first American industrial developments and inventions had to do with improving the way people farmed. Eli Whitney's 1793 cotton gin, Cyrus McCormick's perfection of the mechanical reaper in 1837, and John Deere's steel plow of the same year are examples of this. Berea Sandstone in particular can have an exceedingly fine grit or texture, making it superior for sharpening farm tools and grinding grain, a fact that did not go unnoticed in this agrarian society. One of the first immediate uses of it was for creating grindstones. A grindstone is a cut circular stone with a square hole in the center for turning. For centuries, grindstones were used to sharpen farm tools and to mill grain, and this practice was no different in Ohio. During the early 1800s, sandstone began its long-lasting influence: “Such excellent local stones as Berea sandstone,”¹² were used in the mills of early pioneers. Substantial quarrying of sandstone along the Ohio River started in 1814; the uses there were many, including material for “[waterway] locks, dams, and buildings in Cincinnati.”¹³

Utilizing northern Ohio sandstone on a larger scale began in 1828 when an industrious farmer named John Baldwin started to mine the sandstone on his land southwest of Cleveland and fashion it into grindstones which he sold “in the adjoining townships.”¹⁴ In doing so, he prompted one of northern Ohio's first forays into the

¹¹ J. S. Newberry, *Report of the Geological Survey of Ohio*, vol. 2, *Geology and Paleontology* (Columbus, Ohio: Nevins & Meyers, 1874), 217.

¹² *Ibid.*, 126.

¹³ Adams and Carlton, “Ohio's Sandstone Industry,” *Ohio Geology Newsletter*, Spring 1982, 1.

¹⁴ “Statement of John Baldwin, Presented by Dr. Henry Porter,” 3, (November 5, 1874), Baldwin Wallace Library Archives.

Industrial Revolution. Manufacturing grindstones produced initial success. Knepper writes, “For a time Ohio’s Berea sandstone was the source of over 80 percent of American grindstones; every farmer had one. Millstones were made of Berea sandstone also.”¹⁵ In addition, Baldwin sparked a “revolution in the construction industry,” that made Berea Sandstone a very desirable building material in the United States and other countries through the late nineteenth and early twentieth centuries.¹⁶ He contributed to the founding of the city of Berea and expanded the sandstone quarry industry in northern Ohio. It thrived for a century and led to thousands of jobs for workers young and old, local and foreign.

John Baldwin inadvertently took the first step toward turning northern Ohio into an industrial powerhouse. As DeBlasio and Pallante state, “The discovery and early use of [the area's] sandstone resources began in the 1840s. From their humble beginnings, the small and independent enterprises emerged as a world famous industrial center.”¹⁷ Massive pits in the earth dominated Berea’s city landscape. “Big Quarry,” nearest to downtown Berea, was at its peak of production around 1880.¹⁸ Quarrying in Berea continued on steadily until “decreasing demand for sandstone and the Great Depression closed the last of Berea’s quarries in the mid-1930s.”¹⁹

A mere twenty miles west of Berea, the city of Amherst also had its fortunes rise with the sandstone industry. Amherst and Berea were founded in 1811 and 1836

¹⁵ Knepper, *Ohio and Its People*, 281.

¹⁶ Mary K. Assad, *Baldwin Wallace College* (Charleston, SC: Arcadia Publishing, 2008), 8.

¹⁷ Donna M. DeBlasio and Martha I. Pallante, *Images of America: Amherst* (Charleston: Arcadia Publishing, 2010), 7.

¹⁸ Patricia M. Mote and Susan Lee, *Images of Modern America: Berea* (Charleston, SC: Arcadia Publishing, 2015), 62.

¹⁹ Ohio Historical Marker, “Berea Sandstone Quarries,” (1998), Ohio Bicentennial Commission, Coe Lake Park, Berea, OH.

respectively, but their areas had already been surveyed and settled by Americans before existing as fully-fledged cities. Both towns had their origins as small agricultural communities. The sandstone quarry industry completely changed the fates of the towns. Without the quarries, these towns would surely be a fraction of their size today, likely still lingering on as tiny farm villages. Local historians in 1916 even went so far as to suggest that Amherst was “not really founded” until the quarries started up, showing the importance of the industry.²⁰ Amherst was officially designated as the “Sandstone Center of the World” by the Ohio Bicentennial Commission in 2003 (the name was popularly used since the late 1800s), and Berea's colloquial nickname used by the city website is “The Grindstone City.” The presence of quarries in multiple cities (and on countless individual farms for smaller-scale use) indicates that the industry was a regional phenomenon. Like prospecting for a gold mine, money could be made by finding a site with sandstone hundreds of feet thick near the surface.

Amherst became a huge supplier of high quality sandstone, nationally and internationally, for about a century before employment in the industry dwindled in the mid-twentieth century, much like it did in Berea. Amherst’s quarries “first began to cut sandstone for grinding stones and building materials during the 1840s.”²¹ Several quarries commenced production in the antebellum years when thousands of tons of stone were cut and shipped off. They continued to thrive through the 1860s as Paschen states: “During the Civil War, Amherst’s quarries contributed mostly to the production of fine grindstones used to grind the grain that was the staple of the Union Army.”²² The Ohio

²⁰ Wright, *A Standard History of Lorain County, Ohio*, 531.

²¹ Stephen H. Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 33.

²² Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 41.

Historical Marker outside the Amherst Town Hall reads: “Beginning in 1847, Amherst developed and prospered around the sandstone industry and its associated quarries. This sandstone proved to be an important economic blessing to our early settlers and is the foundation of Amherst's existence. Amherst sandstone shows lines of stratification or bedding when exposed in sections. Its natural beauty is enhanced by a virtual spectrum of rich and unique colors including deep reds, browns, yellows, and shades of gray. Amherst sandstone is well known for its quality, durability, and rich texture and has been utilized across the United States and throughout the world. Amherst is literally and figuratively built upon a rock, which extends deep in the earth.”²³

These remarks about the variety of colorful types of sandstone mirror the fact that the people were as individually interesting as the rocks for which they delved deeply. Ohio’s social landscape changed dramatically after the 1840s, as scores of immigrants flooded the country looking for better opportunities and work. The names of Amherst and Berea were world famous for their quarries, and immigrants would come to the United States specifically looking for work in the fabled quarries of northern Ohio. Physical work such as quarrying was a popular choice for immigrants that could not speak English well and could not easily get non-physical work, or for those who were not established and needed immediate income upon settlement. The industry “brought hundreds of immigrants to work in the quarries from Germany, Poland, and England; many of their descendants remained and became business owners and professionals.”²⁴ There was also considerable migration from Scotland, Ireland, Hungary, Italy, and more than a dozen

²³ Ohio Historical Marker, “Sandstone Center of the World,” (2003), Ohio Bicentennial Commission, 206 South Main St., Amherst, OH.

²⁴ Patricia M. Mote and Susan Lee, *Images of Modern America: Berea* (Charleston: Arcadia Publishing, 2015), introduction.

other countries.²⁵ These workers found jobs in the quarries, joined American society, and made better lives for their children. The large influx of immigrants from southern and eastern Europe started in the late 1800s after the initial waves.

Quarrymen risked their lives in the difficult work; as Patricia Mote states, “Quarrying was treacherous work...Accidents were frequent and fatal.”²⁶ Injuries on the job were common for quarrymen, especially the inhalation of stone dust that sometimes proved deadly. Local history sheds light on the life of a typical immigrant worker: “John Chihay, a Polish immigrant, came to the United States in 1913... Upon arrival, he began working for the Cleveland Quarries Company and advanced to channel machine helper by the mid-1920s.”²⁷ Proving the dangerous nature of the work, his medical record indicates that in addition to suffering from silicosis (due to stone dust inhalation over the years), in 1915 his head was bruised, and in 1925 his toe was “smashed.”²⁸

The owners and other various executives and investors were able to handle these massive operations within the earth to extract thousands of tons of stone. While these individuals provided the necessary leadership, capital, investments, and major decisions for running quarries, the backbone of the industry was the unsung everyday worker, who made up the clear majority of the workforce. When the stone near the surface was depleted, workers delved deeper and deeper into the earth for its ancient treasure. In addition to general laborers, several positions were required or helpful in opening and operating a quarry such as horse or oxen wagon drivers, contractors, land surveyors,

²⁵ Marley, Wendy F. and Nicholas J. Zentos. *Ethnic Communities of Lorain County: A History and Directory*. N.J. Zentos, 2009.

²⁶ Patricia M. Mote, *Legendary Locals of Berea* (Charleston, SC: Arcadia Publishing, 2012), 48.

²⁷ DeBlasio and Pallante, *Images of America: Amherst*, 36.

²⁸ *Ibid.*

geologists, manual shovelers, machinists, hoisters, drillers, blacksmiths, carpenters, timber cutters, tool and water carriers, and foremen to oversee and direct the work. Later innovations required operators of derricks, steam shovels, channel cutters, and cranes. If the final product was intended to be sculpture or a building exterior, the finished and cut stone would be processed by yet another worker: a skilled artist to chisel statues (ranging in size greatly), relief images, engraved text, or specific shapes such as decorative columns.

Historian W.W. Williams visited what he called the “magnificent” sandstone quarries of Amherst, Elyria, and Brownhelm in the fall of 1877, while he and his colleagues were writing the voluminous *History of Lorain County, Ohio* that was published in 1879. Extensive local history is encapsulated in this illuminating text that describes part of northern Ohio at the height of the quarry industry. He writes, “I was hardly prepared to realize the vast magnitude of work going on here. The stone handled annually is simply enormous.”²⁹ The activity of the quarries could certainly be detected a fair distance away due to the constant screeching and clicking of the machinery and the sight of the towering cranes that perched around the edges of quarry cliffs. It was a busy place full of activity that must have been a spectacle for passersby in horse-drawn carriages and trains. On foot, peering over the edge down into the workplace, the quarry must have seemed like a miniature city; Williams referred to the area as “the sand-stone district.”³⁰ Of the foremen, Williams writes, “We found these foremen not only well informed, intelligent men, but some of them quite good geologists, who could talk about

²⁹ W. W. Williams, *History of Lorain County, Ohio* (Philadelphia: Williams Brothers, 1879), 26.

³⁰ Williams, *History of Lorain County, Ohio*, 26.

other rocks than Amherst sandstone.”³¹ The quarries in Amherst often reached extremely deeply into the earth, with some quarries reaching a depth of over 200 feet, deeper than Lake Erie.³² A single quarry in Amherst during a four-year period from 1870 to 1874 yielded nearly one million cubic feet of stone.³³ The quarries gradually made northern Ohio’s people accustomed to industry and ingrained the socio-economic aspects of an industrial identity rather than an agricultural one. Urbanization began in Ohio after the rise of the quarries with factories and workers “clustered in urban centers.”³⁴ The late nineteenth to early twentieth century modernization of education, healthcare, and city infrastructure were also signs that Ohio’s society was adapting to the presence of industry.³⁵

Northern Ohio was unique due to the sheer number of grindstones and building blocks that were mass-produced, the high quality of the sandstone, and the wide range of recipients of the stone around the world. The international demand for northern Ohio’s sandstone grindstones was so great that they were distributed as far away as Russia, South America, and Japan.³⁶ The state’s spirit of innovation and growth would later spell the decline of the sandstone quarries with the invention of the early concrete mixer truck by an Ohioan in 1916.³⁷ This met the need for road building in the sprawling cities and suburbs of America. By the 1930s, concrete mixer trucks were used all over the country.

³¹ Ibid.

³² Ibid., 60.

³³ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 68.

³⁴ Knepper, *Ohio and Its People*, 303.

³⁵ Ibid., 303-310.

³⁶ Adams and Carlton, “Ohio’s Sandstone Industry,” *Ohio Geology Newsletter*, Spring 1982, 2.

³⁷ Ohio resident Stephen Stepanian developed prototype plans for a concrete mixer truck in 1916, “Who Invented the Portable Mixer Anyway?” The Aberdeen Group, 2000, accessed October 13, 2016, <http://www.pdqcampbell.com/samples/J00C031.pdf>.

Zachary Carpenter, current president of the Cleveland Quarries Company, stated, “Our industry has been most affected by concrete products...What was once built with stone is now often built with concrete.”³⁸ Despite this competition, the Company still operates one sandstone quarry in 2016 on over 100 acres in Birmingham with an annual output of 18,000 tons for use in “commercial, industrial and residential applications.”³⁹ Other sandstone quarries still function in the region such as the Kipton Quarry. The use of grindstones to sharpen tools mainly ended in the twentieth century as well, due to chemicals and abrasives replacing them.⁴⁰ By the time of the quarries’ decline, however, northern Ohio was already fully industrial; the change had already been brought on in part by the quarries.

What remains of almost all the former quarry sites in northern Ohio today are eerily still lakes. When operations ceased, most quarry sites were simply abandoned for a variety of reasons. Nature slowly reclaimed them with rainwater, a process that started even while excavation work was still being done. Anna Nokes, a Baldwin University student, wrote in 1895: “Gradually the water came, first a little pool, then it rose higher and higher, until at last the workmen gathered up their tools and left the water to fill to the brim this basin they had made in the earth, until that place formerly so full of busy sounds was nothing but a quiet, blue body of water, glimmering in the sunlight.”⁴¹

³⁸ Zachary Carpenter, email message to Christian York Ellis, August 24, 2016.

³⁹ Ibid.

⁴⁰ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 64.

⁴¹ Ohio Historical Marker, “The Big Quarry,” (1998), Ohio Bicentennial Commission, Coe Lake Park, Berea, OH.

What made northern Ohio a prime area for industry, in our case, the sandstone quarry industry? Knepper offers eight categorical reasons that “combined to spur Ohio’s development from an agriculturally dominant society to an industrially dominant society.”⁴² These eight attributes are location, natural resources, capital, energy, transportation, labor, technological innovation, and entrepreneurship; Ohio excelled in every category. Using Knepper’s eight categories, the nuances involved in this question become clearer.

The location was perfect. Proximity to the lake, plenty of nearby forests for timber, and an abundance of north-running rivers with port cities combined with nationwide railroad connections allowed industry and population to grow quickly. Cleveland enjoyed an average growth rate of 47% every decade for 60 years from 1870 to 1930.⁴³ Ohio is also close to the populated east coast, which contributed greatly to the relative ease and scale of westerly migrations.

The natural resource was there. Immense deposits of quality sandstone very near the lakeshore could be quickly quarried and shipped off. Thousands of huge slabs of sandstone were dug up, cut or ground into the desired form or size, loaded onto trains or ships, and sent to wherever the buyer wanted them, often in bulk. Knepper states, “Ohio was blessed with a variety of essential resources that settlers had used in the primitive industrial processes of the early nineteenth century. The new manufacturers quickly took advantage of the abundance of easily and cheaply accessible materials.”⁴⁴

⁴² For a complete, in-depth analysis of these eight points, see Knepper, *Ohio and Its People*, 278-301.

⁴³ Barney Warf and Brian Holly, “The Rise and Fall and Rise of Cleveland” *Annals, AAPSS* 551, (May 1997): 210.

⁴⁴ Knepper, *Ohio and Its People*, 279.

In terms of capital, Williams' estimate for the yearly total revenue of the region's sandstone quarry industry in 1879 was \$500,000, or in 2016 dollars, over \$11 million a year, with the business increasing annually at the time.⁴⁵ After the initial investment of capital, when the quarries were dug and the stone began to be sold, the competing stone companies in the area made more capital as profit. The realization that sandstone could be used for "more commercial purposes" than for farmers' personal grindstones set off an explosion of commerce.⁴⁶

Before more advanced machines were invented and applied, energy for extracting and finishing the sandstone first came from hand chisels. Draft animals initially provided the energy needed for hauling the stone until the advent of steam power, coal, and diesel engines. As for transportation, Williams states, "The quarrying business is here most eminently practicable and the stone land being near the lake, the question of transportation was ready solved, as soon as the work of taking out the treasure was commenced. The close proximity of the [railroads] offers another great advantage to those whose business it is to delve for a nation's building material."

By the 1830s, man-made transportation shortcuts such as the Erie Canal and the Welland Canal allowed ships carrying Ohio goods to bypass Niagara Falls and reach the Atlantic Ocean. Ohioans entered the worldwide export trade. However, canals paled in comparison to their successors: efficient trains that crisscrossed the state with 299 miles of railroad in 1850 and nearly 3,000 only a decade later in 1860.⁴⁷ Ohio had more railroad tracks than any other state.⁴⁸ People and materials could be moved quickly in any

⁴⁵ Williams, *History of Lorain County, Ohio*, 27.

⁴⁶ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 34.

⁴⁷ Knepper, *Ohio and Its People*, 154.

⁴⁸ Knepper, *Ohio and Its People*, 154.

direction to and from Ohio. Ohio's railroad infrastructure allowed for unprecedented industrial development and population booms. As recorded in the 1860 U.S. census, with 2.3 million people, Ohio was the third most populous state in the country behind Pennsylvania and New York, with both of these states connected to Ohio through numerous railroads and canals. Therefore, Ohio was linked with the largest population centers of the United States.

Originally, local workers generally provided the labor for northern Ohio's quarries. However, Knepper notes that, amid the development, a shortage of local skilled labor was a hindrance to early industries. As enterprises expanded rapidly, two new sources emerged to meet Ohio's labor demands: young people leaving rural areas to work in cities, and immigrants looking for opportunity. By the late 1800s and the turn of the century, immigrants from abroad began to work industrial jobs in great numbers (they would accept lower wages than more established Americans).⁴⁹ In fact, immigrants and their first generation descendants were the "overwhelming majority of workers in the emerging manufacturing sector in early 20th century America."⁵⁰

Technological innovation in the form of inventions such as dynamite in 1867, the steam powered drill in the 1880s, and the channel cutter in 1882, made the work safer and easier.⁵¹ Local quarry owners conducted scientific experiments to try to invent new machines. One such owner was Baxter Clough, who was "always making experiments with machinery to cheapen the manufacture of stone, the majority of which proved

⁴⁹ Ibid., 291.

⁵⁰ For a useful account on data and statistics, see, Charles Hirschman and Elizabeth Mogford, "Immigration and the American Industrial Revolution From 1880 to 1920" *Soc Sci Res.* 38 (December 2009): 2.

⁵¹ Hand tools were used at first in the quarries before gunpowder and later dynamite were used to blast away soil and to crack the sandstone for easier processing. For details, see, Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 54-58.

successful; other quarry owners waiting the results, thus reaping the benefit of his experience.”⁵² According to Williams, northern Ohio had no shortage of ambitious entrepreneurs: “Most of the growth of the stone industry of Amherst and the adjacent country has been the result of the business, energy and tact of the present proprietors of the quarries.”⁵³

Sandstone quarries supported the contemporary industries of agricultural crop processing, timber logging, building construction, shipbuilding, blacksmithing, machine manufacturing, steelmaking, overseas transport, and railroads. They were overwhelming contributors to the regional effort for economic dominance and brought considerable wealth to the area. Sandstone was called the most important mineral resource in Lorain County at the height of the industry.⁵⁴ In addition to these physical and economic effects, the industry also had tremendous social consequences that resulted in a societal identity change. Due to the monolithic impact of the quarries, the region of northern Ohio has traditionally had a deeply rooted manufacturing identity. The passage from agriculture to industry was the defining aspect of 1800s America. It was experienced firsthand in northern Ohio with one of the first catalysts being sandstone.

The presence of the quarries initially placed direct demand on the nearby timber industry that provided logs for raising and dragging stone blocks and even for makeshift train tracks.⁵⁵ Timber was also needed to build housing for the workers, stone processing buildings, ladders, derricks, cranes, containers, tools, and in the shipbuilding industry

⁵² For more information on Baxter Clough, “He always used his personal influence to help [his employees] to be industrious, steady and frugal, to save their wages and secure homes, which a large number have done.” Williams, *History of Lorain County, Ohio*, 342.

⁵³ *Ibid.*, 337.

⁵⁴ Newberry, *Report of the Geological Survey of Ohio*, vol. 2, *Geology and Paleontology*, 216.

⁵⁵ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 62.

(including wooden docks) to eventually distribute the stone worldwide. According to Paschen, docks were built “for the purpose of transporting the sandstone to various lake ports.”⁵⁶

The sandstone quarry industry also furthered infrastructural development. Quarry owners purchased and constructed trains and tracks specifically for hauling sandstone blocks out to mills and taking them to shipyards to be sent to rapidly developing cities. An important example was Chicago. It was desperately in need of new buildings and was eager to buy durable sandstone after the destructive fire of 1871. The same year, Lorain County quarry owner John Worthington built a railroad from Brownhelm Station near his quarry directly to Lake Erie for fast shipping. This became common, as competing quarry owners quickly connected their sites to larger rail lines; for example, in 1873 the main line of the Lake Shore and Michigan Southern Railroad was connected via a railroad siding to the massive Gray Canyon Quarry in Amherst (it later became the largest single sandstone quarry in the world).⁵⁷ This railroad siding was later sold to a timber company, further enriching the logging industry.⁵⁸ Baxter Clough, owner of Gray Canyon Quarry, “built a dock for shipping, constructed a steam railroad, and improved machinery to reduce the cost of manufacturing cut stone.”⁵⁹ John Baldwin in Berea similarly constructed railroads for his quarries. Sandstone itself was also used to build sturdy railroad bridges.⁶⁰ Eventually, trains were used to take the stone directly to other cities because the Lake Shore Railroad “made its rates so low that it was cheaper to ship by rail

⁵⁶ Ibid., 54.

⁵⁷ Ibid., 67.

⁵⁸ Wright, *A Standard History of Lorain County, Ohio*, 535.

⁵⁹ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 68.

⁶⁰ Wright, *A Standard History of Lorain County, Ohio*, 533.

than by water.”⁶¹ An additional use for northern Ohio sandstone included “paving highways and installing sidewalks and curbing,” again linking the industry with the growth of infrastructure.⁶²

After the initial demand for grindstones, Ohio sandstone also became popular as a building material. The sandstone quarries have a strong connection with the construction industry. Countless buildings, public and private, including houses, were built from the foundation up or partially trimmed with the sturdy rock. Carpenter states, “The quarries were significant because the stone quarried was for a long time the building blocks of young America’s infrastructure. Hundreds of courthouses, banks, residences and high rises are constructed from Berea sandstone because of its strength and durability.”⁶³ Structures using Ohio sandstone were built in downtown Amherst, Berea, Lorain, Cleveland, Chicago, New York City, Buffalo, Philadelphia, Washington D.C., and countless other locations, including South America.⁶⁴ The Ohio Statehouse in Columbus and the Canadian Parliament buildings in Ottawa were also constructed using Ohio sandstone. Local sandstone was used in the construction of several buildings on the campuses of Baldwin Wallace University and Oberlin College.

In addition to structures, numerous statues and monuments were built from the durable stone. The Hope Memorial Bridge on the west side of Cleveland features iconic statues holding various vehicles to exemplify the evolution of transportation through the ages; these were carved from 43-foot-tall blocks of Amherst sandstone.⁶⁶ Geologists

⁶¹ Ibid., 535.

⁶² Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 65.

⁶³ Zachary Carpenter, email message to Christian York Ellis, August 24, 2016.

⁶⁴ Williams, *History of Lorain County, Ohio*, 336. For a fuller list of structures built with northern Ohio sandstone, see, “Restoration,” Cleveland Quarries, accessed June 16, 2016, <http://www.clevelandquarries.com/restoration>.

⁶⁶ DeBlasio and Pallante, *Images of America: Amherst*, 81.

during the peak of the industry wrote that northern Ohio's sandstone was "everywhere highly appreciated for its beauty, durability, and the ease and certainty with which it is worked."⁶⁷ Locally, sandstone quarry workers were allowed to take unused scrap stone home to use for building house foundations and sidewalks that are still visible today.⁶⁸ Sandstone was indeed a community builder in northern Ohio, socially and physically.

The quarries also directly impacted other key northern Ohio industries. Knepper informs that sandstone "provides building stone and high-grade silicas for specialized use in the glass, foundry, and abrasives industries."⁶⁹ This claim is reinforced by Carpenter's statement: "Besides what the quarrying industry did for the building trades, at one point the quarry also produced firebrick which was used in the steel industries' kilns. This was a major source of income for the quarry at one time. Of course, the quarry also produced grindstones, which is really how Cleveland Quarries got its start. This played a major role in many industries."⁷⁰ Sandstone quarrying laid the framework for later industries, such as the famous steel and automobile enterprises, possibly worked by the same quarrymen or their descendants. Near Amherst and Berea are the port cities of Lorain and Cleveland. Both cities are known for the powerful steel mill industry that propelled the region through the twentieth century. The sandstone quarries also supported steelmaking in the area. Paschen writes, "Perhaps the least visible use of sandstone, to the general public at least, is in steel mills. Sandstone's unique properties- chemically inert, durable, and heat resistant up to 3,200 degrees- made it ideal for use in the mills as furnace lining, in acid tanks, soaking pit linings, in Bessemer converters, on ladles, cupolas, in hearth

⁶⁷ Newberry, *Report of the Geological Survey of Ohio*, vol. 2, *Geology and Paleontology*, 216.

⁶⁸ Mote and Lee, *Images of Modern America: Berea*, 28.

⁶⁹ Knepper, *Ohio and Its People*, 281.

⁷⁰ Zachary Carpenter, email message to Christian York Ellis, August 24, 2016.

bottoms, and in mixers. Such versatility made sandstone an excellent building, paving, sharpening, [and] lining item that could withstand heat, cold, and chemicals without much damage.”⁷¹ As late as 1982, the iron and steel industries used “Ohio sandstone as a source of molding sand, refractory brick, and raw material for ferrosilicon.”⁷² In 2016, the northern Ohio sandstone quarry industry interacted with the petroleum business as well. Carpenter writes, “We produce cores from a special type of our stone that is used to test oil wells.”⁷³

There still remains enough of a demand for the area’s sandstone that the industry can survive and even grow. A resurgence of the industry as an alternative building material for cities might occur in the future. The rapid growth of cities in the world put huge strains on the supply of sand for making concrete. The total disappearance of two dozen islands in Indonesia since 2005 due to the overzealous mining of sand demonstrates this shortage.⁷⁴ Geologists in 1874 speculated that the sandstone deposits were “inexhaustible,” and anticipated that the stone “is destined to be far more largely drawn upon in future years than it has been.”⁷⁵ Could sandstone once again become northern Ohio’s next great worldwide material export? As Carpenter explains, “The quarries produce a product that still represents a quality natural resource that can’t be matched by modern replications. Additionally, Berea Sandstone is part of this country’s history and is a testament to quality craftsmanship and building methods.”⁷⁶

⁷¹ Paschen, *Quarry Town: The History of Amherst, Ohio 1811-1900*, 65.

⁷² Adams and Carlton, “Ohio’s Sandstone Industry,” *Ohio Geology Newsletter*, Spring 1982, 3.

⁷³ Zachary Carpenter, email message to Christian York Ellis, August 24, 2016.

⁷⁴ Vince Beiser, *New York Times*, June 23, 2016, <http://www.nytimes.com/2016/06/23/opinion/the-worlds-disappearing-sand.html>.

⁷⁵ Newberry, *Report of the Geological Survey of Ohio*, vol. 2, *Geology and Paleontology*, 216.

⁷⁶ Zachary Carpenter, email message to Christian York Ellis, August 24, 2016.

The social effects of quarries on northern Ohio were many and included bringing thousands of industrial workers to the area, developing two farming communities into urban centers famous for industry, the founding of universities and churches, boosting the area's population, and commencing a societal shift that acclimated agrarian people to industrial work. Industry in the late 1800s could not exist without a large workforce, and the quarries brought that workforce to northern Ohio. A driving force and early causal link for many future industries in northern Ohio, the quarrying business served as a social magnet for thousands of workers who settled in the area. In 1830, Amherst's population was 552, rising to 2,482 by 1870.⁷⁷ Similarly, Berea's population exploded from less than 100 individuals in 1827 to 1,628 in 1870.⁷⁸

Between 1860 and 1890, Ohio workers' "wages increased faster than the cost of living."⁷⁹ With the economic strength and the large population needed to harness this new prosperity, Ohio became arguably the most important state in the country during this era. Political power manifested in the form of seven presidents from Ohio and a reputation for being a swing state in national elections. In 2016 Ohio ranked in as the seventh most populous state with 11.6 million people. It continues to experience substantial manufacturing output (nearly \$100 billion in 2013) despite decreases of industrial labor forces in recent decades.⁸⁰

⁷⁷ The Cleveland Historical Team, "Amherst's Quarries," Cleveland Historical, accessed October 18, 2016, http://clevelandhistorical.org/items/show/258#.V_LCeSMrLSz.

⁷⁸ "Statement of John Baldwin, Presented by Dr. Henry Porter," 1, (November 5, 1874), Baldwin Wallace Library Archives.

⁷⁹ *Ibid.*, 291.

⁸⁰ "Ohio Manufacturing Facts," National Association of Manufacturers, last modified February 2015, accessed November 2, 2016, <http://www.nam.org/Data-and-Reports/State-Manufacturing-Data/2014-State-Manufacturing-Data/Manufacturing-Facts--Ohio/>.

The founding of Baldwin Institute in 1836 was possible only through the use of capital gained through the burgeoning quarrying industry. Baldwin would invest some of his profits into that establishment which would develop into what is now Baldwin Wallace University. The prosperity brought by that industry directly created educational institutions in Berea, further expanding its population and renown. A plaque on the campus offers a summation: “The Berea quarries formed the foundation for a local economy that sustained this community and provided the resources that gave rise to Baldwin Wallace University.”⁸¹ German Wallace College in Berea was established in 1864 mainly for the large number of German-speaking quarry workers and their families.⁸² In addition to the living proof of northern Ohio residents today who are descended from immigrant quarry workers, substantial evidence can be found that suggests the immigrants and their descendants stayed in the area, exemplified by Berea’s Polish Village neighborhood (with noticeable sandstone home foundations and sidewalks) and Amherst’s annual German Festival (held in the “Sandstone Village” public history venue).

The sandstone quarries led northern Ohio out of age-old agricultural routine and into a world where industry yielded previously unimagined wealth. This paradigm shift is embodied in the life of Curtis Bailey: “Curtis Bailey’s early life was confined to agricultural pursuits, which he followed until he attained his twenty-fifth year. In the spring of 1855 he removed, with his family, to Amherst Township, and entered the employ of Baxter Clough, to work in his stone quarries. At the end of the first year he

⁸¹ Memorial Plaque, Durst Welcome Center, 115 Tressel St., Baldwin Wallace University, Berea, OH.

⁸² Assad, *Baldwin Wallace College*, 8.

became foreman, and has continued in his and the employ of the Clough Stone Company, as superintendent of their stone quarries, ever since...”⁸³

The archetypal frame for how an industrial operation should function was laid down first by the sandstone quarry enterprises, and this example was followed by every other successful industry to follow in the region. People in 1830s Amherst and Berea, for example, were not familiar with mechanized modern industry. By the Civil War, industry was second nature to thousands in northern Ohio due to the quarries.

With a huge workforce experienced in industrial labor, Ohio produced huge quantities of material for both world wars. The state continued to have extreme economic success until the 1970s. To explain northern Ohio’s rise to prominence, the story of the sandstone quarries must be examined. Without the infrastructure and industrial tradition that was created to ship out the sandstone, later industries would have faced more difficulty starting up. The broader significance of the quarries is that they marked the very beginnings of heavy industry in northern Ohio, a region that would eventually be known as a manufacturing colossus. Economic and physical effects of the sandstone industry included rapid expansion of transportation infrastructure and educational establishments, direct and indirect demand increases on the supplies of other enterprises, mass exportation of material goods including grindstones (which were used in various other industries), a lockstep relationship with the construction industry, and an influx of considerable wealth and local investment.

The sandstone quarry industry in northern Ohio has a place in the national history of the United States. The industrial revolution brought on by the quarries led to later

⁸³ Williams, *History of Lorain County, Ohio*, 343.

industries and growth that took the United States into the twentieth century. This made Ohio history become national history. The quarries represent the first major step Ohio took to become an industrial state. This is a historically pertinent matter because the Union was certainly aided in the Civil War by its industrial advantage over the Confederacy. The early years of the quarry industry show that northerners chose to industrialize well before the war. Sandstone, sleeping dormant through the ages of the earth, awoke to serve a great purpose: contributing to northern Ohio's status as an industrial giant.

Another story has unfolded since the closing of many quarries. The natural formation of lakes at the formerly bustling sites prompted communities to take advantage of the situation. For example, in Berea, the site of the former "Big Quarry" is now known as Coe Lake, a park dotted with splendid fountains, a forest path, and a gazebo overlooking the water. Without the quarries these lakes would not exist. The former quarry sites continue to benefit all who visit them. Nature continues to give in a new way where it already provided so abundantly.

Appendix

The author's email interview with Zachary Carpenter (current President of the Cleveland Quarries Company), August 24, 2016.

Christian Ellis: What does the company do in the present day?

Zachary Carpenter: "Cleveland Quarries and fabricates Berea sandstone for commercial, industrial and residential applications. We sell stone across the country for a variety of

projects including new construction and restoration.”

Ellis: How many quarries are operated and where?

Carpenter: “We presently operate 1 quarry that sits on over 100 acres on Birmingham Ohio.”

Ellis: How much stone in terms of tons are quarried nowadays?

Carpenter: “We quarry upwards of 250,000 cubic feet per year, or 18,000 ton.”

Ellis: Is sandstone the only type of stone that is quarried?

Carpenter: “Yes, only Berea sandstone in buff and gray colors. We do however fabricate other materials when requested to by our customers.”

Ellis: What is the future outlook for the company?

Carpenter: “We are currently expanding our quarry and our fabrication capabilities. We continue to take on more complex jobs that require the newest cnc technology and old world hand crafting skills.”

Ellis: Do you think the history of sandstone quarries in the 1800s has been overshadowed by other industries such as steel and automobile making?

Carpenter: “Most certainly. Our industry has been most affected by concrete products however. What was once built with stone is now often built with concrete. This spans

from simple things like concrete pavers all the way to complex architectural accents that are often now done in pre cast concrete due to cost.”

Ellis: Do you think the importance of the quarries in empowering the region and bringing in thousands of immigrant workers is an underrepresented fact?

Carpenter: “I am not sure. The quarries certainly employed a great many people in this region at one point but I cannot speak to what the effect that had on the local economy.”

Ellis: How have other industries in northern Ohio interacted with the quarrying industry in the past?

Carpenter: “Beside what the quarrying industry did for the building trades, at one point the quarry also produced firebrick which was used in the steel industries kilns. This was a major source of income for the quarry at one time. Of course, the quarry also produced grindstones which is really how Cleveland quarries got its start. This played a major role in many industries.”

Ellis: How do the other industries interact with the quarrying industry today?

Carpenter: “Primarily the quarry deals the building market. Really other industries affect the quarries more so than the opposite. Much like any construction, when business is good in the general economy our business tends to follow suit.

The quarries do interact with the petroleum industry as well. We produce cores from a special type of our stone that is used to test oil wells.”

Ellis: Why were the quarries significant in the past?

Carpenter: “The quarries were significant because the stone quarried was for a long time the building blocks of young America’s infrastructure. Hundreds of courthouses, banks, residences and high rises are constructed from Berea sandstone because of its strength and durability. Of course the quarries also provided employment, and provided grindstones to soldiers during the war.”

Ellis: Why are they still significant or important today?

Carpenter: “The quarries produce a product that still represents a quality natural resource that can’t be matched by modern replications. Additionally Berea sandstone is part of this country’s history and is a testament to quality craftsmanship and building methods.”

Ellis: Are there any plans to develop the quarries in Amherst and/or South Amherst into parks such as what has been done with a large quarry in Berea now known as Coe Lake?

Carpenter: “The quarries in Amherst will likely be developed into a residential community in the near future.”

About the author

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