

wooden rails, strap iron on wooden rails, iron and steel); sources of power (animal, steam, diesel); types of locomotives (steam-powered engines varied by weight, number of drivers, conventional drivers versus geared, horsepower and speed); the gauge of track (narrow, standard, broad); and the roles of particular logging railroads in broader rail networks (free-standing, branch, mainline).

The Earliest Horse-Drawn Logging Railroads, 1850

The completion of the Illinois and Michigan Canal connecting Chicago with the Mississippi River in 1848 opened up a huge prairie market for pine lumber from Michigan. Lumbermen in the Grand and Muskegon river valleys could not get logs to their sawmills fast enough to supply Chicago merchants with lumber for customers in the West. The city shipped out thirty-nine million board feet of lumber in

1849, almost double the previous year's deliveries. The lumber exported from Chicago increased almost sevenfold during the first eight years that barges plied the canal, reaching 136 million board feet in 1856.¹⁰ In 1850 two lumbermen in the Grand River valley tried to speed up the process of moving logs from the skidways in the pine forests to the banking grounds next to the river by having horses pull carloads of logs along wooden rails. One of these railroads penetrated a few miles into the pineries of Allendale Township just downstream from Eastmanville (see map). This railroad, built under the direction of Dr. Timothy Eastman, was later operated by Chicago lumberman Jabez Barber.¹¹ The other railroad was built about the same time, 1850, from the head of a bayou east a few miles into the forest.¹² These first two experimental horse-drawn logging railroads in Michigan must have been at least a partial success because by 16 February 1853 the *Grand River Times* published the following advertisement:

Notice to Contractors

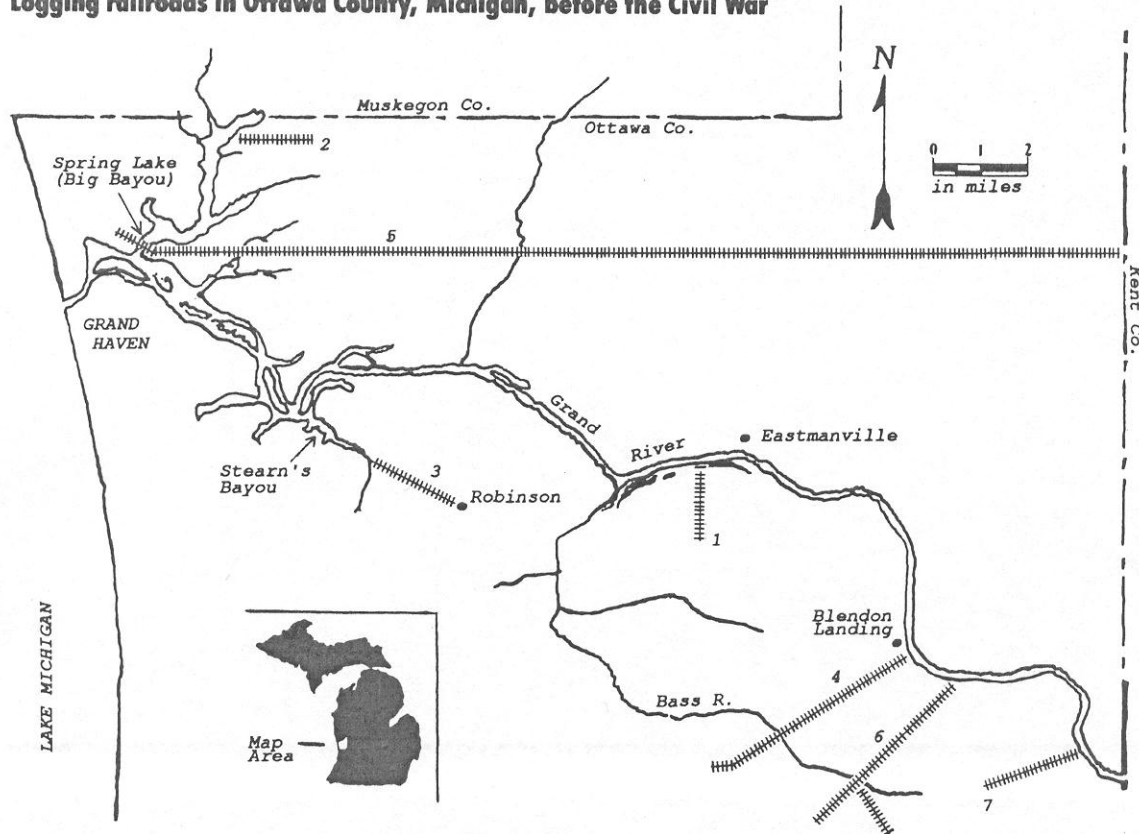
We will receive proposals till the first day of March, next, for the construction of the two and one-half miles of railroad running from the bank of Stearn's Bayou, on Sec. 5, to the centre of Sec. 16, in T 7, N. R. 15 W. The ground is favorable and the material is very convenient.

Each proposal must be accompanied with the name of at least one responsible person as surety for performance of contract. Plans and specifications may be seen at our office.

GILBERT & CO.
GRAND HAVEN, FEB. 9, 1853

This third railroad, built from Stearn's Bayou southeast toward Robinson center (see map) was successful enough to operate for at least eight years.¹³ The stands of pine timber that these first three horse-drawn logging railroads penetrated were probably exhausted and the railroads abandoned by 1864. None of these three railroads appear on an 1864 plat map of Muskegon and Ottawa counties,

Logging railroads in Ottawa County, Michigan, before the Civil War



although the routes of four other railroads in central and eastern Ottawa County are identified.¹⁴

By 1858 logging railroads were so numerous in the Grand River valley between Grand Rapids and Grand Haven that a Milwaukee citizen traveling on a Grand River steamboat wrote: "To facilitate chopping, every owner has his own railroad, extending back from the river to his heavy timber. One man has his regular locomotive, though the horse is the general motive power."¹⁵

The Blendon Lumber Company and Its Steam Locomotive Railroad (1857)

The fourth railroad to be built in Ottawa County was the first logging railroad in the Great Lakes region to employ a steam locomotive. The white pine forest in Blendon Township was one of the largest in Ottawa County and stood several miles from the Grand River, the nearest stream that could float logs. John Ball found this tract of white pine during the Michigan land rush of 1836, after leaving New York with one thousand dollars in gold and nine thousand in bank drafts tucked away in his saddlebags.¹⁶

Ball, who was serving as a timber cruiser and land agent for several investors from Troy, New York, traversed the forests of Allegan, Ionia, and Ottawa counties during the fall of 1836. After spending a day cruising timber from Grandville in Kent County to Blendon Township in Ottawa County he recorded finding only one small tract of pine. He and his companion camped out that night and "slept as well as the tramping deer and howling wolves would let us." The next day they took a more northern route back and had not gone far before coming into a dense forest of pines. They spent the rest of that day and part of the next mapping the pine forest but had to return to Grandville for supplies before completing their survey. A few days later they returned in the rain and snow to make

a thorough investigation of the lands, finding some 2,500 acres of good pine almost in a body, on a part of which there was some good white oak. One oak tree was seven feet in diameter with a

clear body say of seventy feet high and a fine spreading top, the largest tree I ever saw in Michigan. It was sawed and sent east for navy purposes.¹⁷

John Ball purchased the twenty-five hundred acres of pine and oak with some of the ten thousand dollars his New York investors had given him to buy land for them. When the financial panic of 1837 depressed lumber prices, Ball opened a law practice in Grand Rapids, where he continued to serve as land agent for the investors in New York.

It took more than fifteen years for the financial situation to improve enough to give those investors an incentive to begin logging their tract. Economic conditions had changed so much by 1855 that a *Chicago Journal* correspondent wrote:

The lumber wealth of Michigan, and especially this portion of the state is incalculable. I know of no more admirable locality for the active and energetic prosecution of the business than this. A frame saw mill, a steam boiler and engine, and one raft of logs on the Grand River, constitutes sufficient capital to make any owner rich in a few years.¹⁸

In response to this new economic climate, Ball's investors had him arrange for a cash assessment of their timber.¹⁹ They also instructed him to begin negotiations for acquiring a right-of-way on which a railroad could be constructed from their forests to the Grand River. Henry Hart surveyed the right-of-way during February 1856 and purchased it for F. B. Leonard, T. C. Brinsmade, and J. E. Whipple, the New York investors, who then organized a lumber company.²⁰ Newspapers first referred to their firm as the Lansingburg Company, but it soon became known as the Blendon Lumber Company.²¹ They purchased additional timber and employed Capt. S. R. Noyes of Lansingburg, New York, as their agent from 1855 to 1865.

Two newspaper accounts document this company's use of a steam locomotive to haul logs starting in the spring of 1857:

We learn that Col. Norton has leased the steam sawmill recently erected by him, at Nortonville, to the Lansingburg Company, for a term of ten years, for a consideration that bids fair to highly remunerative to the owner.

The Lansingburg Co. are now prepared to carry on their lumbering operation with great facility. A locomotive with necessary cars have been placed upon a track of some three miles in length, extending back from the river, to an extensive tract of pine land, owned by the company, in the town of Blendon, in this county. With this arrangement they are enabled to bank a very large quantity of logs daily. These logs are rafted to the mill before mentioned for manufacture into lumber.²²

Lansingburg²³ is a small place, celebrated only for its railroad, and the large amount of lumber and logs that is sent therefrom.²⁴

There are no other contemporary news accounts of the operation of the Blendon Lumber Company railroad. Fortunately, some of the operations of this railroad can be reconstructed from letters written by two individuals who worked for the company.²⁵

During the winter of 1855/56 the lumber company built a small sawmill in the center of Blendon Township and used that mill primarily to saw timber for the railroad. The railroad initially had wooden rails,²⁶ but the Blendon Lumber Company later replaced these with rails made of used strap iron.²⁷

The Blendon Lumber Company railroad was three miles in length when it was first constructed and later attained a length of eight miles. The railroad carried logs from the forests in Blendon Township northwest to Blendon Landing just inside Georgetown Township on the Grand River "where there was a high bank, down which the logs were rolled into the river."²⁸

The steam locomotive purchased by Blendon Lumber Company had four driving wheels, operated on standard gauge track and was built in 1850 for the Michigan Central Railroad by Locks and Haven Locomotive builders of Lowell, Massachusetts.²⁹ Blendon Company employee Harley Bement described "the old St. Joe [as] a big freight engine with a tender and water tank."³⁰ During the spring and summer months this engine made "four or five trips a day over the track through the dense woods of Blendon and Georgetown" to Blendon Landing. Bement described the operation as follows:

Each car coupled far enough apart to put on two tier(s) of logs, sixteen feet long. She had from six to eight of these cars and put from three to eight thousand [board feet] in a car. The wheels were the same height as those of all flat cars at that time. She carried an engineer and firemen when she supplied the Litchfield mill. About 100,000 [board feet] a day had to be put in so you can readily see this could not be done on a crooked road and a poor track.³¹

The financial timing of Blendon Lumber Company's technological innovation in hauling logs was horrendous. The panic of 1857 soon made it virtually impossible for lumbermen to make a profit, and many west Michigan sawmills shut down.³²

Fortunately the depression in lumber prices was short-lived. With its railroad investment already made, the Blendon Lumber Company proceeded to build one of the largest steam sawmills on the Grand River at Blendon Landing in 1858. The only reason for constructing such a large sawmill at this somewhat isolated location would be to take advantage of the logs coming down to the Grand River on the company's railroad.³³ The logging railroad was used to haul hardwood—white oak, hickory, ash, cherry, and black walnut logs—as well as white pine.³⁴ The white oak was used as railroad and car timber and in the building of numerous ships.³⁵ Another profitable cargo for the logging railroad was cordwood, which was sold for firewood.³⁶

The slowly improving financial conditions after 1857 were interrupted by the secession of the southern states and the Civil War. The war depressed the Chicago lumber market during 1861, but prices began rising in 1862, marking the beginning of what one Michigan lumberman called “eleven fat years.”³⁷

The Blendon Landing Sawmill and perhaps the Blendon Lumber Company did not benefit from the boom, however. During the next two years, the mill's owner joined the Union Army and became a prisoner-of-war; in May 1864 the mill was sold to a Boston businessman; and finally the mill burned down two months later during a dry summer of many forest fires, some of which may also have destroyed part of the timber owned by the Blendon Lumber Company. The 16 August 1864

Grand Rapids Daily Eagle advertised a salvage sale of the sawmill's machinery.³⁸ The mill itself was never rebuilt. The logs still being delivered to Blendon Landing were dumped into the Grand River and floated downstream to one of the sawmills in the Nortonville/Mill Point area.³⁹ In 1865 Blendon Lumber Company sold the remaining pine and oak on their land, along with the logging railroad, to John Haire of Georgetown, Michigan.⁴⁰

Was the Blendon Lumber Company Railroad the First Steam Logging Railroad to Operate in the United States?

The Blendon Lumber Company's steam railroad apparently ceased operation about 1870.⁴¹ The best estimate of pine and hardwood logs and lumber delivered to Blendon's Landing on the Grand River by this railroad during its approximately fourteen years in operation is between forty and sixty million board feet.⁴²

Overall the Blendon Lumber Company's experiment using a steam locomotive to haul logs several miles to the Grand River, beginning in 1857, was probably not much of a financial success because of depressed economic conditions during the panic of 1857 and the early Civil War. The company also faced expensive wear and tear on its equipment—the locomotive, car wheels, and wooden rails (later replaced by strap iron)—caused by hauling heavy logs.⁴³ Ironically, the Blendon Lumber Company surmounted obstacles both economic and technical, only to succumb in the end to historical accidents that kept the company from exploiting the newly improved markets or its own improved technology.

The Blendon Company nonetheless deserves recognition for running a steam logging railroad seventeen years before the Glencoe and Pinconning Railroad used a steam locomotive to haul logs to Lake Huron in 1874.⁴⁴ The Blendon experiment also predated by two decades W. S. Gerrish's operation of what was apparently the first consistently profitable steam logging railroad, the Lake George and Muskegon River line, which began in 1877.⁴⁵

Michael Koch, in his classic book on the history of logging railroads,⁴⁶

contends that the first logging railroad in the United States was constructed in 1852 in New York state and used a steam locomotive to haul the logs. Koch unfortunately misquoted William F. Fox, who wrote:

The first railroad for hauling logs was built in 1860 by Fox, Weston & Bronson, in the town of Lindley, Steuben County, New York. It was constructed of wooden rails, and was equipped with platform cars and a locomotive which bore on its cab the name “Bull of the Woods” [and hauled] logs to the bank of the Tioga River.⁴⁷

The Blendon Lumber Company's steam locomotive logging railroad predated this railroad by three years. A search for documentary evidence of the earliest logging railroads in a number of states found none that employed a steam locomotive at an earlier date (see table). Thus, the Blendon Lumber Company's 1857 freestanding steam logging railroad is the oldest documented use of steam railroad technology to haul logs in the United States.

Additional Logging Railroads in Ottawa County

An 1864 plat map of Muskegon and Ottawa counties, which shows the Blendon Lumber Company railroad, also identifies two other lumber railroads—one operated by Stephen Lowing from Ohio Dock on the Grand River to Blendon Township with Cole's sawmill at its inland terminus, and one operated by George Weatherwax from his river landing in Georgetown Township into the pineries of that township.⁴⁸ There are no logging railroads identified on the plat map of Ottawa County published in 1876,⁴⁹ although there is fragmentary historical evidence that other horse-drawn logging railroads ran in Blendon and Allendale townships during the 1870s and early 1880s.⁵⁰

That a total of six logging railroads were built between 1850 and 1864 along the Grand River in Ottawa County suggests that the two constructed first were successful. Only the success of the initial experiments would have induced investors to commit the capital necessary to build four more logging railroads, three of which were more than two miles in length.

First use of railroads to transport logs prior to 1877

	Animal power	Steam locomotive	
		Free-standing railroad	Mainline railroad
Michigan	1850	1857	December 1860
California	by 1854 (gravity)	1871	
Illinois	1856/57	1862	
New York		1860	
Maine			
Pennsylvania		1864	
Virginia		by 1869	
Georgia	1867	1870	
New Hampshire		1870	
Florida	by 1873	by 1873	
North Carolina		by late 1877	

Sources

Michigan: Hopkins operated a logging railroad in 1850 from the head of Spring Lake, Grand River valley (see advertisement for someone to operate this railroad, *Grand River Times*, 6 August 1851, plus letter to the editor by Edwin Thayer, "The First Logging Railroad in Michigan," *American Lumberman* 1449 [28 February 1903]: 18). Timothy Eastman operated a logging railroad in 1850 to Grand River in Alledale township (see Thayer, "First Logging Railroad in Michigan"). The Blendon Lumber Company operated a steam locomotive logging railroad from Blendon Township in Ottawa County to Grand River in 1857 (*Grand River Times*, 6 May 1857, p. 2, plus Thayer, "First Logging Railroad in Michigan"). The Detroit and Milwaukee Railroad operated daily log trains west to Hunter Savidge's mill at Mill Point (Spring Lake) in the fall of 1860 (see *Grand Haven News*, 19 December 1860, p. 3).

California: see S. T. Borden, "Arcata & Mad River: One Hundred Years of Railroad in the Redwood Empire," *The Western Railroader* 17 (June 1954): 4, and Lynwood Carranco and Henry L. Sorensen, *Steam in the Redwoods* (Caldwell, Idaho: Caxton Printers, 1988).

Illinois: A logging tramroad using mules and oxen was constructed at Ullin, Illinois in 1856/57. A steam locomotive was put on this railroad in 1862. (James Bell, who operated a sawmill in Ullin, cited by M. L. Saley, columnist for the *Northwestern Lumberman* 43 [3 February 1894]: 3).

Maine: Both the Augusta and Kennebec and the Grand Trunk Railroads operated logging trains in 1860 according to a news account in the *Brunswick Telegraph* (cited by M. Koch in *Steam and Thunder in the Timber* [Denver, Colorado: World Press, 1979], p. 102).

Pennsylvania: Wright and Pier operated a steam locomotive in 1864 at the mouth of Callen Run, a small tributary of the Clarion River in Jefferson county (see Benjamin F. Kline, Jr., *Dinkies, Dams and Sawdust: The Logging Railroads of Pennsylvania* [Lancaster, Pennsylvania: privately printed, 1975], p. 1265, citing the *Ridgeway Advocate*, 7 January 1897).

Georgia: Moses Wadley operated a tramroad in Emanuel County during 1867. George Garbuth used a Fifield steam locomotive near Ogeechee, Emanuel County, beginning in 1870 (see letter to editor in *Northwestern Lumberman* 11 [27 April 1878]: 4).

New York: Fox, Weston and Bronson operated a steam locomotive in the town of Lindley, Steuben County, beginning in 1860, not in 1852 as Koch mistakenly states (*Steam and Thunder in the Timber*, p. 22). In the 1976 facsimile reprint (Harrison, New York: Harbor Books, 1976) of W. Fox's 1901 *History of the Lumber Industry in the State of New York*, this citation appears on page 52. Thus 1852 would be an easy error to make when transcribing the reference.

New Hampshire: William Gove, "New England's First Logging Railroad: Brown's Lumber Company—Whitefield, New Hampshire," *Northern Logger* 21 (no. 10, April 1973): 18–19, 42–45.

Virginia: One anonymous correspondent remembered two logging railroads that used little upright engines on wooden tracks in 1869, but he did not give the names of the companies. He pointed out that at least two Virginia companies were using iron rails in 1878—Jackson and Co. of Suffolk, who operated a fourteen-mile railroad hauling both logs and lumber, and John L. Rosser and Co., who had a six-mile railroad from their mill on the A & C canal back through their swamp (letter to editor signed H., *Northwestern Lumberman* 11 [20 April 1878]: 4).

Florida: "Horse Railroads for Hauling Logs," (anonymous correspondent, [*Jacksonville, Florida*] *Republican*, reprinted in *The Lumberman's Gazette* 2 [no. 10, April 1873]: 127). Also "Wooden Railways," (anonymous correspondent, *The Lumberman's Gazette* 3 [no. 1, July 1873]: 23).

North Carolina: Greenleaf, Johnson and Son were using two locomotives to haul logs on a three-mile railroad near Edenton, according to a letter to the editor signed H., in the *Northwestern Lumberman* 11 (20 April 1878): 4.

The First Mainline Railroad to Operate Log Trains in the Great Lakes Region

During the latter part of 1860 the first mainline railroad penetrated the white pine forests of Michigan thanks to Hunter Savidge, a Mill Point lumberman, who paid the Detroit and Milwaukee Railway to run a train

loaded with logs from the banking ground to his mill each day.⁵¹ This log train operated on the Detroit and Milwaukee mainline from the banking grounds west of Nunica to Mill Point (now Spring Lake) adjacent to Grand River in Ottawa County. The daily supply of logs enabled Savidge's mill to stay open while other mills closed for the winter when ice in the rivers cut off their supply of logs.

Soon, however, the start of the Civil War depressed the Chicago lumber market and collapsed Illinois banks, probably producing the same economic losses for Savidge's mainline logging train as for the Blendon Lumber Company's logging railroad. Sawmills had also been constructed along the route of the Detroit and Milwaukee Railway at such locations as Muir and Ionia in Ionia County and Berlin (now Marne), Coopersville, and Nunica in Ottawa County.⁵² Both the railroad and the Chicago lumber merchants could make a better profit transporting sawn boards from these mills than by transporting whole logs by rail. As a result, Savidge's logging-train experiment did not lead others to employ mainline railroads to transport logs to their mills.⁵³

This first experiment in the operation of logging trains by a mainline railroad preceded by ten years the 1870 use of log trains by the Flint and Pere Marquette Railroad, the earliest such use documented in the previously published literature.⁵⁴ Several other Michigan common carrier railroads began operating log trains within two years after the Flint and Pere Marquette began operating daily log trains.⁵⁵

Replacing Myth with Fact

The business investors and lumbermen who attempted to haul logs by rail in the Grand River Valley of Michigan before and during the Civil War did not take the time to record their successes and failures publicly. Their attempts were so completely forgotten that by 1881 a correspondent of the *Northwestern Lumberman* writing from Grand Haven could state confidently that the first logging railroad on the Grand River was built by Whitney and Stinchfield in 1878.⁵⁶ At the turn of the century Edwin Thayer attempted to get the history of the Blendon Lumber Company's railroad incorporated into both the national history of lumbering and the local history of the Grand River valley,⁵⁷ but his efforts were ignored and forgotten locally as well as nationally. The standard history of Ottawa County mentions none of the six logging railroads that operated before or during the Civil War.⁵⁸

Numerous lumbermen constructed and operated animal-powered free-standing logging railroads during the 1850s, 1860s and early 1870s in Michigan.⁵⁹ The construction and operation of steam locomotives on logging railroads not connected to any mainline railroad was not attempted again in Michigan until 1873 when the Pinconning and Kaiserville Railroad began operating.⁶⁰

It took the open winter of 1877–78 for Winfield Scott Gerrish's Lake George and Muskegon River logging railroad to make a profit sufficiently obvious to stimulate the construction of numerous logging railroads in Michigan during the spring and summer of 1878. By the time the last logging branch line was built in Michigan by the Lake Superior and Ishpeming Railroad in 1957,⁶¹ more than five hundred logging companies had constructed several thousand miles of track into the forests of Michigan.⁶²

Conclusion

One of the most important technological developments in the history of logging in the nineteenth century involved the use of railroads to transport logs.⁶³ A review of the documented history of logging railroads supports the conclusion that America's logging railroad era began in Ottawa County, Michigan, with the introduction of horse-drawn logging railroads in 1850 and the introduction of a steam locomotive to transport logs in 1857. The history of the numerous experiments with logging railroads between 1850 and 1877 documents multiple independent "inventions." Selectively, some experiments failed—for economic or technological reasons. The successes multiplied whenever they encountered a fortunate combination of feasible technology and economic opportunity. Despite the well-deserved historical reputation of W. S. Gerrish as an early operator and innovator in the use of railroads to transport logs, he was not the "heroic" lone inventor. ▲

Notes

This paper is dedicated to the memory of Richard Flanders, professor of anthropology at Grand Valley State University, who died in 1989. His intellectual curiosity about Blendon Landing, now a ghost town, first stimulated me to begin studying the environmental history of logging in the Grand River Valley. I wish to thank Forrest Meek, Randall Rohe, Paul Trap, Robert Vandevusse, and Sam Breck who have provided me with assistance valuable in the writing of this paper and in other projects on the environmental history of logging in Michigan.

1. William G. Rector, *Log Transportation in the Great Lakes Lumber Industry 1840–1918* (Glendale, California: Arthur Clark, 1953); Barbara E. Benson, *Logs and Lumber: The Development of the Lumber Industry in Michigan's Lower Peninsula, 1837–1870* (Mount Pleasant: Central Michigan University Press, 1989); Mark E. Neithercut, "The White Pine Industry and the Transformation of Nineteenth-Century Michigan" (Ph.D. dissertation, University of British Columbia, 1984).
2. Rolland H. Maybee, *Michigan's White Pine Era: 1840–1900* (Lansing: Michigan Historical Commission, 1960), pp. 37–41; Willis Dunbar, *Michigan: A History of the Wolverine State*, 1st ed. (Grand Rapids, Michigan: Eerdmans, 1965), pp. 473–74; Sam Breck, Graydon Meints and Evan Garrett, eds., *One Hundred Fifty Years of Michigan Railroad History* (Lansing: Michigan Department of Transportation, n.d. [1987]).
3. Hudson Keenan, "America's First Successful Logging Railroad," *Michigan History* 44, (September 1960): 292–302.
4. Leslie E. Arndt, "1973 Logging Train 'Natural' for Bay County," *The Bay City Times*, Sunday edition, 3 August 1975, p. 3B; Leslie E. Arndt, *The Bay County Story: Memoirs of the County's 125 Years* (Bay City, Michigan: Huron News Service, 1982), pp. 122–23; Fred C. Olds, "Michigan's First Logging Line: A New Claim," *The Inside Track* 8 (Nov./Dec. 1977): 19–20; Michael Koch, *Steam and Thunder in the Timber: Saga of the Forest Railroads* (Denver, Colorado: World Press, 1979), p. 22.
5. Randall Rohe, "Tramways and Pole Railroads: An Episode in the Technological History of the Great Lakes Lumber Era," *Upper Midwest History* 5 (1985): 19.
6. A previous effort was made around the turn of the century to draw attention to the attempts of lumbermen to use railroads for transporting logs to the Grand River in Ottawa County between 1850 and 1870. See article by Edwin Thayer, who worked for the Blendon Lumber Company as a shipping agent, "First Logging Railroad: Interesting Reminiscences of the Old Blendon Lumber Company's Line," *Grand Rapids Herald*, 5 September 1899, p. 4. See also a letter to the editor from Edwin Thayer entitled "The First Logging Railroad in Michigan," *American Lumberman* 1449, 28 February 1903, p. 18.
7. For more on these general theories of technological change, see George Basalla, *The Evolution of Technology* (New York: Cambridge University Press, 1988); Donald T. Campbell, "Evolutionary Epistemology," in Paul Schillp, ed., *The Philosophy of Karl Popper*, vol. 1 (La Salle, Illinois: Open Court, 1974); J. Hugill and D. Bruce Dickson, eds., *The Transfer and Transformation of Ideas and Material Culture* (University Station: Texas A&M Press, 1988); and Everett M. Rogers, *Diffusion of Innovations*, 3rd ed. (New York: Free Press, 1983).
8. E. F. Guild, "Logging Railroads," *Michigan Engineer* 4 (1883): 58–61; Ralph C. Bryant, *Logging: The Principles and General Methods of Operation in the United States*, 1st ed. (New York: Wiley & Sons, 1914), pp. 242–48.
9. Rohe, "Tramways and Pole Railroads."
10. George W. Hotchkiss, *Industrial Chicago*, vol. 4, *Lumber Interests* (Chicago, Illinois: Goodspeed, 1894), p. 193.
11. The only historical documentation for the existence of this railroad is Thayer, "First Logging Railroad in Michigan."
12. Hopkins & Brothers, who operated a sawmill at Mill Point as the village of Spring Lake was then called, built this animal-drawn logging railroad. In an advertisement dated 1 August 1851 and run in the *Grand River Times*, 6 August 1851, p. 3, Hopkins sought someone to get in five million feet of saw logs using their equipment, which included five yoke of oxen, one span of horses, and two miles of track. This logging railroad is also mentioned in Thayer, "First Logging Railroad in Michigan."
13. Anonymous, *History of Ottawa and Muskegon Counties, with Illustrations and Biographical Sketches of Some of Its Prominent Men and Pioneers* (Chicago, Illinois: H. R. Page & Co., 1882), p. 103, states that Charles H. Clark built the horse railroad for the Gilberts in 1853. Thomas Gilbert sold the railroad to Ferry & Son when Gilbert decided to move to Grand Rapids in 1855/56. That this railroad was still in operation as late as 1861 is documented by an obituary for the wife of one of the railroad's workers (*Grand Haven News*, 5 June 1861, p. 3).
14. I. Gross, *Map of the Counties of Ottawa and Muskegon and Part of Allegan, Michigan* (Philadelphia, Pennsylvania: Geil, 1864; reprinted, Muskegon, Michigan: Muskegon Genealogical Society, 1986).
15. *Milwaukee Daily Sentinel*, 4 June 1858, reprinted in *Grand Rapids Eagle*, 11 June 1858, p. 3.
16. John Ball, *Autobiography of John Ball*, compiled by Kate Ball Powers, Flora Ball Hopkins, and Lucy Ball (Grand Rapids, Michigan: Dean-Hicks, 1925), pp. 133, 140–43.
17. *Ibid.*, p. 143.
18. Correspondence of the *Chicago Journal* on Grand Haven, the lumber trade, the Detroit and Milwaukee Railway, etc., as reprinted in the *Grand Rapids Daily Herald*, 29 May 1855, p. 2.
19. Leo C. Lillie, *Historic Grand Haven and Ottawa County* (Grand Haven, Michigan, 1931; reprinted Grand Haven, Michigan: Tri-Cities Historical Society, 1980).

20. Henry Hart to F. B. Leonard et. al., recorded 5 March 1857, *Book M*, pp. 104–105, Register of Deeds Office, Ottawa County, Grand Haven, Michigan.
21. The incorporation records of Michigan include no record of either the Blendon Lumber Company or the Lansingburg Company (letter to the author from the Corporation and Securities Bureau, Michigan Department of Commerce, 16 October 1987).
22. *Grand River Times* (Grand Haven, Michigan), 6 May 1857, p. 2.
23. Lansingburg, where the company dumped its logs into the Grand River, became known as Blendon Landing.
24. *Grand River Times* (Eastmanville, Michigan), 14 October 1857, p. 1.
25. A one-paragraph history of the Blendon Lumber Company railroad published in the *Grand Haven Tribune*, 16 August 1899, p. 4, was reprinted in the *Grand Rapids Herald* and led to a series of articles on this logging railroad. One is Thayer, "First Logging Railroad." A secondhand historical account of the operations of the Blendon Lumber Company railroad written by C. Waffel, "America's First Logging Railroad," *Grand Haven Tribune*, 3 October 1899, p. 4, contained so many errors that two men who had worked for the Blendon Lumber Company wrote letters to the editor. They not only corrected the errors but went on to describe other operations of the lumber company. See Edwin Thayer, letter to editor, *Grand Haven Tribune*, 10 October 1899, p. 4, and Harley C. Bement, letter to editor, *Grand Haven Tribune*, 27 December 1899, p. 4.
26. Edwin Thayer, in his 10 October 1899 letter to the editor of the *Grand Haven Tribune*, recalled that "the stringers upon which the wooden rails were placed, were made from timber adjoining the track, trees from sixteen to twenty inches in diameter, flatted upon both sides, laid upon crossties, likewise flatted and imbedded in the ground, and instead of being spiked to the ties with iron spikes, the stringers were fastened to the crossties with stout oak pins, two inches in diameter through holes bored with a two inch auger into the crossties beneath."
27. Thayer, "First Logging Railroad in Michigan," p. 18. Pieces of the strap-iron rail have been plowed up by farmers and dug up by Grand Valley State University archaeologists investigating Blendon Landing, which is now a ghost town. I have been shown such pieces by Gerrit Elzinga, a farmer, and by Professor Richard Flanders, an archaeologist. There are no archaeological remains of the railroad grade above the surrounding land. This is probably because the land was subsequently plowed by the farmers who purchased it from the lumber company. The only grade that still exists is a cut just west of Blendon Landing.
28. Anonymous, letter to Saginaw columnist, *American Lumberman* 1266, 26 August 1899, p. 24.
29. This locomotive was known as "Old St. Joe" according both to Thayer ("First Logging Railroad" [1899]) and the 1882 vanity county history, *History of Ottawa and Muskegon Counties*. The compilers of another country history, the *Illustrated Historical Atlas of Ottawa and Kent Counties, Michigan* (Chicago, Illinois: Belden & Co., 1876; reprinted Grand Rapids, Michigan: Grand Rapids Public Museum, 1975) erroneously state on page 36 that this locomotive was purchased from the Detroit and Milwaukee Railway. In 1899 Edwin Thayer recalled that George Pratt, a locomotive engineer who worked on the Detroit and Milwaukee Railway, claimed to have run the locomotive on the Michigan Central around 1840 when the latter line extended west only as far as Ann Arbor. This must also be erroneous. The rosters of locomotives owned by the Michigan Central Railroad in the possession of the Railway and Locomotive Historical Society, Westford, Massachusetts, list a locomotive called "St. Joe" in 1855 that was built by Locks & Haven in 1850. This locomotive does not appear on the 1858 roster of Michigan Central locomotives.
30. Bement, letter to editor, *Grand Haven Tribune*, 27 December 1899, p. 4.
31. *Ibid.*
32. Benson, *Logs and Lumber*, pp. 216–17.
33. The U.S. Census reported that this large sawmill, owned by Litchfield & Co., employed thirty-five men, operated four circular saws in addition to upright saws and was producing four million feet of pine lumber annually. The census also reported that a steam sawmill, built several miles inland at the end of the railroad by Stores and Wyman in 1856, had twelve employees and was producing 1.3 million feet of sawed pine lumber annually. See United States Census, 1860, "Manuscript for Schedule Five: Products of Industry, State of Michigan," held by the U.S. Census Bureau (Washington, D.C.), entries for Ottawa County, Blendon Township, p. 2; and for Georgetown Township, p. 1.
34. The editor of the *Grand Haven News* spoke highly of the quality of Blendon oak and Edwin Thayer contended that the white oak taken from Blendon was the finest white oak in Michigan (*Grand Haven News*, 16 July 1862, p. 3; Thayer, "First Logging Railroad in Michigan," p. 4).
35. The first ship, built in 1861 and named in honor of the Major Robert Anderson who commanded Fort Sumter, was loaded with black walnut lumber and sent through the Welland Canal to Liverpool, England. In 1863 and 1864 the United States Arsenal at Troy, New York, contracted for several hundred thousand feet of oak, black walnut, and hickory timber to be used in the construction of gun carriages (Thayer, "First Logging Railroad in Michigan," p. 4).
36. *Grand Rapids Daily Democrat*, 25 April 1867, p. 4.
37. H. Brinks, "The Effect of the Civil War in 1861 on Michigan Lumbering and Mining Industries," *Michigan History* 44 (March 1960): 101–108; Benson, *Logs and Lumber*, p. 219.
38. A. C. Litchfield, owner of the Blendon Landing Sawmill, became an officer in the Union Army and was captured by the Confederate Army (*Grand Rapids Eagle*, 28 March 1865, p. 2, reports his release). Boston capitalist James W. Converse purchased the Blendon sawmill in May 1864 (*Grand Haven News*, 4 May 1864, p. 3), but it burned two months later on 28 June, during a week when forest fires were raging over thousands of acres in central and eastern Ottawa County (*Grand Rapids Eagle*, 30 June 1864, p. 1). After the fire, the mill equipment advertised for sale included "three boilers, 24 feet long, four feet in diameter, with two 16 inch Flues in each; Fire Fronts, Grates, Cast Iron Steam and Mud pipes, All in Good Order. Also a Smoke Stack, 50 feet long and four feet in diameter with all the stay irons. . . . two engines, shafting and other machinery in a damaged condition. Also a quantity of brick. The property will be sold at a GREAT BARGAIN" (*Grand Rapids Eagle*, 16 August 1864, p. 3.)
39. See the *Grand Haven News*, 10 August 1864, p. 3.
40. At this time the logs were floated down to the old White sawmill at Mill Point owned by Edward Cole and John Haire and to the Norton sawmill, then operated by Fred Ranney (see Thayer, letter to editor, *Grand Haven Tribune*, 10 October 1899).
41. Thayer, "First Logging Railroad in Michigan," p. 18.
42. This estimate is based on the following information: The Blendon Lumber Company made a ten-year contract with the Norton mill in 1857 (*Grand River Times*, 6 May 1857, p. 2.). News accounts indicate that the Norton sawmill cut only Blendon Lumber Company logs during this period. The 1860 U.S. Census reports that the Norton mill was cutting six million feet annually (U.S. Census, 1860, "Manuscript for . . . Michigan," entries for Ottawa County, Spring Lake Township). This contract must have been carried out until at least 1864 as the plat map of Ottawa County for that year shows extensive log booming grounds owned by the Blendon Lumber Company near Nortonville. Two other sawmills also cut Blendon Lumber Company logs. The sawmill at the inland terminus of the logging railroad cut more than one million board feet annually and operated from 1856 to 1870 (U.S. Census, 1860, "Manuscript for . . . Michigan," Ottawa County, Blendon Township; and U.S. Census, 1870, "Manuscript for Schedule Five: Products of Industry, State of Michigan," held by the U.S. Census Bureau [Washington, D.C.], entries for Ottawa County, Blendon Township). The Litchfield sawmill that operated at Blendon's Landing from 1859 until it burned down in June 1864 cut four million feet annually (U.S. Census, 1860, "Manuscript for . . . Michigan," entries for Ottawa County, Georgetown Township).
43. One witness to the major technological problems that lumbermen faced in using railroads to carry very heavy logs was Richard E. Butterworth, co-owner of Butterworth & Lowe Co., in Grand Rapids, Michigan. His

- company was manufacturing railroad construction cars as early as 1873, and railroad cars designed specifically for carrying logs as early as 1878. See Anonymous, "Cars for Logging," *Northwestern Lumberman* 16 (11 December 1880): 1.
44. See Rohe, "Tramways and Pole Railroads."
 45. Daniel Carey, "Michigan's Foremost Unique Logger," *Michigan History* 32 (September 1948): 301-302.
 46. Koch, *Steam and Thunder in the Timber*, p. 22.
 47. William F. Fox, *History of the Lumber Industry in the State of New York*, Sixth Annual Report of the New York Forest, Fish, and Game Commission (1901; facsimile reprint, Harrison, New York: Harbor Books, 1976), pp. 51-52. Koch probably confused the date 1860 with page 52 and recorded the date as 1852.
 48. The 1864 map showing all three lines is I. Gross, *Map of the Counties of Ottawa*, pp. 41, 46, 47. The line operated by Stephen Lowing is not mentioned in the Lowing Family History book (typewritten copy, Michigan History Room, Grand Rapids Public Library, Grand Rapids, Michigan). Nor is Lowing's railroad mentioned in any of the entries on local history contained in manuscript volumes that were compiled by the late Dorothy Skinner Hubbard, a Lowing family descendant. However, Joanne McClow, another Lowing descendant, recalled her uncle telling her that they were hiking on an old railroad grade, just where the railroad is drawn on the map (she made this remark in a personal interview with the author on 29 April 1988, before she had seen a copy of the map identifying the grade). A search of the Grand Rapids and Grand Haven newspapers published between 1857 and 1867 turned up no news account mentioning these logging railroads, but additional information on these and other river landings can be found in Donald Linebaugh, "Grand River Landings, Ottawa County, Michigan" (Master's thesis, College of William and Mary, 1982).
 49. *Atlas of Ottawa and Kent Counties, Michigan*.
 50. *Ibid.*, p. 36; Anonymous, *History of Ottawa and Muskegon Counties*, p. 102; J. Pierson, "Historical Note," *Michigan History* 11 (October 1927): 667-68.
 51. *Grand Haven News*, 19 December 1860, p. 3. Michael Koch in his *Steam and Thunder in the Timber* contends that the Augusta & Kennebec Railroad as well as the Grand Trunk Railroad operated log trains in Maine sometime during 1860 (p. 102). Koch cites the *Brunswick Telegraph* in support of his claim but does not indicate the dates on which the news accounts documenting these events were published.
 52. George Hotchkiss, *History of the Lumber and Forest Industry of the Northwest* (Chicago, Illinois: G. Hotchkiss & Co., 1897), p. 331, erroneously states that the era of railroad building into the forests of Michigan began about 1860-62, with the construction of the Flint and Pere Marquette Railroad. The Detroit and Milwaukee Railway reached Muir in 1857 and penetrated the pine forests of Ottawa County in 1858.
 53. The Detroit & Milwaukee Railway hauled logs again in 1864 when a sawmill burned down near Coopersville. The millowner Mr. Storrs decided not to rebuild and had his logs hauled west to Mill Point, where they were dumped into the bayou (now Spring Lake). See *Grand Haven News*, 10 August 1864, p. 3.
 54. *Saginaw Courier*, 30 December 1870, reprinted in Forrest B. Meek, *Michigan's Timber Battle Ground: A History of Clare County: 1674-1900* (Clare, Michigan: Clare County Bicentennial Historical Committee, 1976), pp. 134-36.
 55. These additional log carriers were the Jackson, Lansing, and Saginaw Railroad, the predecessor of the Mackinaw division of the Michigan Central Railroad, running between Rifle River and Wenona (West Bay City), documented in the *Grand Rapids Daily Eagle*, 3 November 1871, p. 4; the Grand Rapids, Newaygo, and Lake Shore Railroad between southern Newaygo County and Grand Rapids, reported in the *Grand Rapids Daily Eagle*, 25 July 1872, p. 1; and the Ionia, Stanton, and Northern Railroad between Montcalm County and Ionia, mentioned in the *Ionia Sentinel*, 6 December 1872, p. 6.
 56. "Grand Haven Grist," *Northwestern Lumberman*, 19 (25 February 1882): 2.
 57. See Thayer, "First Logging Railroad" (1899) and "First Logging Railroad in Michigan" (1903).
 58. Lillie, *Historic Grand Haven and Ottawa County* 59. See Rohe, "Tramways and Pole Roads."
 60. On this operation see the above-cited Arndt, "1973 Logging Train"; Arndt, *Bay County Story*, pp. 122-23; Olds, "Michigan's First Logging Line," pp. 19-20; and Koch, *Steam and Thunder in the Timber*, p. 22.
 61. Jean Worth, "LS&I Building Railroad in Haunts of Hiawatha," *Mining Journal*, 21 September 1957, p. 8.
 62. Forrest Meek and Carl Bajema, "Logging Railroads of Michigan, 1850-1964: An Annotated Bibliography," manuscript.
 63. These railroads were significant not only in the history of technology but in landscape history as well, because they made major contributions to the rapid demise of the forests that had covered much of Michigan's pre-settlement landscape. In addition to the work of scholars already cited here, other significant histories of logging and deforestation in Michigan are: Theodore J. Karamanski, *History and Cultural Resources: Logging, Mining and Pioneer Agriculture on the Ottawa National Forest, Michigan* (Chicago, Illinois: Mid-America Research Center, Loyola University of Chicago, 1984); Theodore J. Karamanski, *Historical Records Study: Cultural Resource Identification and Evaluation for the Hiawatha National Forest, Michigan*, vol. 1 (Chicago, Illinois: Mid-America Research Center, Loyola University of Chicago, 1984); Kenneth D. Lafayette, "The Way of the Pine: Forest Industries of Marquette County During the White Pine Era, 1848-1912" (author manuscript, Marquette, Michigan, 1987). Research is needed on the differential impacts of logging railroads on various regions and tree species, as well as on the rate and extent of deforestation. For example, logging railroads encouraged clear-cutting, whereas the later use of trucks made selective cutting more feasible. Sources for such research include lumber business records in archives; business journals; survey records; maps, and field surveys of abandoned logging railroad grades.