



Historic American Engineering Record image by Arthur A. Haskell of Yale-Duryea waterwheel at the foot of Yale Hill, Stockbridge. (1934)

This sample chapter from *18th & 19th Century Waterpowered Industry in the Upper Housatonic River Valley* by Bernard A. Drew accompanies a SIA grant application.

STOCKBRIDGE

“Stockbridge never took to large-scale industry,” according to a writer in *The Berkshire Hills* (1939). “Only in the century from 1750 to 1850 were woolens, chairs and papers produced in limited quantities, and hats and hand-wrought nails in sizable lots. Though foundries and machine shops also operated during a part of the century, no organized manufacturing or heavy industry exists in Stockbridge today.”

A manufacturing neighborhood near Stockbridge village center is all but invisible today. Interlaken (Curtisville) and Glendale still have remnants of company housing as testimony to their earlier industries.

Stockbridge industry thrived by 1838, when the *Pittsfield Sun* published these statistics:¹

Cotton Mill 1: cotton spindles 3700; cotton consumed 122,591 lbs.; cotton goods manufactured 507,500 yards; value of same \$57,000; males employed 38, females 32; capital invested 80,000 dollars.

Woollen Mills 2: woollen machinery 8 sets; wool consumed 212,587 lbs.; cloth manufactured 185,000 yds; value of same 217,500 dols.; males employed 66, females 67; capital invested 100,000 dols.; sperm oil used 4000 gallons.

Sheep of all kinds 2700; wool produced 8298 lbs; average weight of fleece 3 pbs.; value of wool \$4987.80; capital invested 68,532 dols.

Boots manufactured 750 pairs; Shoes 2200 pairs; value of boots and shoes 6135 dollars; males employed 11, females 4.

Tanneries 2: hides tanned 1315; value of leather tanned and curried 6000 dols.; hands employed 7; capital invested 5055 dollars.

Furnace for manufacture of Pig Iron 1: pig iron made 1337 tons; value of same \$53,400; hands employed 98; capital invested \$75,000.

Air and Cupola Furnace 1: Iron castings made 75 tons; value of same 7750 dols.; hands employed 4; capital invested 1500 dollars.

Chair Manufactory 1: value of chairs 17,000

dols.; males employed 28, females 22.

Value of turning and boring of Iron and Wood 15000 dols.; hands employed 10; capital invested 2000 dollars.

VILLAGE CENTER

The earliest reference to a grist mill in Stockbridge proprietors' records is from 1745 in a vote having to do with a highway layout: “Road laid out from said square to Grist mill and continues to be 8 rods wide a few rods east of John Konkapot’s barn....”²

Proprietors at a meeting 18 April 1873 “Voted that Mr. Joseph Woodbridge have Liberty to set a Sawmill and gristmill on the River at the end of the Little mountain lying at the West end of the Lot belonging to the heirs of Mr. Edwards. The said mills to be set at or near where there is a large rock about the middle of the River....”³

A Town Plan Showing Colonial Highways in Stockbridge From the Town Books, circa 1770s, shows a grist mill at the outlet of “Great Pond” (Stockbridge Bowl) and Dresser Mills at “Mill Hollow” (Glendale) as well as the above-mentioned mill near Woodbridge’s at the east end of Main Street.⁴

The Rev. David D. Field in his 1829 Stockbridge history, observed, “The Housatonic enters the town from Lee, along the northern base of the Beartown mountains, and takes first a western, then a northern, then again a western, and then a southern direction, passing around Monument Mountain into Great Barrington... This receives Konkapot brook, a sluggish stream, from the south, and Barnum’s brook, Great-pond brook, and Mohawk brook, from the north.

“Barnum’s brook flows from a pond and marsh [Kampoosa fen] to the south of rattlesnake mountain. On this a small corn mill was built soon after the town was settled. It now supplies a tobacco factory, an oil-mill and saw-mill.”⁵

2 Stockbridge records, Page 397.

3 Stockbridge records, Page 408.

4 Stockbridge records, Page 420.

5 *A History of Berkshire County, Massachusetts*, 267.

1 “Statistics of Berkshire County,” 22 March 1838, 2.

“The corn mill just mentioned, being insufficient for the inhabitants, another was soon erected on the Housatonic,” Field went on, “back from the dwelling-house of Mr. Flavius Pease. Though this mill-site has long been unoccupied, it is said that the water might be taken out there in a canal, and conveyed along the southern side of the village, and machinery established to a great extent.”

Samuel Clark & Co. of Stockbridge in 1804 advertised: “Wool Carding & Picking Machine Is ready for business at Clark’s Mill. For picking, oiling and carding 12 ½ cents— for carding 10 cents — Those who will favor us with their custom may depend on having their word done in the best manner.”⁶

A decade later, John Hayward exaggerated slightly in his *New England Gazetteer* in saying Stockbridge has “excellent hydraulic power,” but indicated, “There are one cotton and two woolen mills in the town, two tanneries, and manufactures of pig iron, iron castings, chairs, boots, shoes, and machinery for boring iron and wood: total amount of the manufactures, for the year ending April 1, 1837, \$380,765. Marble is abundant.”⁷

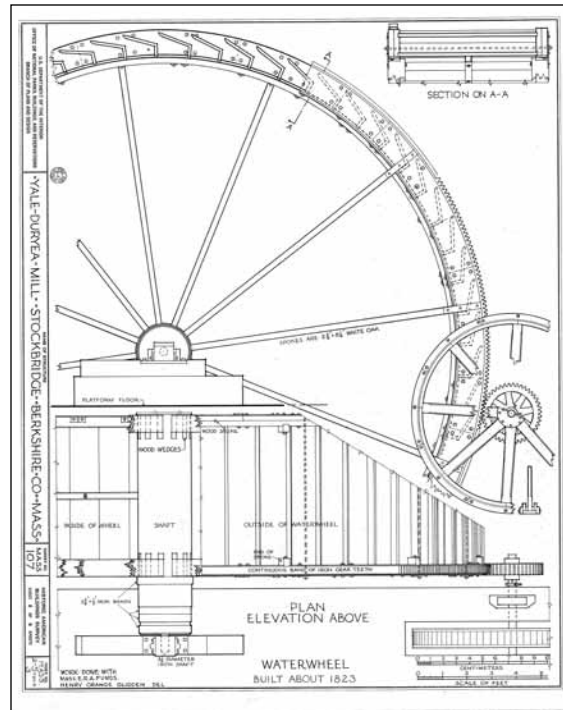
Another historian, E.W.B. Canning, writing in 1885, said, “The pioneer manufacturing establishment in town was a grist mill on the site of Mr. Comstock’s present works [northeast corner of Route 102 and Yale Hill Road]. This was built before 1745, and its ability to supply the growing wants of the inhabitants was supplemented, in 1762, by another, for the erection of which the Indian proprietors gave a site to Joseph Woodbridge, brother of the teacher. It stood alongside a ripple in the Housatonic in the rear of the premises of Mr. S.P. Lincoln. The remains of the old dam are still visible.”⁸

Comstock in 1885 had a saw, feed and planing mill on Marsh Brook (also once known as Sepal-losa Brook, sometimes called Sawmill Brook or Mill Brook) and employed four men. His was an overshot waterwheel. Conditions could be dangerous at village industries, even at a cider press. “Joseph Caffrey, aged 13 years, son of James Caffrey, while at work in S.W. Comstock’s cider mill, Saturday, accidentally slipped one foot into the grinder and had it so badly broken and lacerated that amputation will be necessary,” the

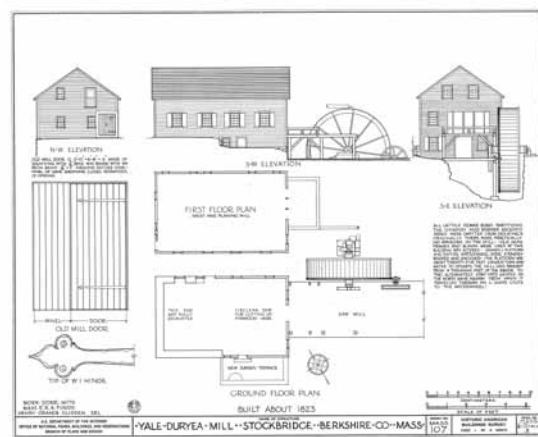
6 *Western Star*, 9 June 1804, 4.

7 *New England Gazetteer*, “Stockbridge, Mass.” section, unpaginated.

8 Beers *History of Berkshire County*, 595.



Historic American Engineering Record drawings of Yale-Duryea waterwheel.



Pittsfield Sun reported in 1870.

A.S. Yale & Son ran a combined grist and sawmill at a second site on Kamposa Brook (as Mil Brook was also called) just upstream from the first. This undershot wheel is believed to date from 1810.

The Comstock and Yale endeavors could stack on Mill Brook because of its elevation and water drop.

“On Mill Brook the Messrs Yale and Mr. S.W.

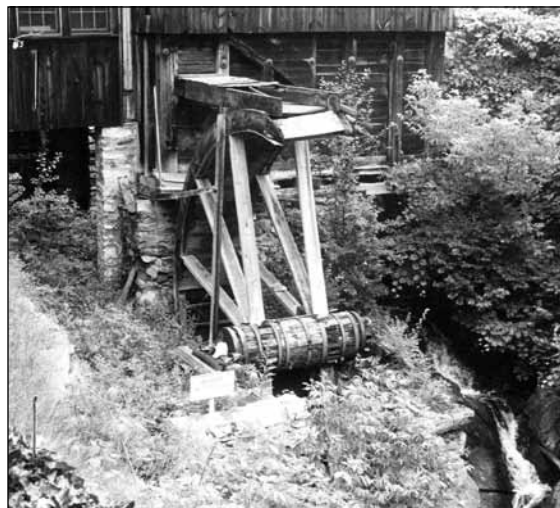


Historic American Engineering Record image, left, shows the upper Yale Hill waterwheel, 1934. Above, the sagging wheel as it looked in 2013.



Massachusetts Historical Commission inventoried the property as the Yale Sawmill, view from south, above, and from the road. (1973)





The waterwheel at the Comstock Mill. (Lee Library, left, and Massachusetts Historical Commission, above)

Comstock are large dealers in lumber of all kinds,” Canning said, “of their own manufacture and of western importation.”

Sanford W. Comstock in 1885 was proprietor of a feed mill and planing mill, Alden S. was a miller and Egbert Yale was a sawyer. Lawrence M. Yale ran a machine and general repair shop and also did wood turning.⁹

A Massachusetts Historical Commission inventory of this neighborhood, which a 1736 Plan of Indiantown suggests may have been the original route from East Main Street to the Kamposa plateau, says: “The village portion of Yale Hill is a collection of houses and industrial buildings dating from the late 18th century to the early 20th century. Two of five former mills survive in this neighborhood: The clapboarded Yale Mill... [ca 1810, 22 Yale Hill Road] is the higher, near a bridge over the stream; the Comstock Mill... [8 Yale Hill Road], with vertical

board siding and cupola, is set back from the road at a lower elevation. Both gabled, two storied buildings are without ornamentation; both have surviving mill wheels. The twenty-four foot overshot wheel of the upper, Yale mill is intact, while only a portion of the undershot wheel at the lower Comstock mill survives. The Yale Mill, made into a house in 1920 by Nina Duryea, parallels the stream in a gorge where water falls steeply between rock banks. The Comstock Mill is perpendicular to the stream, cantilevered on stone piers above the fall of water and wheel; this has also been remodeled for occasional residential use. Other industrial buildings are the Yale Machine Shop, a one story gabled building with beveled horizontal board siding in the yard beyond 16 Yale Hill Road, and a gabled outbuilding that may have been the T.H. Lincoln wagon shop, adjacent to the Phineas Pease House (2 Yale Hill Road)...”¹⁰

Historical American Building Survey records from 1933 indicate the Yale mill at one time had both up-and-down and circular saws, as well as grist stones. Raymond Lynch of Lenox gave an old saw that came from the mill to the Stockbridge Library History Room in 1958.¹¹ Nina Larray Duryea of New

⁹ Hamilton Child, *Gazetteer of Berkshire County, Mass. 1725-1885*.

¹⁰ Yale Hill 1996 inventory form, Massachusetts Historical Commission.

¹¹ “Stockbridge Library Gets Scrapbooks of Playhouse,” *Springfield Union*, 21 September 1958.

York in 1920¹² purchased the mill from Lawrence M. Yale and converted it into a residence.¹³ Broadway actress Eleanor Wilson later purchased the property for a summer home.¹⁴

The Massachusetts Historical Commission Yale Hill inventory says additionally, “In the mid-19th century sawmills stood on both sides of the bridge. The tannery was run by James O. Root until it closed in 1848. Levi Goodrich appears to have operated the lower mill in the 1850s (and possibly built the house at 12 Yale Hill road), followed by Sanford W. Comstock house (8 Yale Hill Road), who was a partner in a lumber business with the Yales by the 1870s. The lumberyard prospered during the period of summer house construction in the late 19th century... By 1885 Lawrence Yale operated a machine and wood shop (16 Tale Hill Road), where sash, doors and plugs for the Callender paper mill were made, and where other machine job work was done... The Comstock Mill (8 Yale Hill Road)¹⁵ stands on the site of the first Stockbridge grist mill, built by Ephraim Williams before 1745 in the early years of the mission town. Because the flow of water was undependable, another grist mill was built on the Housatonic River; the site, given by the Mohicans to Joseph Woodbridge in 1762, is believed to be behind the Flavius Pease House (83 East Main St.). About 1900 an old dam, long way, and wheel pit were still visible there.”

LAKE MAHKEENAC IMPOUNDMENT

Lake Mahkeenac, or Stockbridge Bowl, has a 340-foot earthen dam. And it has two fascinating stories.

Story one: Native Mohicans may have been the first to dam the waters. “The south end of this lake, which is a mile long in the town of Stockbridge,” according to a *New York Times* report in 1926, “is believed to be over a coal mine. According to a legend that has been handed down for two centuries, the Indians discovered coal and worked the mine. When

they were driven out of the country, before 1800, they built a dam on what is now the Forbes estate, raised the lake and flooded the mine so that the white men could not work it.”¹⁶

A second mention is found in the same newspaper in 1946: “Somewhere in the vicinity of Stockbridge bowl is a long lost coal mine once worked by the Stockbridge Indians. According to tradition, before the Stockbridge tribe left in 1820 for Green Bay, Wis., the shaft was sealed by order of Chief Konkapot so paleface never would have use of the fuel.”¹⁷

A third variation is from the *Springfield Sunday Union and Republican* in 1931: “According to legend, a blacksmith who had a shop near the lake shore one day became short of fuel. An Indian told the blacksmith he would get him some coal. Soon afterwards he returned with the black fuel, but he never would tell whence it came. The coal mine is said to have been near the lake, and before the Indians left for their new reservation at Green Bay, Wis., they flooded it so that the avaricious pale face never would profit from it. The mine has never been rediscovered.”¹⁸

Rick Wilcox dug into town records and reported: “Special town meeting, August 27, 1928, article 3, voted that the town appropriate the sum of \$7,500 to acquire the tract of land with water rights appurtenant thereto at the outlet of Lake Mahkeenac, commonly known as the Forbes property, for a playground or recreational center...”

Further, he said, “When the town was digging under the gas pipe line in that area they dug up and old wooden dam, c1750 and also found another rock dam. No sign of a coal mine.”¹⁹

The story of the Mohican and the blacksmith has a certain plausibility, but the legend makes a leap to the existence of a coal mine (coal is not found in this area) and deception to hide the mine (which was not seen even when the dam has been drawn down?).

Story two: “The earliest record regarding the water rights on the lake is dated 1760 and on record are 216 transactions relating to those rights, all of which have been confirmed by the land court,” the

12 See also 1973 Yale sawmill inventory form, Massachusetts Historical Commission and “Stockbridge Woman turns Mill Into House; Old Gristmill is Converted into Unique Country Home,” *Springfield Republican*, 12 December 1920.

13 “Old Gristmill is Converted Into Unique Country Home,” *Springfield Republican*, 12 December 1920.

14 “June 24 Set for Opening of Playhouse,” *Springfield Union*, 25 April 1957.

15 See also 1973 Comstock grist mill wheel inventory form, Massachusetts Historical Commission.

16 “Water Sports in Berkshires,” *New York Times*, 25 July 1926, X7.

17 “Club Set to ‘Save’ Stockbridge Bowl,” *New York Times*, 29 September 1946, 55.

18 “Two Berkshire Lakes Play Varying Roles; One For Recreation, Other For Industry,” 8 May 1931, 1E and 10E.

19 Email to author, 27 November 2013.



The Stockbridge Bowl dam at the Interlaken end. (2013)

Springfield newspaper said.²⁰ “The first dam was built in 1823. It was known as the Newton dam and was used for a saw-mill, a gristmill and a tannery. In 1833 a larger reservoir dam was built above the Newton structure. This was three feet, one and three-fourths inches high. Its flowage rights and height were certified in 1833. This is the dam that caused litigation between Dan R. Hannah [1866-1921] and Ralph E. Forbes [1866-1937] of Milton. In 1836 the present canal was built. The reservoir dam was rebuilt and raised 18 inches in 1840 and flowage rights were acquired by the Curtisville Cotton Manufacturing company. This concern owned what is known as the Pagenstecher

mill and lower pulp mill. In 1868 the Barker family bought equal rights in the reservoir dam and in the Pagenstecher property. They also acquired the right to raise the so-called Newton dam to the height of the reservoir structure, thus merging the two water privileges of the lake. The Curtisville Cotton company paid 430,000 for its privilege, which last year [1930] the town bought for 43000. All those industries have vanished and Interlaken formerly called Curtisville is dependent entirely upon agriculture and its summer resort business.

“Some time after the litigation had been settled between Hanna and Forbes, Hanna placed flashboards on his dam and raised the lake to an abnormal height. The result was a damage suit filed in superior court by Cortlandt Field Bishop [1870-1935] of Lenox for property that had been flooded. Bishop won and soon afterwards the structure was blown up, causing the

²⁰ “Two Berkshire Lakes Play Varying Roles; One For Recreation, Other For Industry,” *Springfield Sunday Union & Republican*, 8 May 1931, 1E and 10E. See also “Lenox Views Project at Stockbridge Bowl,” *Springfield Republican*, 8 December 1929, 6. Also, Frank V. McCarthy, “Our man-made lakes,” *Berkshire Eagle*, 12 August 1972.



Curtisville map from the Beers 1876 Berkshire County Atlas shows some of the small industries and shops that sprang up on the outlet stream from Lake Mahkeenac (Stockbridge Bowl).

lake to go down to the lowest level in more than 100 years.²¹ Hanna wanted the high level maintained so that a big power boat he had placed on the lake could reach his dock on the west shore. It was two feet above the level finally determined by the state engineers. Miss Mary Aspinwall Tappan and her sister, the late Mrs. Richard C. Dixey, who owned the Nathaniel Hawthorne cottage near the lake, were among the strongest advocates of Mr. [Charles A.] Acly's plan [in 1930] to raise the level. They were represented at a Boston hearing before the inland waterways commission by Charles S. Rackemann,²² Boston attorney and a former Stockbridge resident. Congressman [Allen T.] Treadway [of Stockbridge] and County Commissioner [Robert S.] Tillotson [of Lenox] presented affidavits at the hearing showing that the lake was at least three feet lower than it had been before in 30 years. The rights of the Forbes family in the water power were finally bought by William H. Clarke, who was largely interested in the Stockbridge Water company. He tried unsuccessfully to get the company interested in buying the Mahkeenac lake power. The town of Stockbridge became interested when Mrs. Molly Covington Hanna gave it a recreational park on the east shore near congressman Treadway's cottage. The receding water on the beach helped to arouse public opinion in favor of a purchase of the water rights and this was done.²³

Supportive townspeople put up \$3,000 by subscription to go with \$8,000 voted at town meeting to acquire the water rights and built a 30-foot dam structure 12 feet high at most. The dam's spillway today is of concrete and stone. The dam's maximum height is 19 feet.²³

CURTISVILLE AKA GRINDERVILLE

Field in his 1829 survey of waterpower at the Great Pond, aka Lake Mahkeenac or Stockbridge Bowl, and Canning in his overview of Mahkeenac and Lake Averic, both marveled at the abundance of small industry in the mill village of Curtisville, today called Interlaken.

“On the outlet, which runs about two miles, are

21 The resulting channel enlarged itself until the town took remedial action in 1929.
 22 The man responsible for the Land Registration Act of Massachusetts in 1898.
 23 Stockbridge Bowl Dam, National Technical Information Service.



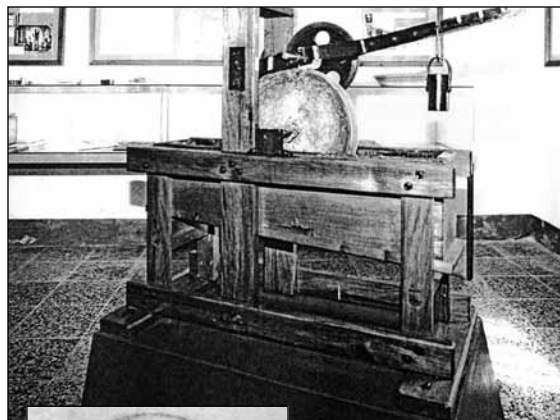
There is a bronze plaque on the Pagenstecher memorial in Interlaken. Those who descend the slope behind the stone structure will find a long, moss-covered stone wall.

valuable mill-sites,” Field said. “A grist-mill was erected upon it about 1782. There are now a grist-mill and saw mill, a distillery, built in 1812; Curtis & Bacon’s woolen factory, built in 1813, employing 18 hands, and manufacturing 40,000 yards of flannel a year; a clothier’s works; Olmsted & Sage’s woolen factory, employing about 16 hands, and manufacturing annually about 14,000 yards of satinete; Churchell & Co.’s chair factory, built in 1822²⁴ (burnt in July, 1827, and immediately rebuilt), employing 30 hands, and making about 8,000 chairs a year; and a trip-hammer shop, built in 1807; all which, excepting the shop, are within half a mile of each other, and within a mile of the pond. The outlet, on its way to the shop, receives the waters of Curtis pond, a small pond to the west.”²⁵

Missing from this list is Leonard Olmsted’s “New Plaister Mill,” which he said in the *Berkshire Star* in 1821 was “In full service and complete operation; one mile north of the meeting house in Stockbridge, and near the subscriber’s Factory—where he will accommodate the public in the Grinding of Plaister, on the shortest notice, and most moderate terms. N.B. Ground Plaister for sale, and to exchange for that in the Stone, for accommodation.”²⁶ The next year he said he had “newly repaired his Mill for the grinding of Plaister.”²⁷

The village was initially known as Curtis Mills, according to Robert A. Acly, who said, “Elnathan Curtis and his sons Isaac, Abel and Elnathan Jr. were the original settlers, arriving about 1750 and followed within the next two decades by several other families.”²⁸

Isaac Curtis Jr. & Co. advertised “Cloth Dressing” in the *Western Star* in autumn 1824: “The subscribers will dress cloth for customers, the present season at their Works in Stockbridge. Most kinds of Country Product and Soap will be received in payment for all colors except Indigo Blue.”²⁹ His successor Ocran



Friedrich Gottlieb Keller of Germany devised a grinder that would convert wood into pulp to make paper. (Wikipedia)

Curtis advertised in the *Star* in summer 1825: “Wool carding & Cloth Dressing. The above business will be carried on by the subscriber the ensuing season on liberal terms, whose machines are in the first rate order. All kinds of Produce received in payment if delivered by the first day of February next. Cider will be received in payment at any time delivered at my Distillery. There will be a deduction for Cash, and Wool will be received.”³⁰ Autumn that year, Curtis apparently aligned with a partner to do business as Curtis & Bacon, and advertised “Cloth Dressing. The business of Cloth Dressing will be carried on the present season by the subscribers, at the old stand of Isaac Curtis Jr. & Co.”³¹ Abel Curtis built the first grist mill in 1782. Barker Bros.’ woolen mill was later on the site. Isaac Curtis built the first saw mill in 1782.

24 Sidney Twichel had an earlier chair factory, in 1820 and located near Hicks’ Inn, making “fancy, bamboo, Windsor, rocking and children’s chairs of every description, also settees and wagon-chairs.” He advertised his chair factory in the *Berkshire Star*, 11 January 1821, 4, and other issues.

25 Field, op cit, 268.

26 Advertisement, Leonard Olmsted, 26 April 1821.

27 “Plasister Grinding,” advertisement, *Berkshire Star*, 6 June 1822, 3.

28 Curtisville inventory form, Massachusetts Historical Commission.

29 Cloth Dressing, Isaac Curtis, advertisement, *Berkshire Star*,

30 September 1824.

30 Notice, Ocran Curtis, *Berkshire Star*, 6 October 1825.

31 “Cloth Dressing, Curtis & Bacon advertisement, *Berkshire Star*, 6 October 1825.

The Churchill Bros. began to turn out chairs at a circa 1813 factory. Erastus Burghardt took over a small, ca 1807 machine shop with trip hammer and foundry. An 1813 woolen mill was known variously as the Brick Factory or Little Mill. While the village—including church and school—appeared on the knoll, industry appeared on the stream below, and eventually the main road through the village—Route 183 today—skirted the old main street.

Curtisville in the years just after the Civil War might have been called Grinderville—for that was the chief industrial activity there.

Albrecht Pagenstecher, a builder of South American railroads, in 1866 learned of a new process developed in Germany by Friedrich Gottlieb Keller to grind wood into pulp to make inexpensive paper. With financial help from his brother Rudolph and cousin Alberto, Pagenstecher sent for two grinders made by a Keller associate, Henry Voelter. The Pagenstecher trio secured a water privilege at the site of an old satinet factory in Curtisville and started a small plant. Friedrich Wurtzbach, who accompanied the machines from Germany, stayed to oversee their operation.

The Berkshire Courier garbled the entrepreneur's name, calling him "Mr. Pnougenseckler, of New York, a celebrated German chemist..." in one August 1866 notice. It got it right in a later story. "Mr. Pagenstecher's new mill for the manufacture of paper pulp, from wood, is now in successful operation," the paper reported in February 1867, "the machinery (new from Germany) working to a charm."

Actually, the paper had to apologize the next week; the eager Stockbridge correspondent had jumped the gun. The grinder wasn't going yet. "Loads of bass wood are arriving to feed it. It is expected to reduce to pulp a cord per day, which (the pulp) will weigh about a ton. If our forest can be turned into paper at this rate, the writers and printers ought soon to be rejoicing over reduced prices."

The first wet pulp was made in this country on 5 March 1867 and was transported to Wellington and

DeWitt Smith's Columbia mill in Lee and turned into paper—paper that would become the standard for newspapers and inexpensive magazines. The invoice for the first customer, saved by Wurtzbach's son Carl, showed the first seven shipments weighed 13,605 pounds, less 55 percent allowance for water, yielding a net of 6,123 pounds, for which the charge was \$489.89.³²

Charles Devol, on a whirlwind 30-hour tour of Berkshire County 1 August 1857, was pleased with the appearance of Curtisville—even with the influx of new industry: "Best roads in the country, kept in repair by Carlton Curtis, Esq. Curtisville. Pul—mill where white-birch, poplar and other soft white woods are ground upon grindstones to a fine pulp, which is pressed, and dried, and packed in barrels and shipped to the paper mill—a German invention. Woolen factory. Sawmill. Beautiful meadows. Extensive dairies. Lake Mackenac, or Stockbridge bowl—a beautiful sheet of clear, pure water, belted with a wide beach of coarse sand and pebbles."³³

The pulpwood experiment was an immediate success and for the next year, Curtisville monopolized production of the raw material. Wurtzbach explained to *The Springfield Republican* why this location was selected: "First, cheap and abundant water power; second, the large number of paper mills, and, third, more important, the large amount of poplar wood covering the hillsides. It was necessary to have wood with a tough fiber, comparatively soft and as near white as possible; this wood practically without value sold later for \$12 a cord, proving a godsend to many a Berkshire farmer. Spruce was not used until poplar was entirely exhausted as a supply..."³⁴

Albrecht Pagenstecher quickly enlarged his operation with another factory building. He engaged machinist Frederick Burghardt to make more grinders.

32 Story of Beginning of Wood Pulp Paper-Making told by Lee Resident Whose Father Helped Start It," *Springfield Sunday Union and Republican*, 16 April 1933.

33 "Thirty Hours in Berkshire County, Mass.," *Albany Argus*, 3 August 1867.

34 *Ibid.*



Albrecht Pagenstecher



Pagenstecher pulp mill in Glendale. (Stockbridge Magazine)

Smith's need for pulp soon outdistanced Pagenstecher's ability to produce it. "What is now the Centennial mill was made into a pulp factory and a few months later a storehouse on the site where the present Niagara mill now stands was turned into a pulp mill," according to a 1954 news story.³⁵ "For a number of years all pulp made in the local mills was ground from poplar, and the owners of mountain property received a good return from the wood of that kind which was quite abundant. Later it began to get scarce and for a number of years teams were used to draw the wood from Otis and Tolland and later it was shipped from more remote regions." Eventually they began to use spruce.

"The poplar wood of Berkshire county is fast being converted into paper stock,"³⁶ the *Berkshire Courier* reported in 1869. By 1885, the Smith mill in Lee was processing 30 to 40 cords of wood weekly, yielding about 25 tons of pulp.

"The pulp is made directly from second growth poplar wood which is gathered in large quantities from

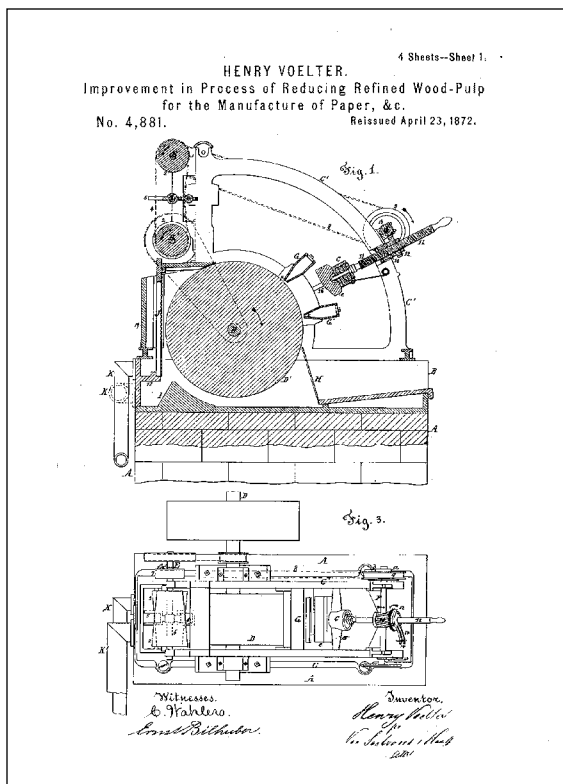
the forests in the vicinity," the *Lee Gleaner* explained. "It is first sawed into blocks about ten inches in length, the bark shaved off, the blocks halved, all knots cut out, and the wood is then thrown into a vat of clear water to soak. The machine used to reduce the wood to pulp is a common grind-stone, erected at a high point in the room, and the blocks are placed in four or five boxes one in each, and pressed crosswise upon the surface of the stone, water running constantly upon it.

"The powdered wood, as it mingles with the water in its downward course, passes several screens which separate all slivers, grit and refuse matter from the material, which is finally deposited in a vat upon the floor, from which the water drains off. The material is then put into cloths and placed under a screw press, to remove the water.

"The flat cakes (resembling a cheese curd, which dairy-women 'run up' and press without a hoop) are then packed in barrels and sent to market. Loads of the material are daily brought to the mills of the Smith Paper Company in Lee, to be mixed (25 or 30 per cent.) with rags in making print paper. Mr. Pagenstecher, who owns the invention, runs two machines in the mill we visited, and one in the mill lower down

³⁵ "Anniversary of Wood Pulp Paper at Lee," *Springfield Republican*, 18 March 1928.

³⁶ Wood Pulp," *Berkshire Courier*, 21 July 1869.



A page from Henry Voelter's 1872 U.S. patent No. 4,881 on an improvement in Process of Reducing Refined Wood-Pulp for the Manufacture of Paper, &c.

the stream. He has also formed a co-partnership with [Benjamin] Barker, of Barker Brothers, Pittsfield, and the company will soon be making the pulp in the large new factory at Curtisville, which Mr. Barker erected for a woolen mill.³⁷

"The entire process is very simple, no chemicals or bleaches are used, and wood may be carried into the mill and shipped the same day as a beautiful white pulp...."³⁸

The pulp grinding business was at times risky. "The stone in Pagenstecher's pulp mill at Curtisville (Stockbridge), burst, Monday morning, and a piece weighing three hundred lbs. came within an inch of the head of Jimmy Curtis, a lad employed in the mill,

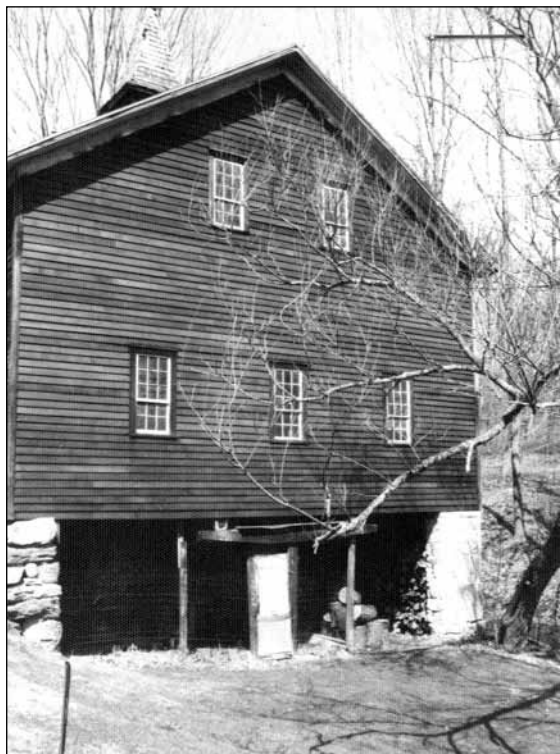
³⁷ The Barkers purchased A.E. Dickinson's mill privilege in 1864 and built a woolen mill that employed upwards of 100 hands, according to the *Pittsfield Sun* for 24 November 1864.

³⁸ "Wood Paper Pulp, 19 August 1868.

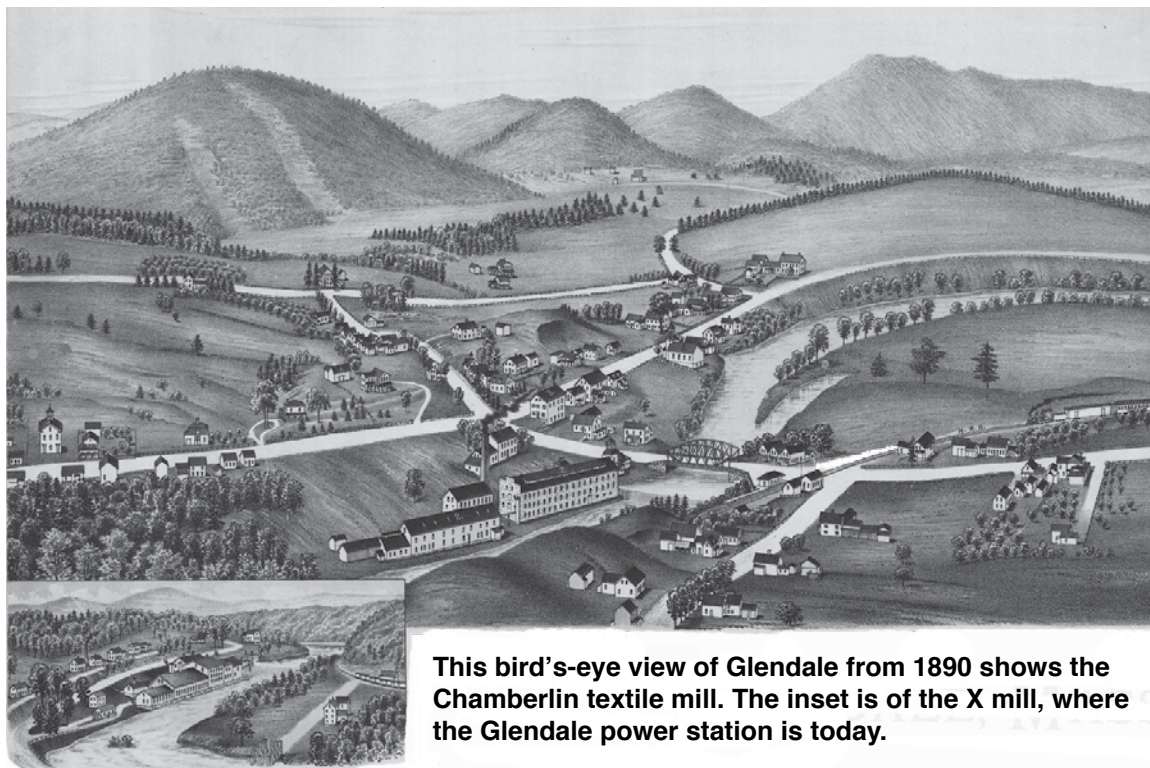
knocking him off a plank upon which he was standing into the story below. He was taken up insensible, but although suffering much from sprains and bruises, he is believed not to be seriously injured."

Curtisville grew as Lewis Beach and James H. Royce converted their failing textile mill in Lee so it could mash wood. Pagenstecher erected an additional mill but there were problems and that plant closed by 1883. Wurtzbach by then worked for Smith.

Pagenstecher enlarged operations. "A new mill for the purpose is nearly completed by Erastus Burghardt & Sons; and the machinery for it is making in the shop of Frederick Burghardt. Mr. Barker's new factory, also, after standing nearly empty and idle ever since it was built, is about to make itself useful in the same business; Pagenstecher & Barker to run it in company. For this purpose it becomes necessary to raise the dam some eight feet, dig a new canal and introduce a new water wheel, all which will be pros-



The old Stephen Curtis gristmill still stands on Averic Road in Curtisville. (Massachusetts Historical Commission, 1975)



This bird's-eye view of Glendale from 1890 shows the Chamberlin textile mill. The inset is of the X mill, where the Glendale power station is today.

ecuted vigorously,” *The Gleaner* said.³⁹

An entrepreneur named Barber joined the crowd, “having fitted up his mill with three of the German pulp machines,” the *Gleaner* said in 1869.⁴⁰

An offshoot was the small-scale manufacture of pulp grinders. Frederick Burghardt of Curtisville and his brother J.M. of Great Barrington made improvements to the grinding process and obtained a patent. *Scientific American* ran a picture of the machine on its front page 6 March 1869.

The Burghardts enlarged their Curtisville machine shop, within a stone’s throw of the Pagenstecher shop, “for the more rapid manufacture of these machines, while Frederick Burghardt is going to build them after his new patent. So Curtisville seems likely to be headquarters for wood pulp business,” one paper boasted.

The Burghardts sold their old machine shop and furnace to D.W. Clary, who put it “in full blast, having

in their employ from 25 to 30 hands, mostly working on machinery for the manufacture of paper pulp from wood,” *The Pittsfield Sun* noted in 1868.⁴¹

The ground wood process was within decades supplanted by a chemical sodium sulphite cooking process to turn wood chips into “black liquor,” a pulp slurry.

The Pagenstechers, the wood sources depleted in South Berkshire and quality water privileges hard to secure, removed to Palmer Falls in Saratoga County, N.Y., and started the Hudson River Pulp Co. “This gave the brothers access to one of the best potential water powers in the state, as well as millions of acres of forests in the nearby Adirondacks,” according to Timothy Starr,⁴² who—ignoring what was going on in Lee and Stockbridge—credits them with merging grinding and papermaking operations under one roof and marking “the beginning of the modern paper industry.”

Grift and Saw Mills.

FOR Sale, three quarters of an excellent stand of MILLS, newly repaired, with a new Dwelling House, and about seven acres of Land, situated one Mile west of the town street in STOCKBRIDGE. The Housatonic River, so called, supplies the Mills with water. The Grift Mill has two run of Rones—the Saw Mill is an excellent one. For further particulars inquire of
BENJAMIN DRESSER,
Stockbridge, May 9, 1796.

39 “Improvements in Curtisville,” 19 August 1868.

40 “Patent,” *Berkshire Gleaner*, 10 March 1869.

41 24 December 1868.

42 *Lost Industries of Saratoga County*, 110-111.

day, the pulp estimated in its air-dry condition, in which it is in the proper state for transportation, but is one half water. The pulp is one half the weight of the wood. Fig. 7329 shows the grinder, and Fig. 7330 the strainer and sorter.

“The wood is prepared for the machine by being sawed into lengths of 15 inches, after having been first deprived of its bark and reduced to the diameter of about 5 inches. Knots are removed by boring. Each billet is then placed in a holder G G’ adapted to apply it firmly to the stone. Six such holders are attached to the machine (though but one is shown in the cut), and occupy about one quarter of a circumference. The pressure is applied by means of a screw (11) behind each follower c, which is very gradually driven by the machine itself. A single band acts at once upon all these screws by intermediate mechanism; and in case the several billets are not ground off with equal rapidity, the proper adjustment effects itself by the slipping of the band g.

“The stone is included in an iron box, and water flowing in constantly at the top removes the disintegrated fibers as fast as they are produced. From the mill, the comminuted mass is carried along in suspension in water, to the first tank P, in which there is a cylindrical strainer R, formed of very coarse wire-gauze, constantly in revolution. The discharge from this tank takes place from the axis of this strainer, which is made large and tubular for the purpose. The flow is, therefore, from the exterior to the interior, through the meshes of the strainer; and the slivers and coarser fragments of the wood, being thus prevented from passing, are from time to time removed. The water, with the available portion of the fiber, is discharged through a lateral duct into a second tank W at a lower level, where it undergoes a straining similar to the preceding, but through a gauze considerably finer. The process is repeated until the pulp has undergone four successive strainings, when the material is passed into a fourth tank, in which the strainer N is so fine as to allow the water only to pass. Between the second W and the third W of these straining tanks is a grinder N, which reduces the coarser fragments detained by the second drum R. The 3d and 4th cylinder-strainers constitute a sorting-apparatus, and furnish pulp of successive degrees of fineness.

“The preferable woods for this purpose are pine, fir, poplar, linn (linden or bass), birch” and sometimes



Glendale Woolen Mill is lower left, dam right, in 1874 Costello photo. (Author’s collection)

beech.⁴⁴

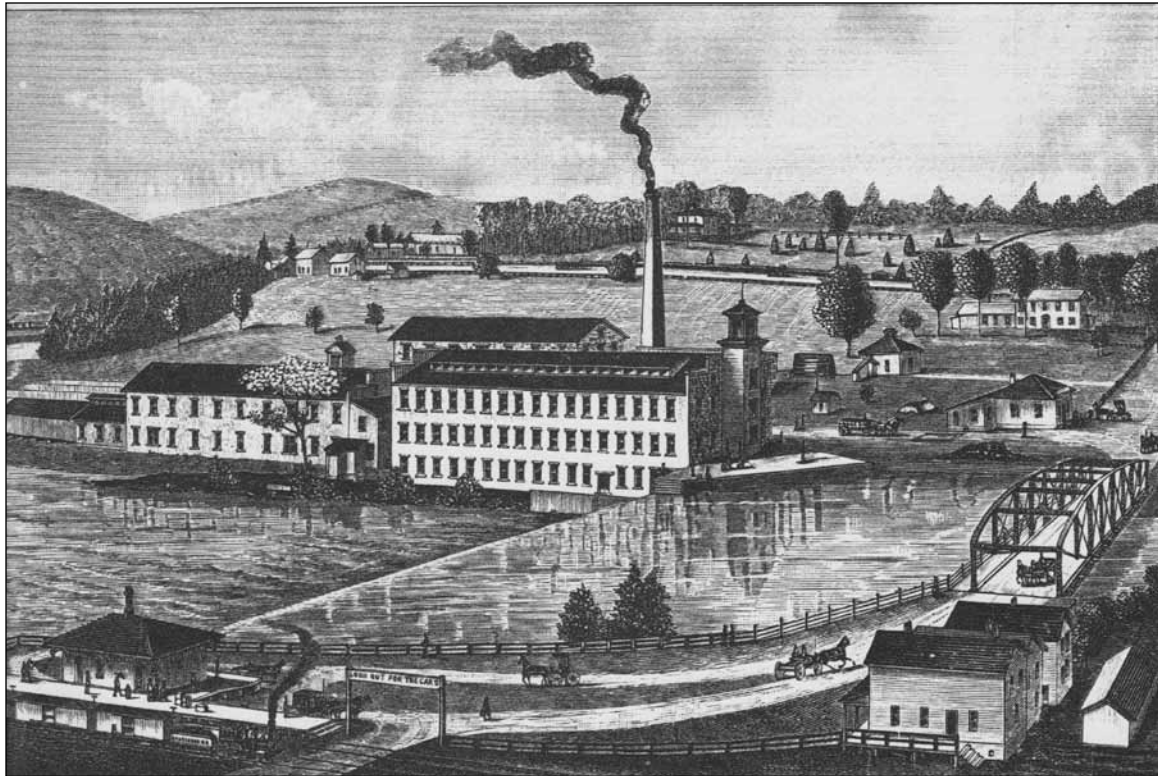
The advent of the wood pulp grinders set the papermaking world ablaze. “The growth in the manufacture of wood pulp in this country has been phenomenal,” the Boston Daily Advertiser said in 1891, “the increase in the daily capacity of the mills engaged in making it, for the last nine years, being nearly 500 per cent, and nearly 200 per cent in the last four years. In 1888 the stumpage consumed for pulp was valued at \$2,235,000. The product, 225,000 tons ground and 112,500 chemical pulp, was valued together at \$12,375,000. Figures given by the chief of the forestry division indicate a present consumption in round numbers of 1,000,000 cords of wood per annum.”⁴⁵

FREDERICK BURGHARDT’S IMPROVED MACHINE FOR MAKING PAPER PULP

An industrial ingenuity emerged in Curtisville for devising pulp paper machinery. Frederick Burghardt’s improved wood pulping machine, for example, drew

⁴⁴ Edward Henry Knight, *Knight’s American Mechanical Dictionary: A Description of Tools*, Vol. 3., 2308.

⁴⁵ “Wood Pulp,” 13 August 1891, 2.



Glendale Woolen Mill. (Beers 1876 Berkshire County Atlas)

the attention of *Scientific American*. This story appeared in the periodical's 6 March 1869 number, on the front page:

“The use of some of the softer sorts of wood for producing fibrous pulp suitable to paper making is quite common, but the means of disintegrating the material and preparing it for the paper maker have not been altogether satisfactory. One consists mainly in softening the wood by steam and then discharging it from a gun or tube, it being blown into filaments by the force of the explosion. Others comminute the material by mechanical processes. The machine represented in the engraving is intended to produce the desired result in this latter way. It consists of a cylinder mounted on a frame, the cylinder being covered with a jacket of rasping, filing, or cutting material, formed by successive circles of steel or chilled iron segments as seen in the engraving. At one end of the cylinder shaft the power is attached, and at the other end the shaft carries a worm that engage with a gear turning on a shaft in bearings attached to the frame. On this gear shaft are

two cams, or eccentrics, that, turning between jaws or ‘struts’ of a sliding frame, give a gradual reciprocating motion to a hopper or receiver for holding the block of wood to be comminuted by the machine. The lower surface of the wood bears upon the rasping or cutting surface of the cylinder, and its gradual reciprocating motion insures equality of abrasion, without leaving the ridges which otherwise would correspond with the interspaces of the cylinder coating. A weight or spring, or any other suitable device, can be attached, if desired, to the block for the purpose of graduating its amount of pressure on the cylinder.

“Somewhat below the center of the rasping cylinder is hung a small cylinder covered with card clothing or stiff bristles, and receives motion from the shaft of the main cylinder by means of pulleys and belt, as seen in the engraving, or gears; the motion being in reverse of that of the rasping cylinder, and more rapid. This card-clothed cylinder is intended to remove the ‘fluff’ or fiber from the teeth of the cutting cylinder, and to keep them clear. The material is deposited be-

neath the machine in any convenient receptacle. The fiber, as it come from the machine, appears, under the microscope, and also when tested by the touch, to be well-adapted for mixing with other paper stock. it is nether sawdust nor coarse threads, but a floss-loke fiber similar to short-stapled cotton or flax.

“Patent pending through the Scientific American Patent Agency. For fuerther information, address Frederick Burthart, care of J.M. Burghardt, Great Barrington, Mass.”⁴⁶

In his patent for a wood grinder, No. 97,041, issued 23 November 1869, Burghardt gave his address as Curtisville.

GLENDALE

Stockbridge’s larger industries grew in Glendale. Though an office building, foreman’s house and workers’ housing survive, all the mill buildings are gone.⁴⁷

Historian Field said, “A grist and saw-mill were built on the Housatonic at ‘Mill Hollow,’⁴⁸ a little more than a mile west of the village, about 1781; where the water privileges are very great. Buildings, erected for a woolen factory in 1813 or 14, have recently been purchased by Lester, Avery & Co., who are repairing them, with a view to a cotton factory; for which 16 carding machines, 944 spindles and 28 power looms are not preparing. Here are also a grist-mill and a saw-mill. Between this spot and Great Barrington line, are also important water privileges; near which a road has just been opened.”⁴⁹ The road was to Housatonic village.

That early woolen mill was probably Grant Chamberlain’s, for which he advertised in 1821: “The subscriber will Card Wool and dress Cloth, at the Woolen Factory, the ensuing year, where work will be well done and at short notice.”⁵⁰

Benjamin Dresser in 1796 advertised in the *Western Star*: “For Sale, three quarters of an excellent

stand of MILLS, newly repaired, with a new Dwelling House, and about seven acres of Land, situated one Mile west of the town-street in STOCKBRIDGE. The Housatonuck River, to called, supplies the Mills with water. The Grist Mill has two run of stones — the Saw Mill is an excellent one.”⁵¹

He sold the property in 1804, to Oliver Partridge, but the deed description is no help in identifying the location: “Beginning at a Hemlock stump, standing on the northwesterly side of the river at Saw Mills one rod northerly by a blue rock marked H & two rods from the river at low water mark thence westerly fifteen degrees north twenty three rods from the river & twenty one from said stump (which course includes about one rod in Width of the road) thence North 33 degrees westerly twelve rods, thence West 33 degrees South twenty one rods thence South 20 degrees last Forty rods to the river thence up the River to a station at low Water Mark in a range with said Hemlock and to contain eight acres (it being the farmland said Oliver bought of Jonathan and Rosanna Hicks)...”⁵²

A town map of colonial highways shows the [John] Dresser Mills on the south side of the river but easterly of the road at the Housatonic River bridge in Glendale. “Seley’s factory, apparently a forge, was in business on the east bank of the river in 1829. Just north of Glendale village, “Mohawk pond is an opening in Stockbridge mountain to the south, the outlet of which turns a saw-mill,” Field said.⁵³

Lester Avery & Co. purchased a cotton mill a half mile up the river from Glendale village (built about 1813) and improved it in 1825, but it was eventually discontinued because its dam flooded the meadows there. This may have been the Dresser site, at the northern end of the village. The mill when Avery had it was “supplied with water from a side dam, and has 17 carding machines, 976 spindles, and 24 power looms, and employs 42 hands, who manufacture cotton sheeting, yard wide, No. 16, at the rate of 150,000 yards annually.”⁵⁴

John Z. and Charles Goodrich and their New York partner Samuel G. Wheeler ran the Glendale mills profitably for many years, though suffered at least two

46 “Improvement in Machine for Making paper Pulp,” *Scientific American*, 6 March 1869, 1.

47 Glendale village, Glendale Woolen Co. foreman’s house and Glendale Woolen Co. worker housing inventory forms, Massachusetts Historical Commission.

48 They are believed to have stood opposite the Glendale Middle Road bridge. The first river crossing for people heading to Glendale was at the Butler Bridge site, built in 1794. The first Middle Road bridge was erected in 1800. Glendale village inventory, Massachusetts Historical Commission.

49 Op cit, 595.

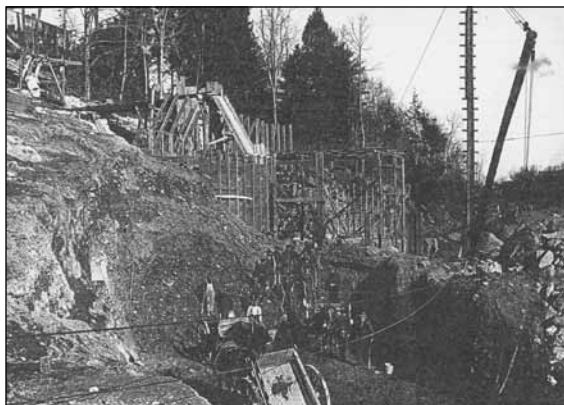
50 Notice, Grant Chamberlain, *Berkshire Star*, 21 June 1821.

51 24 May 1796, 4.

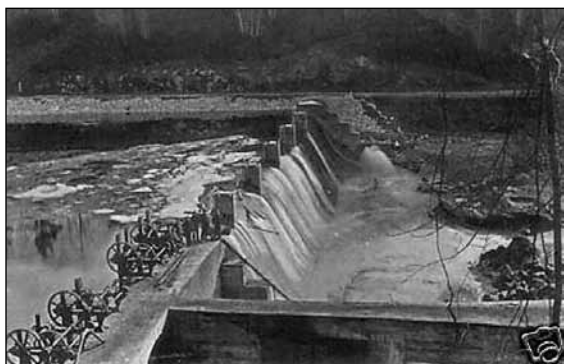
52 Benjamin Dresser Jr. to Oliver Partridge, deed, 22 October 1804, Middle Berkshire Registry of Deeds, Pittsfield, Book 42 Page 249.

53 Op cit, 268.

54 Field, op cit, 267-268.



Glendale dam under construction. (Fred Sauer photos/Ramsdell Library) Bottom, two postcard angles on the completed dam.



fires. The firm went through more than one failure, but recovered. During the Civil War, the company made navy blue cloth for the Union. The firm opened another mill in Lee.

The mill buildings were just south of the bridge, just south of the dam. F.W. Adams leased them in 1871 and purchased the property outright in 1880. Adams, who also owned a granite quarry in town, refurbished the shop and brought in modern machinery. The annual fabric output was \$250,000 in the 1880s, much of it fancy cassimeres, according to Hamilton Child in his *Gazetteer of Berkshire County*. The work force numbered 160.

Stockbridge's largest mill, Glendale Woolen, was destroyed in a fire in 1891.

"Fire broke out in the mill of the Glendale Woolen company at Glendale, last night about 8:30 o'clock, and in an hour the entire structure, with much valuable machinery and a large quantity of unfinished goods, was reduced to ashes," *The Berkshire Courier* reported. "The loss is estimated at \$40,000, and it is supposed to be fully covered by insurance. The fire is a sad blow to the village, which has before suffered serious reverses. Arrangements were making for starting the mill at an early date, and only yesterday two families from this town moved there, being promised employment shortly.

"The mill has had a varied history. It was of stone, five stories high, and one of the largest woolen mills in Southern Berkshire. The first mill was built more than a generation ago, and was burned some years later. On its site, which commands one of the best water powers in the county, a larger mill was built, and for many years it was successfully run on the manufacture of woolen goods known as 'unions.' Reverses came later and finally the property was mortgaged and attached and what all, and became an important item in the Stockbridge savings bank troubles a year ago.

"The Berkshire Life Insurance company of Pittsfield, had a mortgage on it of over \$30,000, and the property was sold under foreclosure early last month and bought by Mr. Herman of New York, a prominent dealer in rags and shoddy. He has lately made many improvements, including a new mill race and other changes, and the mill was to start soon and bring the little hamlet back to prosperity. Last night's fire is a serious set back, and leaves matters as gloomy as they

were some months ago."⁵⁵

Charles Collander operated a tissue paper mill in Glendale for two years, until it suffered \$65,000 in damages in a fire in 1900. According to a news story, the business was in a building that had been constructed on the Housatonic River in 1850.⁵⁶

The mills closed. "In Stockbridge and elsewhere in the valley," Willard A. Hanna observed, "whether or not suddenly emancipated and enlightened spinsters were a major factor, it was culture, not industry, which soon came to prevail. One by one the textile mills, the iron furnaces, the marble quarries, and many of the related industrial enterprises closed down. It was not, it would seem, for lack of minerals, fuel, wool, labor, or capital. People of the valley, who had pioneered in industrialization in the eighteenth century, seemed to have had their fill of it by the time the twentieth century rolled in. Big scale modern industrialization was relegated to towns well up or down river."⁵⁷

MONUMENT MILLS POWER STATION AT GLENDALE

Just west of Glendale village, another mill stood near the still functioning hydro-electric plant, west of the woolen mill and on a bend in the river. Frederick Perry built a dam in 1849 to serve this site. There was a lower bridge to reach the south side of the river.

The privilege was advertised for sale in 1860: "WATER POWER For Sale In Glendale, Stockbridge. With over 125 acres of land known as the Perry Dam or Water Power and esteemed as one of the best privileges on the Housatonic river. The purchasers making immediate improvement, need pay but 10 per cent of the purchase money, balance on note and mortgage for five years, at 6 percent. Per annum."⁵⁸

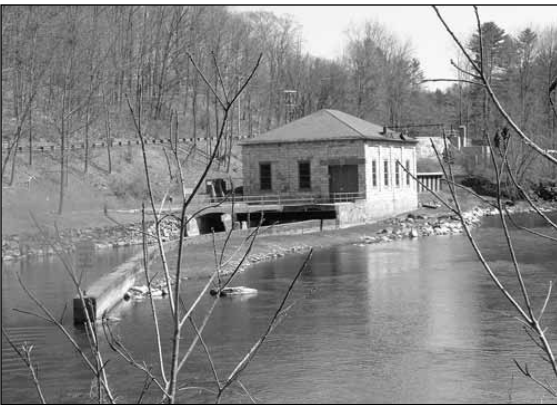
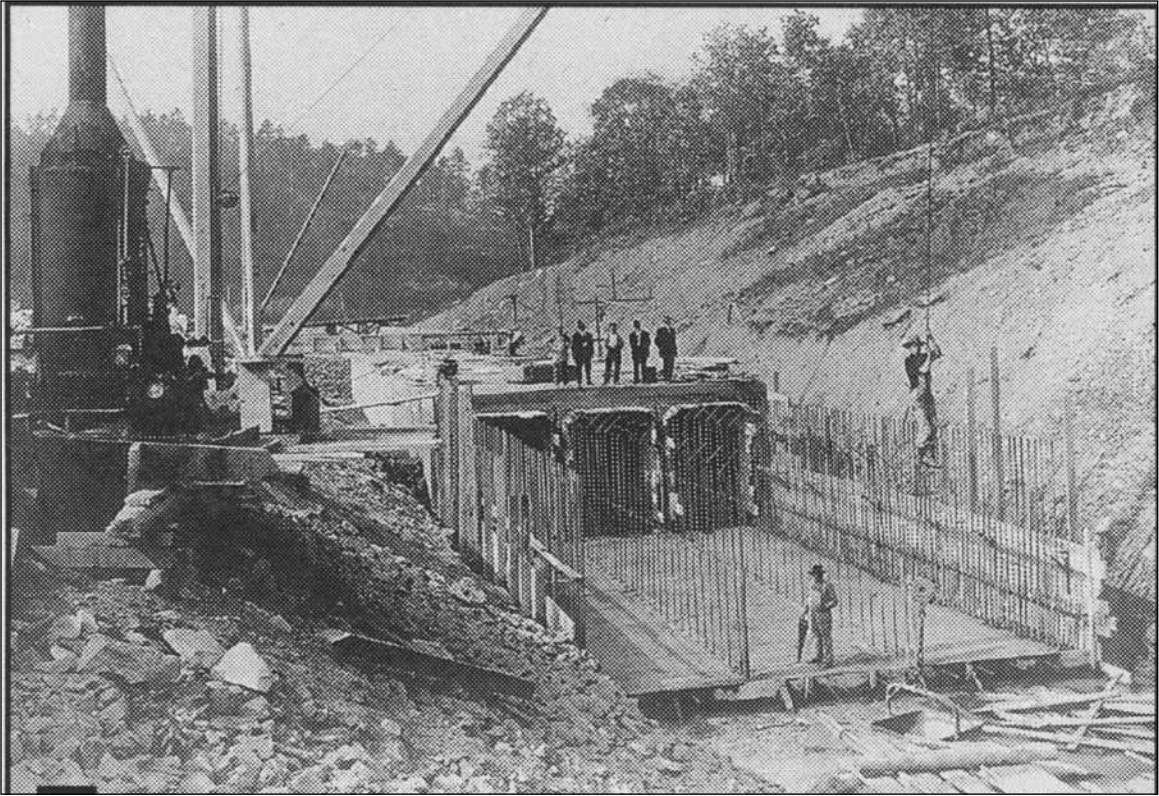
Perry sold to Rewey & Evans who built a mill to make coarse paper. Scottish immigrant James H. Hunter in 1862 purchased the operation and ran it as Hunter Paper Co. In 1872 it became Chaffee & Callendar, named for George Chaffee and Clark E. Callendar. They produced wrapping and bagging paper, mostly of jute. They turned out 12,000 tons a year valued \$150,000. Forty hands worked at the factory. In the 1890s it turned out manila paper as well.

55 "Glendale Mill Burned," 22 October 1891, 1.

56 "Glendale Paper Mill Burned," 12 March 1900.

57 *The Berkshire-Litchfield Legacy*, 13.

58 *Berkshire Courier*, 5 April 1860, 3.



Penstock to Glendale power house under construction, above (Ramsdell Library). The facility in 2013, below.

“Monument Mills found that it was more efficient to use electric power to drive its textile equipment than to use direct water or steam,” according to James N. Parrish.⁵⁹

The paper mill sold its water rights to Monument Mills in Housatonic Village, for a new power sta-

tion in 1894.⁶⁰ Monument Mills (John H.C. Church, president) acquired 150 more acres of “valuable water power and a number of buildings, which sold for \$12,100” in 1905. “The large paper mill was burned several years ago,” *The Berkshire Courier* reported, “and since then the property has been in the hands of trustees.”⁶¹

The station is a 50-foot square structure erected by Ashular Stone Works employing stone from the old Glendale Woolen Mill.⁶²

J.R. Lee of Patterson, N.J., took the contract to build the facility including a new dam. Construction began in July 1905 with completion at the end of the

⁵⁹ Glendale Powerhouse inventory, Massachusetts Historical Commission.

⁶⁰ Richmond Iron Works to Monument Mills, Central Berkshire Registry of Deeds, 13 February 1895, Book 289 Page 358. Richmond Iron Works had taken title from Stockbridge Iron Co. 21 February 1894, Book 289 Page 37.

⁶¹ “Sold to Monument Mills Co.,” 1 February 1905.

⁶² Glendale Powerhouse inventory, op cit.

next year. William Ring was superintendent of construction. Upwards of 160 men were on the site at its peak, "20 mules, "eight or nine teams of horses, steam shovel, cranes, stone crusher and other machinery being employed almost constantly," according to a newspaper report.⁶³

"I christen thee Monument Power Plant," Ruth Church, daughter of Monument Mills President John H.C. Church, said as she broke a champagne bottle against the newly finished dam in January 1907.

"Two minutes before T. Ellis Ramsdell lowered the first gate, shutting off the river flow from its course down stream through the big structure. When the gate started to lower, a whistle salute was blown by a locomotive of the N.Y., N.H. & H. railroad, which happened to be on the opposite side of the river," *The Berkshire Courier* reported.⁶⁴

"The dam across the river at this point is built of concrete," according to J. Franz, who examined the site in 1910, "and is 125 ft. long and 28 ft. high. A canal 1500 ft. long lead to the headgates, and from here to the station there is a fall of 41 ft. The maximum capacity available at the station is estimated to be 3000 hp, and at minimum flow the available head is sufficient to yield 1500 hp. The penstock is 8 ft. in diameter and is made of boiler iron. Four inlets are provided into the station, which is a stone and concrete structure. At the present time there is but one 600 hp McCormick turbine installed. This is direct-connected to a 500 kw, revolving field Stanley generator, the exciter⁶⁵ for which is belt-connected and located on the opposite side of the turbine governor. The generator has a speed of 286 rpm, and its characteristics are similar to those of the machines in the other station [at Alger Furnace].

"The switchboard in the new station is made up of one exciter panel, one generator panel and two feeder panels. There are two sets of busbars, and the switches are of the belt-lock type. This arrangement of switchgear permits the generator to feed the outgoing lines separately, and also to operate in multiple with the other units in the station lower down the river. Two four-wire lines are run from the station: one No.

4 bare-copper line constituting the company's trunk line and supplying the mill with energy and a No. 6 insulated-copper line feeding energy to the Stockbridge Lighting Company. The company operates in a village of about 2000 inhabitants and is two miles distant from the station. Its entire output is used for lighting. Nearly all of the energy generated is used during the day by the two cotton mills owned by the company, which owns the hydroelectric stations, and at night the output is sold jointly to the Stockbridge Lighting Company and the Great Barrington Light & Power Company.

"The motor installation of the mills fed from the hydroelectric plants consists of an aggregate of 645 hp in induction motors and 355 hp in synchronous motors. These drive groups of machinery are such as are customary to the cotton industry. Besides nine induction motors having the aggregate of 500 hp, there is in Mill No. 1 a 75-hp synchronous machine and in Mill No. 2 there is, in addition to five induction motors with an aggregate rating of 145 hp, one 180-hp synchronous machine. The synchronous machines are belted to lines of shafting in the basement floors, to which are also connected two 3000-hp turbines driven from the waterpower of each mill. These synchronous machines are used to improve the power factor and are employed either as motors or generators, depending on whether there is a large supply of water or not. Ordinarily the motors are started and brought up to synchronous speed by means of the turbines. In the synchronous motor room of Mill No. 1 there is also maintained a 236-kw constant current transformer and panel, from which the street lamps for the village of Housatonic, in which the two mills are the chief industries, are supplied with energy.

"A magneto call telephone system connects all departments of the plant to the main office, which is located in a separate building. The company has a competent electrical engineer and frequent tests are made on motors to determine under what load conditions they operate. Under each motor there is a card on which the oiler makes record of the time he oiled and inspected the motors."⁶⁶

Monument Mills closed in the late 1950s. The power station went idle. The generator and turbines were removed. The original penstocks were aban-

63 "May Furnish Power by January First," *Berkshire Courier*, 25 October 1906, 1.

64 "Power Plant Christened," 10 January 1907, 1.

65 An exciter supplies the electric current to produce the magnetic field in another generator or motor.

66 "Housatonic River Hydroelectric Plants," *Electrical World*, 2 June 1910, 1441-1442.

doned, their flow controls taken by vandals.

Mary Heather (1903-2000) and her brother, Joseph Guerrieri (1908-2002), beginning in 1977 rescued the old power station from demolition and restored it to operation, sending electricity into the grid. In a 1980 interview, Heather said the facility was expected to produce up to 500 kilowatts of power.⁶⁷

John Elling of West Stockbridge said he was among several young men who worked with Guerrieri to clean out the old power station penstocks and install new turbines and generators. He said Guerrieri had him take parts from a Buick Riviera to craft a new exciter.⁶⁸

The power house was placed on the National Register in 1982.⁶⁹

The plant still operates.

In autumn 2013, Littleville Power Co., a subsidiary of Enel Green Power North America, began installation of a new powerhouse and water turbine at the base of Glendale Dam. The \$3 million project was expected to generate 1.4 million kilowatts of electricity.⁷⁰

C.C. ALGER & STOCKBRIDGE IRON WORKS FURNACE

A cold-blast furnace operated in Stockbridge, just above the present village of Housatonic and directly on the north bank of the Housatonic River below Monument Mountain.

The Stockbridge Iron Works was established in 1833, with C.L. Blum the first ironmaster. Legislation enabling the businessmen to incorporate reads: "Chap. 0019 An Act to incorporate the Stockbridge Iron Company. Be it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same, as follows: Sect. 1. Charles C. Alger, G. C. Peet, and A. H. Galloway, their associates and successors, are hereby made a corporation, by the name of the Stockbridge Iron Company, for the purpose of manufacturing pig, cast and bar iron, in

the town of Stockbridge, in the county of Berkshire; and for this purpose shall have all the powers and privileges, and be subject to all the duties, liabilities and restrictions, set forth in the thirty-eighth and forty-fourth chapters of the Revised Statutes. Sect. 2. The said company may hold, for the purposes aforesaid, real estate to the amount of seventy-five thousand dollars, and the whole capital stock of said company shall not exceed one hundred and fifty thousand dollars. [Approved by the Governor, Feb. 16, 1841.]"

According to industrial historian Victor C. Rinaldo, the first furnace was charcoal-fired.⁷¹

Charles Coffey Alger (1809-1874) purchased the property in 1836⁷² and advertised the next year in *The Berkshire Courier* for "6,000 cords of Wood cut, at 50 cents per cord. Inquire at *Stockbridge Furnace*. Liberal contracts will be made for 200,000 bushels Charcoal, delivered next season."⁷³ Alger built a second furnace, anthracite-fueled, and brought it to charge in spring 1845. Master Jacob W. Hoysradt ran the pig iron operation. A community grew around the furnace sufficient to warrant a stop on Richard Van Deusen's daily stage coach line from Great Barrington to State Line in West Stockbridge to connect with the east-west rail line. Several structures dotted both sides of the river in the vicinity of the dam (perhaps accounting for some of the regular excavations on the east side of the river) on an 1855 map of the town that hangs at the Red Lion Inn.⁷⁴

A visitor to the furnace in 1845 revealed an innovative endeavor. Alger "is a man of exhaustless ingenuity and is constantly introducing improvements of incalculable advantage to the country. In the first place, some time ago, to make the hot air generated by his furnace *reheat* his furnace, he collected it in pipes, and turned it back on the ignited ore," a correspondent identified only as "H" wrote to Horace Greeley of *The New York Daily Tribune*. "The place where this stream of heated air meets the fire is so intensely bright that the eye can scarcely endure the light, and it goes through a thin board like a bullet. By this process he accumulated heat, to the immense saving of fuel. Latterly he has introduced a great improvement in making

67 Bernard Drew, "Power on Her Mind," *River Valley Chronicle*, October 1980, 50. See also Paul Faber, "Hydro-Electricity: Small can Be Beautiful, as Well as Profitable," *New York Times*, 23 September 1979.

68 Conversation 6 November 2013.

69 Stephen Fay, "Glendale Power house makes National Register," *Berkshire Eagle*, 28 July 1982.

70 Dick Lindsay, "New hydropower plant planned," *Berkshire Eagle*, 10 September 2013, B1.

71 *A Survey of the Stone Blast Furnaces of New England & Eastern New York State*.

72 Land records, Central Berkshire Registry of Deeds.

73 "Wanted," advertisement, 2 December 1836.

74 Plan of the Towns of Stockbridge and West Stockbridge, Berkshire County, Massachusetts.

Charcoal. By erecting brick buildings in which he can pile eighty cords of wood at a time, he saves some fifteen bushels of coal to the cord over the common process of burning in coal pits. Not content with all this economy, he now saves the gases generated in the process of burning, and from them makes pyroligneous acid, a material universally used in making calico prints. Formerly this was imported from England at a large expense, but latterly it was made in this country, by burning wood for the especial purpose. Mr. Algers [sic] here makes it out of the superfluous gases that escape in the process of charring wood, and at so cheap a rate that he can afford it a few cents per gallon. He expects also to make naphtha from the same process. I wish I could describe the machinery, etc. by which the condensation is effected, but I do not thoroughly understand it myself. Mr. Algers has a laboratory built, and employs a chemist from New York the year round to make experiments. The efforts of Mr. Algers will furnish a valuable addition to the science of chemistry in the country.⁷⁵

The furnace at its peak produced \$53,400 worth of pig iron annually.⁷⁶

Alger's patents included one 30 June 1838 for an improved mode of heating the blast in furnaces, another in 1857 for an improved furnace for smelting iron.⁷⁷ Alger brought an infringement suit against Joseph E. Edsell of Hamburg, N.J., over "his peculiar arrangement of the blast pipes leading from the heating oven at the funnel head to the tweres. Instead of bringing down the air in pipes placed outside the stack, where they are subject to changes of temperature, induced by the weather, the evaporation of rain and accumulation and melting of snow, a patent was granted in 1836 to Mr. Alger for placing the pipes in the body of the stack, between the lining and the stone work. There the great supply of air, the most weighty of all the materials introduced into furnace, is kept at an equable temperature, lending greatly to the equable running of the furnace," reported *American Railroad Journal*.⁷⁸ A jury agreed with Alger and awarded him \$350 damages. Alger affiliated for a time with Leonard Geiger, who obtained a patent in 1866 on

75 "Summer in Berkshire Co. Mass.—Mountain Scenery—Improvements in Iron, Coal, &c.," 28 July 1845.

76 Alger Furnace inventory form, Massachusetts Historical Commission.

77 Furnace for Smelting iron, Patent No. 17,659, 30 June 1857.

78 "Hot Blast Patent Suit," 5 May 1849, 275.

a type of action for a breech-loading firearm and assigned it to Alger. Remington Arms used the design.

In 1847 Alger purchased an interest in the Cornwall Bridge iron furnace.⁷⁹ But most of his later career was in Hudson, N.Y., where he designed the Hudson Iron Co. blast furnace in 1859.⁸⁰ The furnace, described as oversized, included a number of Alger innovations. Jacob W. Hoysradt (1824-1890), who had apprenticed under Alger at Stockbridge and became his assistant at Hudson, moving up to general manager when Alger retired in 1864. Hoysradt later served a term as Hudson mayor.⁸¹

John Beckley of North Canaan took a brief interest in this furnace during the Civil War; as "lessee of the Taghkonic iron works [as it was also known] near Stockbridge," he announced he would discontinue the iron business as of 1 May 1866, "after which the buildings will be torn down and a cotton factory erected on the site," the weekly newspaper advised. "The property is owned by Learned of Pittsfield, and a valuable water privilege is connected with it. The iron manufactured by Mr. Beckley has been pronounced by government inspectors as the best in the market, but as the ore has to be transported from the north part of the county, there being no ore bed in the vicinity of the furnace, the heavy expenses prevents a sufficient profit being made in that business," according to *The Berkshire Courier*.⁸²

The furnace apparently processed iron ore imported from West Stockbridge. The owners of the Stockbridge Iron Works in 1873 leased "right and privilege to dig Iron ore in and upon the premises situated in West Stockbridge in said County, known as part of Nathaniel Leet Farm....," according to an 1873 deed that anticipated the mine would produce 7,500 tons of gross ore per year. The fee was \$1.50 a ton.⁸³

The Stockbridge furnace layout may be surmised from records of the Stockbridge and Pittsfield Railroad Co.⁸⁴ That railroad, chartered in 1847, placed 21.75

79 *Journal of the Franklin Institute*, New Series Vol. 23, page 401

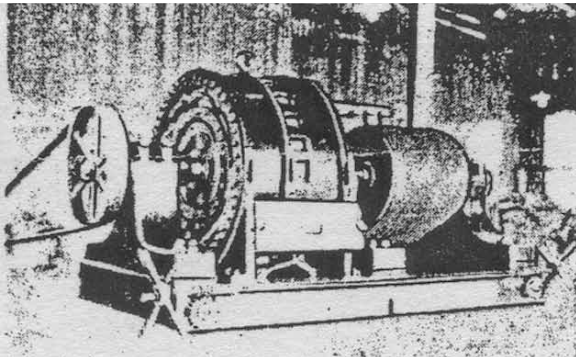
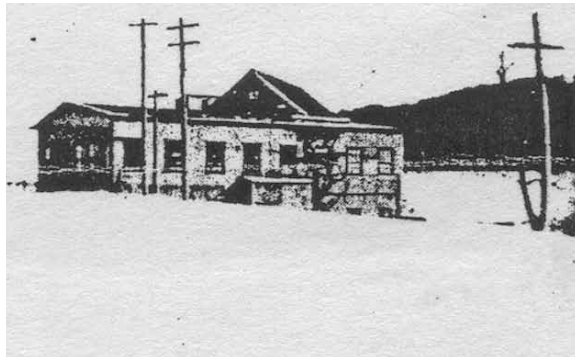
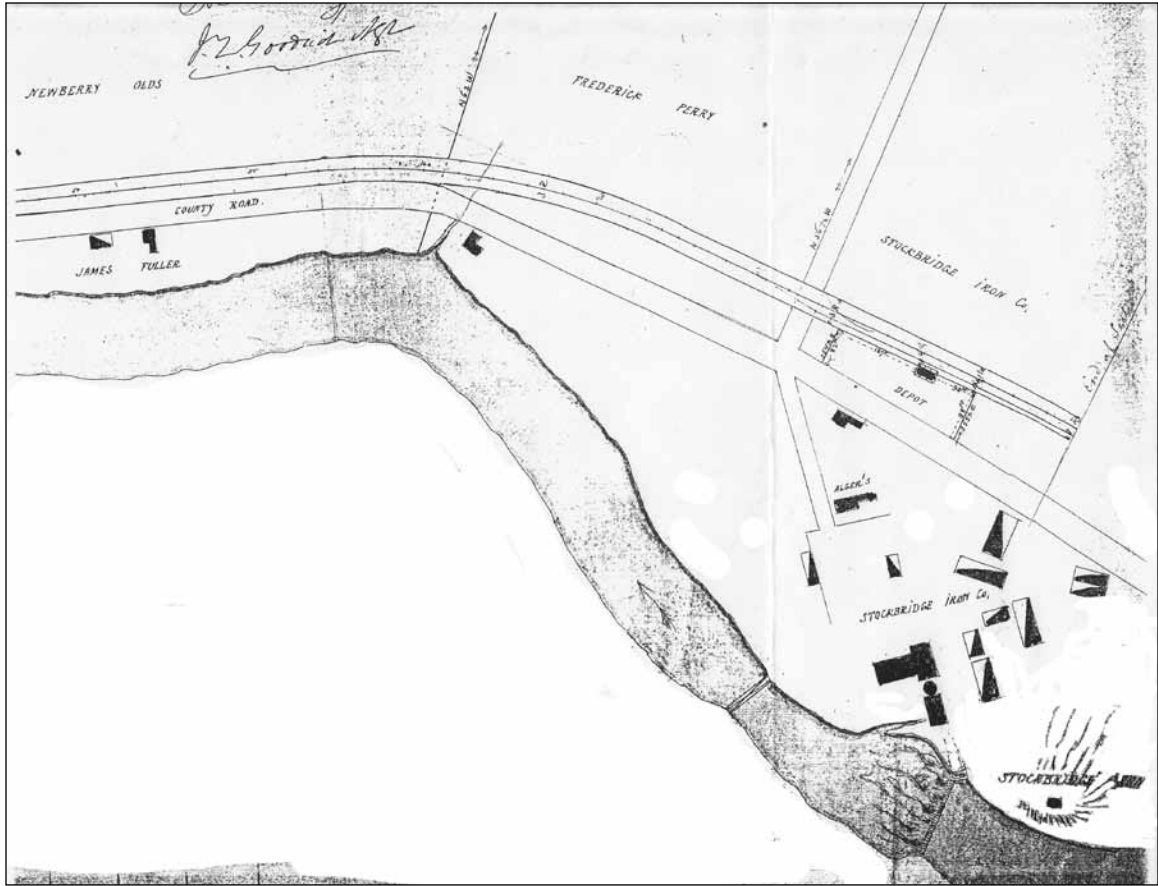
80 Chap. 354 An Act to confirm the title to certain real estate to the Hudson Iron Company...., 15 April 1859, Laws of New York, 82nd Session, 862.

81 Jacob Warren Hoysradt, Find a Grave.

82 "New Factory to be Erected," 7 December 1865.

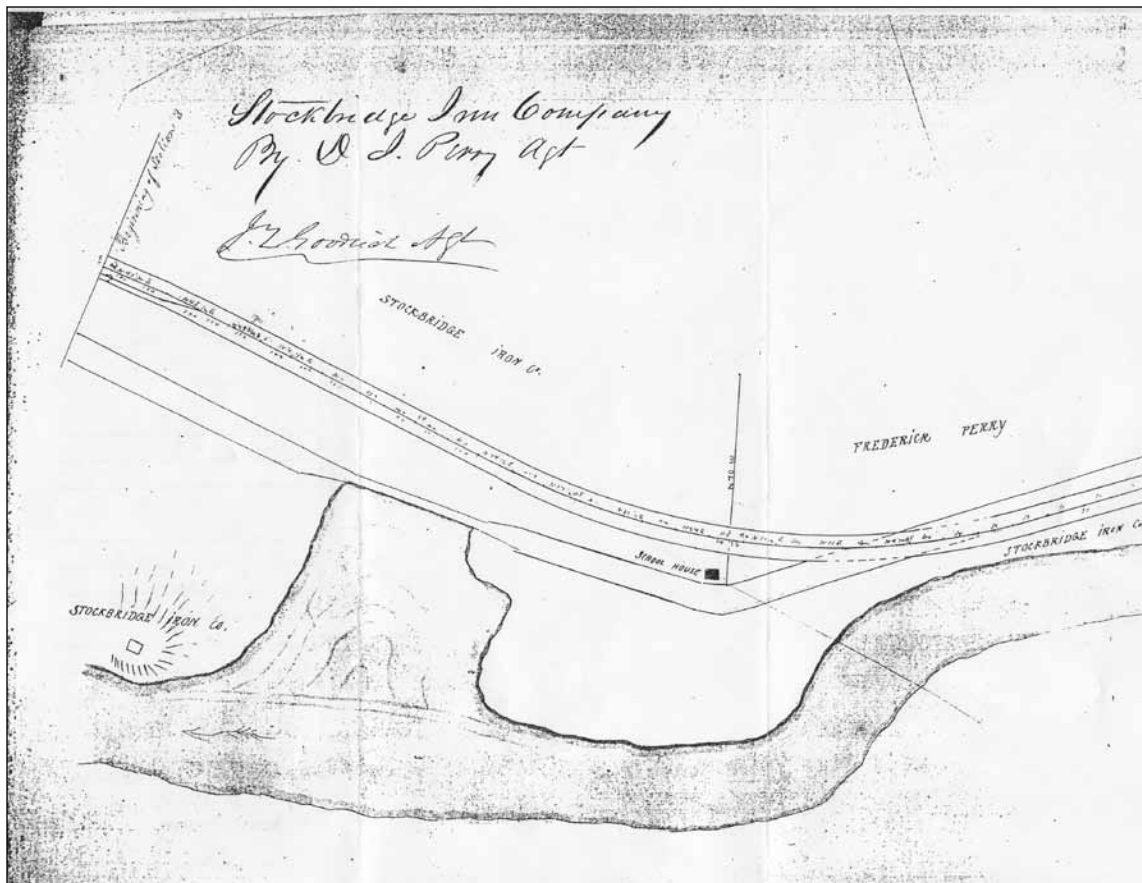
83 Stockbridge Iron Company to Richmond Iron Works, apparently a renewed lease, 18 July 1873, Southern Berkshire Registry of Deeds, Book 143 Page 341.

84 Location of Lands of the Stockbridge and Pittsfield Railroad



miles of track from VanDeusenville (connecting with the Housatonic Railroad) through Housatonic and company, County of Berkshire, Massachusetts 1896 (date filed with Berkshire County Commission), Shelf 10. Central Berkshire Registry of Deeds. Location Plan 1, Housatonic, and Plan of the Stockbridge and Pittsfield railroad Located in Berkshire County, Extending from VanDeusenville to Pittsfield (filed December 1880), Shelf 9, Central Berkshire Registry of Deeds, Location Plans 2 and 3, Housatonicville.

Stockbridge to join the Western Railroad in Pittsfield. The line was completed by January 1850 and leased to the Housatonic Railroad. Right-of-way drawings on file at the Central Berkshire Registry of Deeds indicate the iron furnace and casting house, power station and various charcoal sheds and horse barns on the west side of the river. The furnace was dismantled during the 1893 construction of an electrical generating sta-



Maps of Stockbridge Iron Co. by D.I. Perry, agent, are in the Richmond Iron Works Domesday Book at the Central Berkshire Registry of Deeds in Pittsfield. The railroad passed close by. There was a bridge crossing just south of the works. The 1893 power station and a generator are shown left. (*Electrical World*)

tion on the site.⁸⁵

The local ironmakers resisted expensive technological changes. Several furnaces closed after the Panic of 1857, though the survivors cruised through the Civil War. The development of Bessemer steel processes in Pennsylvania sealed their fate. The last furnaces here closed in 1923: They were the Richmond Iron Works in Richmond and the Barnum & Richardson facility in East Canaan, Connecticut.

“The basic problem that Connecticut ironmasters faced since the early days of the Republic,” Robert Gordon explained in *A Landscape Transformed*,

“when they began selling iron nationally, was that ironmakers in other regions with better factor advantages could capture Salisbury’s customers unless the Connecticut makers offered a product sufficiently better to justify a higher price. To succeed, a forge or furnace proprietor had to make the best possible use of artisans’ craft skills and knowledge....”

As iron historian Ed Kirby once put it aptly, the industry was “brain-dead” and didn’t know it.

MONUMENT MILLS POWER STATION AT ALGER FURNACE

Electrical inventor William Stanley demonstrated in 1886 the viability of alternating-current transmis-

⁸⁵ Richmond Iron Works to Monument Mills, Central Berkshire Registry of Deeds, 13 February 1895, Book 289 Page 358, containing about 40 acres for \$1,000.



The William Stanley-designed power station was abandoned after the new generator went online upstream at Glendale. The views on this page are inside and out of the main chamber; water left here through twin passages (top) to the turbine system. The lower photo on the next page may be the base for one of the generators. (2013)



sion—his story is told in the Great Barrington chapter. In 1893 with a new power station for Monument Mills at the former Alger iron furnace site, Stanley showed just how such a system could work. His power station here made the first long-distance transmission of high-voltage alternating current anywhere, sending electricity to Monument Mills in Housatonic and on into Great Barrington for residential and retail customers.

“Mill Superintendent Theodore Ramsdell was responsible for the decision to electrify the mills in

1892...,” according to historian Thomas Blalock. “Ramsdell approached William Stanley to supply the electrical equipment for this new hydroelectric facility... This was the first such alternator constructed by the Stanley Electric Manufacturing Company in Pittsfield. Prior to this, transformers were the major product of the company.”⁸⁶

The system was daring. As the *Berkshire Courier* quoted Stanley, “The unique thing about this plant is this: When it is finished and running, it will be the first plant in this country, and I think anywhere in the world, commercially installed, where arc and incandescent lights and motors are all distributed from the same generator in the same circuit.

“Only two wires, about the size of a lead pencil, will be used. Heretofore the transmitting of power by electricity has been confined to short distances less than half a mile, but by the system used in this plant power can be transmitted ten miles as well as one mile. It will be a big thing for manufacturing concerns, and this plant, when completed, will create no end of talk in the electrical business circles.”

“What is the system used, and is it peculiar to the Stanley company,” the reporter asked.

“It is the alternating current transformer system, and is peculiar to the Stanley company only in the fact that it is the only concern which thus far has successfully made a motor that would operate on this system.

“Heretofore it has been necessary to have three distinct generators and three distinct circuits in a plant for arc and incandescent lights and for power. Now it is all combined into one.”⁸⁷

Great Barrington native and electrical engineer Franklin L. Pope (1840-1895) supervised construction of Stanley’s innovative hydroelectric plant at Alger Furnace. See the next section for a description of how it worked.

The system at Alger Furnace was shut down in 1912, the 20-foot-high wooden dam was eventually breached, the power station dismantled. The wooden generating room structure suffered a fire in the 1930s.

I visited the site with the permission of the owner, who stressed the property is not open to the general public for safety and other concerns.

Stone ruins of the power station, side abutments

86 “In the Berkshires, part 1: William Stanley started something,” *IEEE Power & Energy*, July/August 2012, 93.

87 “A Unique Plant,” 13 July 1893, 1.



The two photos at top are at the Alger Furnace power station site. Above left is a steel brace from one of the power transmission poles. It reads "Jones McLaughlin." Above right is one of the scattered remnants on the south side of the river. (2013) Right is a salvaged piece of the original copper transmission cable. (Drew collection)





The author with a metal brace from a power transmission pole. On it is stencied “Monument Mills Housatonic, Mass.” (Donna Drew photos, 2013)

and some footings of the dam (visible at low water) remain.⁸⁸

The old power line poles from the Alger power station, painted green, were taken down in 1940. “Removal of poles and old-fashioned fixtures by employees of the Southern Berkshire Power and Electric Company this week, closed a chapter in the era of electricity in which the late William Stanley, inventor, and later the General Electric Company of Pittsfield played important roles,” the *Berkshire Eagle* said.⁸⁹ “The poles were those erected for the original line where the first successful long distance alternating current was carried in the country... The line of poles ran from the station down the railroad property [actually, they were on the east side of the river], into the village [Housatonic] through the Grove, across the lawn in front of Central block, past Kane’s store and followed a general direction of the New Haven

railroad tracks to Great Barrington...”

ELECTRICAL WORLD: HOW THE HYDRO-ELECTRIC PLANT WORKS

J. Franz described the Stanley system at Alger Furnace in detail for *Electrical World* in its 2 June 1910 issue: “The first electric plant was erected in 1894, a wooden dam, 20 ft. high and 140 ft. long was thrown across the river and impounds sufficient water to develop about 800 hp. The station is a wooden structure, and houses two generators, one rated at 240 kw and the other rated at 280 kw. Both generators are of the S.K.C. type. The smaller unit is of especial interest, as it was the first machine of this type made by the Stanley company, so far as the writer is aware, and much of the original practical experimenting was done in this station. In 1898 the business assumed such proportion that it became necessary to install a second unit, which was quite an improvement over the first and was designed with sufficient ventilation.

“The old unit, as one of the attendants expressed it, is a splendid stove, and with the aid of a small coal

⁸⁸ Longtime owner Lila W. Berle said she would love to see the property properly preserved but until then, for safety and liability reasons, it is closed to the public.

⁸⁹ “Remains of 1st Power Line finally Give Way to Progress,” 27 January 1940.





At low water, one can see the base of the old Alger Furnace dam, left. Top right is the dam foundation on the south shore. Above left is the 1893 power station ruins as seen from the south shore. (2013)

stove sufficed to keep the station comfortable during the severe winter weather which prevails in the Berkshire Hills. Despite this disadvantage, however, the machine has given satisfactory results for the past 12 years and has needed no repairs. Each unit is belt-connected to a 350-hp McCormick horizontal turbine, built by the Holyoke Machine Company, and regulated by governors manufactured by the same firm. The exciters are also belt-driven, and are rated at 3 kw and 5 kw, respectively, the latter unit being compound wound, and both being products of the Crocker-Wheeler Company. The smaller main generator is designed for a speed of 800 rpm, and the larger machine operates at 500 rpm. Both are two-phase, 66-cycle induction-type machines wound for 2400 volts.⁹⁰

Blalock explained, “Originally only a two-wire, single-phase transmission line was constructed along the 5-mi. (8-km) route to Great Barrington, However,

provision was made for the addition of a third wire later to supply two-phase power using a common third wire for the two phases.”⁹¹

Franz went on: “Many changes have been made in the switching apparatus, and a few years ago an entirely new switchboard was installed. This consists of two generator panels, one exciter panel and three feeder panels. The exciter panel has also a sectionalizing switch which divides the bases, and thus either or both machines in multiple can be used to supply the feeders. The board is of standard design, and was built by the former Stanley Electric Company. The station is also equipped with a rain gage, so that a record can be kept of the rainfall. A four-wire No. 0 bare-copper line leaves the station and connects with a trunk line on the opposite side of the Housatonic River, consisting of a No. 2 insulated-copper three-wire line running to the plant of the Great Barrington Light & Power company, four miles down stream. This company also operates an auxiliary steam station. The street and residence lamps in districts contiguous to the station are fed from two No. 6 insulated copper lines.

“The company [Monument Mills] developed so rapidly that soon the need for more power was felt, and a second station was built a mile and a half up stream in 1906...”

90 “Housatonic River Hydroelectric Plants,” op cit.

91 Ibid.

McCORMICK'S HOLYOKE TURBINE WHEEL & STANLEY'S S.K.C. GENERATOR

This is a quick look at two pieces of equipment in the 1893 power station.

Abandoning a career as a musician, John B. McCormick (1834-1924) of Holyoke (a relative of the farm harvester McCormick) while working in J.&W. Jollys' Holyoke Machine Co. shop developed what became known as McCormick's Holyoke Turbine Wheel. Hydraulic engineer James Emerson tested the mixed-flow horizontal turbine in 1876 and noted, "The builders, Messrs. McCormick and [James] Brown, made such extravagant claims that they were laughed at as visionary cranks of the then unusual hydrodynamic species. A week spent in testing, re-testing, changing wheels and gain testing, proved the claims of the builders to be well founded. Leading turbine builders were called in to assist in making the tests, for it was evident the wheel marked a new era in hydrodynamics."⁹² McCormick's new turbine superceded his earlier Hercules model. (McCormick also produced an Achilles turbine.) The turbines were manufactured in Glasgow, Scotland, and Imatra, Finland, as well as the United States.

One of the McCormick turbines is displayed at the Smithsonian Institution. A McCormick 52-horsepower unit still ran at the restored Ewing's Mill in Cherryhill Township, Ind., in 1966.

The S.K.C. generator—S.K.C. standing for Stanley-Chesney-Kelly—was developed and manufactured in Pittsfield, where Stanley had established Stanley Electric Manufacturing in 1890. Cummings C. Chesney (1863-1947) had worked in Stanley's Great Barrington laboratory and was shop superintendent and later vice-president with the Pittsfield venture. He stayed on when the business sold to Ferdinand W. Roebing in 1899 and eventually became Pittsfield Works of General Electric in 1903. The third member of the S.K.C. team was John T. Kelly (1859-1922), a former electrician in Westinghouse's Newark shop. Kelly later established a factory in Pittsfield to make Tele-electric pianos. John H. Kelman was shop superintendent when the first S.K.C. transformers were shipped in 1891. General Electric continued the

manufacture of large power transformers and other equipment in Pittsfield until 1987.

The Stanley equipment proved durable; as the *Berkshire Eagle* reported in 1949, the hydroelectric powerhouse near Greenwich, N.Y., which contains three generators made 50 years ago in Pittsfield by the Stanley-Kelly-Chesney works (SKC). These machines, sold by and installed under the supervision of the late Cummings C. Chesney, have been in continuous operation ever since, and the power station may lay claim to being the oldest powerhouse now operating with the same machinery for half a century."⁹³

ELECTRICITY

Stockbridge wasn't electrified until 1906, according to historian Thomas Blalock, despite an interest as early as 1891. "The 1906 electrification was instigated by local engineer and entrepreneur Joseph Franz... [who] arranged to obtain electric power for Stockbridge from the Glendale powerhouse that had just been completed. The Stockbridge Lighting Company was formed to distribute this power, which was transmitted via a two-phase, 2,400-V overhead transmission line from the powerhouse about 2 mi. (3.22 km) to the west."⁹⁴

The theory was, Monument Mills would use daytime power, Stockbridge nighttime.

The electric line ran to a small concrete building south of village center⁹⁵, where incoming power was distributed to homes that had brick vaults holding step-down transformers.⁹⁶

Townpeople had been specific in voting in 1898 to install electric lights: "Voted: That permission is granted to any company wishing to furnish Electricity to individuals, or the town to enter by other means than Highways on poles within three fourths mile of Soldier's Monument where streets are crossed or followed under ground conduits are to be used. Should the town see fit to light with Electricity iron posts shall be used and no fastenings made to trees. The Selectmen are given full power to see that the wishes of the

92 As quoted in "Perfect Turbine Wheel," Manufacturing Interests. See also "John Buchanan McCormick, Ballad Singer of Many Talents," *Pennsylvania Magazine of History and Biography*, Vol. 92 No. 2, April 1968.

93 "Strong SKC Generators Made 50 Years Ago Still Going," *Berkshire Eagle*, 6 April 1949, 6.

94 "In the Berkshires, part 2," *IEEE Power & Energy*, September/October 2012, 86.

95 Half of the building was a switching station, half was a waiting room for the Berkshire Street Railway. The building still stands.

96 A typical vault survives in Naumkeag, a property of The Trustees of Reservations.



The small building at left, in the left photo, housed electrical equipment for the village. (ImageMuseum) The building survives today, right, but the trolley shelter is gone. (2014)

town and individuals are respected.”⁹⁷

Franz described the system in *Electrical World*: “It is a well-known fact that underground cables are most desirable; and to undertake their installation in connection with a lighting plant in a small summer resort where only a night load is obtainable is a daring proposition. Large summer residences do not furnish as profitable an income to central stations as stores, apartment houses, etc. The installations in the former are large and the consumption comparatively small means large cost at first for transformers, meters, lamps, etc., and increased core losses. The apparatus could be small enough for the average load were it not for the fact that on special occasions, such as parties and dinners, when the house it filled with guests, the installation is used to its full capacity. In the face of such conditions the Stockbridge Lighting Company, of Stockbridge, Mass., undertook to establish a plant with a capital of \$25,000.

“Two miles from the town there is a reliable water-power plant which offered to furnish electrical energy at a reasonable price. After due consideration the water-power company proposition was accepted rather than build a power station. A two-phase, 2400-volt, 66-cycle, four-wire No. 6 transmission line was built, mostly on private right of way, to the nearest available point of the village, and a few consumers were taken on with a 3-in. covering of concrete. Most of the manholes are blind, being 2 ft. x 3 ft. x 3 ft., built of cement with cast-iron covers. A majority of

these manholes are situated in lawns at the road side. Open manholes are only used from the switch house to the main street where five ducts are laid. There are only two ducts through the other streets. Draining the manholes was unnecessary, except in a few places, for the soil is of a gravel or sandy nature and, therefore, allows the water to escape freely. This made a substantial underground system at a minimum expenditure.

“Three miles of double duct were laid with only 50 consumers connected, and with a possibility of 50 per cent increase. It is easily seen that secondary distribution was impracticable on account of consumers being too far apart. Where it was possible, more than one house was supplied from the same transformer. Two of the cables are continued overhead on pole lines, the cable ends being protected similarly to those at the switch house. The overhead lines cover about four miles of streets and are built according to standard construction rules; 30-ft., 8-in. top, chestnut poles being used and set at distances not over 100 ft. apart.

“This work was completed in the fall of 1907 at a total cost of about \$23,000. In the spring of 1908 the company was awarded a contract for public lighting to install 95 32-cp lamps, 51 to be connected with the underground cables, the remaining 44 being strung from the pole lines. Tungsten 5.5 amp lamps are used. The company receives nearly twice as much per year the trunk line. In order to obtain a suitable switch house, the company co-operated with other interests in building a small concrete structure, one-half of which the Berkshire Street Railway Company uses as a waiting station, the other half being used as

97 Special town meeting, 16 November 1898, Article 8.

a switch house. The floor of this part is 6 ft. x 12 ft., the building being 10 ft. high. In this room is installed a Westinghouse marble switchboard having six outgoing, double-throw, double-pole oil switches, and two busbar switches, all of which are protected by cartridge plug fuses. There are also entrance switches, lightning arresters, and choke coils, all of the Westinghouse make, and a General Electric 8 1/2-kw, constant-current transformer and panel, supplying a street-lighting system. From this center of distribution leave three No. 6 twin-conductor cables carrying 2400 volts, single-phase current to the three principal streets of the village. These cables, made by the National Underground Cable Company, are paper insulated. There is also a No. 6 twin conductor cable, cambric insulated, carrying 1000 volts, made by the Standard Underground Cable Company, to supply the street lamps. Two single-phase pole lines leave the station and feed the remotest houses, and also an overhead line for the street lamps on the outskirts.

“The taps of the primary cables are carried direct into the houses to transformer vaults built of brick or concrete, with iron-lined doors. Conduits of fiber were used, being overlaid for each street lamp supplied from the underground system as for the lamp supplied from the pole line. A lamp-post is shown in Fig. 2. A No. 10 lead-covered cable tap is carried direct to the head of the post. The sheathing is permanently grounded to the lamp-post. As no loop-lines were possible there is a total of 14 miles of series lines.

“At three principal street intersections special lamp-posts (Fig. 3) are used. In the base of each are installed test switches. Similar switches are employed on the overhead lines, making it much easier to find trouble on the line than if there were no sectional cut-outs. The lamp-posts vary in distance from 200 ft. to 400 ft. apart. While lamps at such distances do not illuminate the street brilliantly, sufficient light for a country town is obtained in marked contrast to the former oil lamps, which were placed at irregular intervals all over the village. The electric service is highly appreciated by all the residents. The cost of installing the underground street-lighting system was less than \$8,000, and the 45 overhead lamps cost the company less than \$3,000. The management has recently declared a small dividend from first year’s earnings, so that the installation evidently pays. The officers of the company are: Mr. Allen T. Treadway, president,

and Mr. Charles E. Hull, treasurer and manager. The Rogers Electric Company, of Lenox, Mass., was the contractor and had entire charge of the work.”⁹⁸

Stockbridge didn’t ignore its outlying villages. Voters in 1902 agreed “to appropriate \$800 for the streets of the village, said amount to be turned over to the Laurel Hill Association; \$400 for lighting the streets of Glendale and the Furnace District, and \$200 for the village of Curtisville. Said amounts come from Corporation Tax.”⁹⁹

Anson Phelps Stokes had a small, private hydro-electric generating plant at his massive estate in northern Stockbridge (it claimed a Lenox address). “The 100-room Shadowbrook mansion was named for a hillside stream on the property,” according to electrical historian Thomas Blalock. “Apparently, some sort of small water-power installation was constructed on this stream to provide the house with electric lights. A newspaper article of the time refers to an ‘electrical engineer’ being employed at Shadowbrook. Stokes offered to supply electric power to Lenox itself until it was decided that his ‘water privilege’ was not of sufficient capacity to allow for that.”¹⁰⁰ The property is home to Kripalu today.

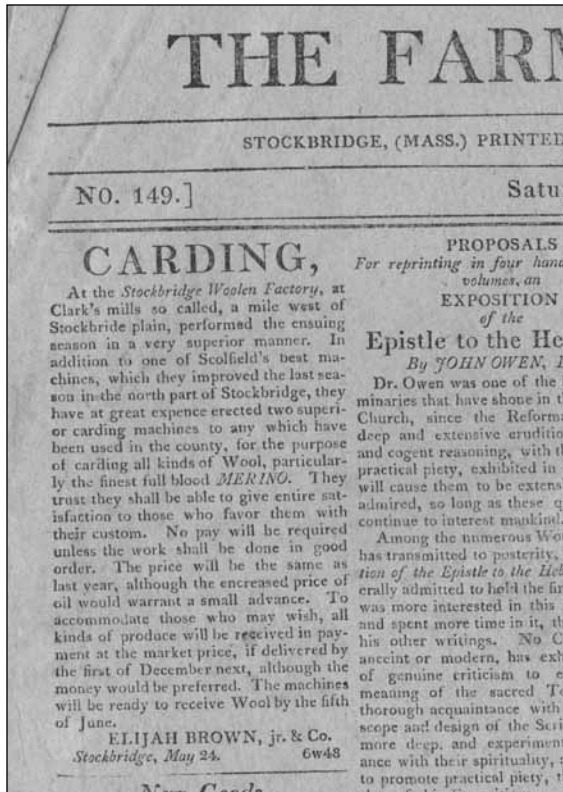
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