

The Early History of the Lackawanna Iron and Coal Company:

A Study in Technological Adaptation

THE early history of the Lackawanna Iron and Coal Company, which grew out of two earlier enterprises whose origins and progress are traced in this essay, forms an interesting and instructive episode in American industrial and technological development during the pre-Civil War era. The two parent firms—Scrantons, Grant and Company (1840–1843) and Scrantons and Grant (1843–1846)—ultimately became one of the largest nineteenth-century manufacturers of iron and steel rails in the United States.¹ In addition, these two small enterprises laid the basis for the growth of Scranton from a collection of tiny hamlets in the wilderness to one of Pennsylvania's largest cities in only a few decades.²

Examining the development of these two firms is rewarding for a variety of other reasons as well. It furnishes a case study of the difficulties attendant upon the use of anthracite and the hot blast

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¹ For statistics on the pig iron and rail production of the Company and its parent enterprises in the nineteenth century, see Frederick L. Hitchcock, *History of Scranton and Its People* (New York, 1914), I, 29–31. In 1902 the plant was moved to a new location outside Buffalo, N. Y., and is today the Lackawanna Division of Bethlehem Steel Corporation.

² The growth of the city was swift, particularly in the 1860's. Though it failed to rank among the 102 American communities with 10,000 persons or more at the time of the 1860 census, it grew to 35,092 by 1870, at which time it was Pennsylvania's fourth largest city (counting Pittsburgh and Allegheny as separate municipalities) and thirty-fifth among American cities in general. *Eighth Census of the United States, 1860: Statistics of the United States* (Washington, D. C., 1866), xviii–xix; *Ninth Census of the United States: Statistics of the Population of the United States* (Washington, D. C., 1872), 380.

by American ironmasters. It shows how flexibility and the willingness to shift goals in the face of technological and financial realities led ultimately to success after a series of disheartening setbacks. It provides an unusual instance in which southern capital flowed north during the antebellum period to help establish a pioneering industry in the Middle Atlantic region. It illustrates the great potential strength, under conditions prevailing at the time, of the family as a business and economic unit. Finally, it affords insight into the complex of human characteristics and individual circumstances—small, unpredictable, and even at times petty or capricious—that may often underlie larger, more over-arching trends.

Material on various aspects of these developments has long been available in local histories of Scranton and the Lackawanna Valley.³ Not until recently, however, has it been possible to trace the entire episode carefully and in detail with the aid of a large body of manuscript sources. In 1969 the Eleutherian Mills Historical Library acquired on temporary deposit a collection of about 6,800 items relating to the nineteenth-century enterprises of the Scranton family.⁴ By studying these documents, now in the Library's permanent custody, in combination with a smaller body of similar materials in the possession of the Lackawanna Historical Society,⁵ one can now reconstruct a more comprehensive and accurate account of the family's early ironmaking ventures than has been previously obtainable.

During the late eighteenth and early nineteenth centuries, while the course of settlement in Pennsylvania pushed westward along the tributaries of the Susquehanna, the development of the region lying north of Blue Mountain proceeded at a much slower pace. This was partly due to public skepticism regarding the area's most notable

³ See, for example, James A. Clark, *The Wyoming Valley, Upper Waters of the Susquehanna, and the Lackawanna Coal-Region* (Scranton, 1875), 106-131; Hitchcock, *History of Scranton*, I, 17-27, 83-88; Horace Hollister, *History of the Lackawanna Valley*, 3rd ed. (Scranton, 1875), 229-252; Benjamin H. Throop, *A Half Century in Scranton* (Scranton, 1895), 78-81, 99-119.

⁴ This is known as the Edmund T. Lukens Collection (hereinafter cited ETL) after a relative of the donor, Mr. Edmund L. Harvey. I am grateful to Mr. Harvey for permission to work with the collection prior to its formal acquisition by the Library.

⁵ I wish to thank Miss Dorothea Mattes of the Society (hereinafter cited LHS) for her cooperation and assistance.

resource, anthracite, and partly also to the fact that the terrain, consisting of long parallel ridges and deep intervening troughs, made it difficult to get this bulky commodity to market. Arks loaded with anthracite were shipped down the north branch of the Susquehanna to such points as Harrisburg as early as 1775, but the river was treacherous, inaccessible to many of the coal basins, and did not lead in any event to potential urban customers in and around Philadelphia. Not until the 1820's and 1830's was the economic growth of the region assured when completion of the Schuylkill, Lehigh, Union, Delaware and Hudson, and Morris canals provided access to both Philadelphia and New York City. The coming of the railroad further boosted the area's prospects; the Philadelphia and Reading had reached the southern anthracite district around Pottsville by 1842, and by the 1850's the northern coal fields were being served by such lines as the Lehigh Valley Railroad and the Delaware, Lackawanna, and Western.⁶

Accompanying these favorable developments was a series of technological innovations in the smelting of iron which created a new source of demand for anthracite. In 1828, James B. Neilson, the manager of a Glasgow gasworks, took out a patent for the use of a heated air blast for smelting the blackband ironstone of Scotland, a mixture of iron ore and bituminous coal previously regarded as useless for commercial purposes. The success of Neilson's process, which underwent improvement over the next few years, encouraged hopes that it might make possible the use of anthracite in smelting, which had been unsuccessfully attempted by the Lehigh Coal and Navigation Company in the 1820's at Mauch Chunk in eastern Pennsylvania. From 1830 until his death in 1838 the Lutheran minister Frederick W. Geissenhainer experimented with various air pressures and temperatures in an effort to make pig iron with anthracite, erecting a furnace near Pottsville and receiving a patent in 1833. His progress is difficult to gauge, but it appears that he did not achieve practical results until at least 1836, when he succeeded

⁶ Chester L. Jones, *The Economic History of the Anthracite-Tidewater Canals* (Philadelphia, 1908); Julius I. Bogen, *The Anthracite Railroads: A Study in American Railroad Enterprise* (New York, 1927), *passim*; Lynn L. Brubaker, "The Production and Use of Anthracite Coal Mining Explosives in America, 1818-1920" (unpublished M.A. thesis, University of Delaware, 1962), 2-9.

in producing a few tons of iron at most before his equipment broke down. Attempts of a similar nature in the anthracite region of Vizille, on the border between France and Switzerland, were also discouraging, but better results were obtained at Ynyscidwin in South Wales by ironmaster George Crane and his assistant, David Thomas. After Geissenhainer's death, Crane acquired his patent, made additions to it, and granted rights for its exploitation to licensees on a royalty basis. During the late 1830's experiments continued to be made with anthracite as a smelting fuel in eastern Pennsylvania, most successfully by David Thomas in 1839 at a furnace which he erected at Catasaqua for the Lehigh Crane Iron Company. By 1841 at least fourteen furnaces in Pennsylvania and New Jersey were making pig iron by means of anthracite and the hot blast, and the practice continued to spread rapidly. As of 1854, when the American Iron Association first collected statistics, more than forty-five per cent of the pig iron made in the United States was produced in this manner.⁷

In view of the complex international nature of these developments, it is advisable to use caution regarding any claim of priority in the smelting of iron with anthracite and the hot blast. It is possible, however, that the first successful use of the hot blast in America with any fuel was carried out in 1835 at Oxford Furnace in Warren County, New Jersey, in an effort to maximize the yields of pig iron obtainable with charcoal. This is directly related to the early history of the Lackawanna Iron and Coal Company, for the entrepreneur involved was William Henry, who played a critical role in the formation of that enterprise and the founding of Scranton itself.⁸

⁷ Henry Hamilton, *The Industrial Revolution in Scotland*, reprinted ed. (New York, 1966), 179-183; Sylvester K. Stevens, *Pennsylvania: Titan of Industry* (New York, 1948), I, 215; James M. Swank, *History of the Manufacture of Iron in All Ages*, 2nd ed. (Philadelphia, 1892), 352-365; Walter R. Johnson, *Notes on the Use of Anthracite in the Manufacture of Iron* (Boston, 1841), *passim*; William Firmstone, "Sketch of Early Anthracite Furnaces," *Transactions of the American Institute of Mining Engineers*, III (1874), 152-156; Peter Temin, *Iron and Steel in Nineteenth Century America: An Economic Inquiry* (Cambridge, Mass., 1964), 52.

⁸ See "Description of a successful Experiment with the Heated Air Blast, made at the Oxford Iron Furnace, New Jersey," *Journal of the Franklin Institute*, XX (December, 1835), 361 ff. In his "Development and Feasibility Study of Oxford Furnace Historic Site" (Xerox,

Henry came by his mechanical and innovative instincts naturally, for he was the grandson of the well-known Lancaster gunsmith, inventor, and Revolutionary War figure of the same name who in 1763 experimented with steam as a means of propelling water craft.⁹ Despite a long life full of striving in various enterprises, however, the younger William Henry failed to emulate his grandfather's ability to make and retain money. Born in 1794 at Nazareth, Pennsylvania, he was raised chiefly by his mother and educated at the denominational school of Nazareth Hall, gaining from both sources a pronounced strain of religious piety that is frequently evident in his correspondence. At the age of sixteen his father sent him to Philadelphia to learn gunsmithing under his older brother Joseph. Following his return to Nazareth two years later, William helped build an arms works which thrived temporarily under wartime conditions but subsequently ran into difficulty. There was also dissension between the Henry brothers, and in 1822 William sold his share of the business to Joseph at a loss, also parting with a \$3,000 inheritance from his father in liquidating debts. With borrowed money and a stock of goods which he purchased on credit, he opened a general store a few miles northeast of Nazareth at Wind Gap, prospering moderately until by 1828 he owned property and other resources later estimated by him at \$5,000. He disliked working behind a counter, however, and the growing "dispepsia and melancholy" which he suffered caused him to sell out in that year and establish a forge on Analomink Creek near Stroudsburg in partnership with his nephew John Jordan, Jr. He was already well established in the somewhat footloose tendencies which were ultimately to help frustrate his lifelong search for success and fortune.¹⁰

Media, Pa., 1970), the architect-restorationist John M. Dickey has assessed Henry's claim to priority in the use of the hot blast in America. He concludes that the Oxford case had "no significant precedent" in the United States (copy in EMHL).

⁹ Carl W. Mitman, "William Henry," in Allen Johnson and Dumas Malone, eds., *Dictionary of American Biography* (New York, 1928-1937), VIII, 560-561.

¹⁰ My reconstruction of Henry's early career, and much of the ensuing discussion of the formative stages of the Lackawanna venture, is based upon a number of xeroxed documents in Henry's handwriting, stemming from late in his life and contained in ETLC, Box 26. The most important of these are entitled "The life and times of William Henry," "Why I did not amass wealth," and "The idea of establishing Iron works in Luzerne County Penna." For Jordan, see *Pennsylvania Magazine of History and Biography*, XIV (1890), xii.

Henry and Jordan had intended to make bar iron from pigs to be supplied by William's brother Matthew, who operated a blast furnace at this time. For some reason, however, adequate supplies of this basic raw material were not forthcoming, and Analomink Forge had to get its pig iron elsewhere. Their financial resources already strained, the two associates took in a silent partner named John F. Wolle, reorganized their firm as Henry, Jordan & Company, and in 1831 leased Oxford Furnace from its owners, William Robeson and John P. B. Maxwell. The New Jersey installation had now been out of blast for more than twenty years.¹¹ Leaving Jordan in charge at Analomink, Henry went to Oxford, rebuilt the old stack, made other physical improvements to the property, discovered a new ore mine, and conducted the previously mentioned experiment with a hot blast. He also commenced what was to become a fateful business and personal relationship in 1834 when Chapman Warner, a local merchant, introduced him to Warner's nephew, Selden T. Scranton, the younger of two brothers who had migrated from Connecticut to Belvidere in Warren County. Henry offered the young man a job, ultimately promoting him to superintendent of the furnace and manager of the company store. In 1839 their relationship became even closer when Selden married Henry's daughter, Ellen.

Despite Henry's efforts, the Analomink-Oxford combination failed to yield satisfactory profits. Bad health on Jordan's part interfered with operations at the forge, and sagging prices for iron, the Panic of 1837, and some untimely fires and floods also plagued the venture. Placing Oxford under Selden's supervision, Henry returned to Stroudsburg, but he became increasingly discouraged with the business and more and more fascinated by a new opportunity which he saw opening to the westward. In 1839, trying to gain some relief from their mounting liabilities, he and his partners sold their Oxford leasehold and stock to Selden Scranton and his older brother, George. Early the following year Henry began liquidating his remaining interests and plunged into the latest of the new enterprises which perpetually caught his imagination. Unlike the others, this

¹¹ In addition to the documents just cited, see Charles Scranton, "The Iron Interests of Sussex and Warren Counties," in James P. Snell, comp., *History of Sussex and Warren Counties, New Jersey* (Philadelphia, 1881), 78-79, and Dickey, "Development and Feasibility Study of Oxford Furnace Historic Site," 8.

would in time prove outstandingly remunerative, but he was not to share in the ultimate profits.

Henry was an eager student of geology with a lifelong interest in exploring the mineral resources of Pennsylvania and New Jersey. Like many fellow nineteenth-century entrepreneurs, he was also deeply infected by the urge to speculate in land and transportation ventures. Throughout the 1830's he and his partners were active in a number of attempts, mostly in association with the Philadelphia merchant Henry W. Drinker, to open up turnpike, canal, and railroad lines through the rugged and as yet largely uninhabited terrain of northeastern Pennsylvania. William Henry was one of nine commissioners appointed under an act of the state legislature in 1830 to conduct a survey of a projected route from Delaware Water Gap to Pittston on the north branch of the Susquehanna, and in 1832 he became Treasurer of the fledgling Susquehanna and Delaware Canal and Rail Road. After four years of intensive propaganda and effort, the promoters realized that their only hope of securing adequate capital lay in attracting foreign investment. Through the influence of Edward Armstrong, a wealthy Hudson Valley landowner who would figure prominently in the next phase of Henry's career, contacts were established with Charles Augustus Murray, later fifth Earl of Dunmore, who was then about to return to England after an American visit.¹² At a meeting in the summer of 1836 prior to his departure, Murray agreed to try raising £100,000 among British investors, but hopes faded in December when letters from him indicated that he had failed due to adverse financial conditions in England.

If Henry's later recollections were correct, he had already suggested an alternate plan to his fellow promoters in case Murray should not succeed, and again raised his idea at a protracted meeting with his despondent colleagues after the bad news arrived from

¹² An extended account of these developments is given in a memorandum in Henry's handwriting, dated August, 1856, and entitled, "Historical facts relating to the rise and progress of the Southern Division of the Del: Lackaw: & Western Rail Road," ETLC, Box 26. On Murray's career and his American visit, see Leslie Stephen and Sidney Lee, eds., *Dictionary of National Biography* (Oxford, England, 1921-1922), XXII, 1085-1087. The community of Dunmore, now part of Scranton, was named after Murray through the influence of Henry W. Drinker.

England. Pointing out that the region through which the proposed railroad would pass contained abundant supplies of anthracite, which with the aid of the hot blast could now be used as a smelting fuel, and that the same area possessed both iron ore and limestone, Henry suggested that it would make good sense to establish an iron-works at some favorable location between the Delaware and the upper waters of the Susquehanna. The product of this establishment could be used in constructing the railroad, which would then carry future output to more distant markets.

According to Henry, Armstrong was immediately enthusiastic about the idea and promised his wholehearted support. His interest must evidently have cooled quickly, however, for he was soon diverted by erecting himself a mansion along the Hudson near Newburgh while Henry continued to operate Analomink and Oxford in partnership with Jordan and Wolle. Not until 1839 did he receive word through a friend that Armstrong was ready to implement the plan he had suggested three years earlier. Thoroughly disenchanted with his own business by this time, he hurried to Armstrong's new residence and laid plans for a furnace and rolling mill somewhere in the northern anthracite field. Armstrong would supply the money, and Henry the managerial and technological expertise.

Henry claimed in later years that even as early as 1836 he already had his eye on the Slocum's Hollow tract which eventually became the site of present-day Scranton. Here, where Roaring Brook flows into the Lackawanna River, were the ruins of a forge, saw mill, grist mill, and whisky still which Ebenezer and Benjamin Slocum had operated at various times until they both died in 1832. From Ebenezer's widow the property had passed into the hands of Zeno Albro, William Ricketson, and William Merrifield, with whom Henry negotiated in 1840 to buy the tract. In the general vicinity were a number of small hamlets known by such names as Hyde Park, Providence, Razorville, and Capouse, and a scattering of farms, the total population of the area being about six hundred and fifty. In addition to the customary assortment of blacksmith shops, grist mills, saw mills, a gunmaking establishment, and other small enterprises, there was some effort underway to exploit the anthracite with which the area abounded, but as a local historian later stated,

"While the people understood the importance of the coal deposit, it gave the land no appreciable value, because there was no way of getting it to market."¹³

Because of his previous interest in possible railroad routes through northeastern Pennsylvania and his official duties as a commissioner of surveys for the Susquehanna and Delaware, it is conceivable that Henry did know the area of Slocum's Hollow well before the implementation of his plans, though it is not possible on the basis of surviving evidence to verify how many of his later recollections were due more to hindsight than to prevision at the time.¹⁴ It is clear, however, that he was negotiating with the property's three owners in late February, 1840, at which time he visited the site and sent Armstrong an elaborate analysis of its resources in terms of water-power, ore, anthracite, and limestone. He rejected the asking price of \$15,000 for the 503-acre plot as much too high, suggesting \$7,500 or \$8,000 in three annual installments without interest. At the beginning of March he informed Selden Scranton that he had taken an option on the tract at \$9,000, with closing to take place within thirty days. He was very enthusiastic about the property, which he believed to be the best for ironmaking in the entire region.¹⁵

Henry, however, soon experienced another setback. Armstrong was not able to raise the necessary cash for the down payment, and the option expired. In the thirty-day interval Henry had considered setting up an ironworks somewhere in the Lehigh Valley if he could obtain backing there, and also mentioned to Selden a chance to purchase an old furnace in Lycoming County. He was apparently still connected with Oxford in the capacity of agent, for in April he made an unsuccessful sales trip to New York City and Philadelphia

¹³ Hitchcock, *History of Scranton*, I, 5; Edward Merrifield, "The Territory of Scranton Immediately Prior to the Lackawanna Iron and Coal Co. Purchase," *Lackawanna Institute of History and Science Historical Series*, No. 4 (Scranton, 1895), *passim*.

¹⁴ Merrifield asserts that Henry began negotiating for the tract in 1838, but I have found no reliable evidence to substantiate this. Among local historians who give credence to the claim that Henry had already decided upon this site four years before its purchase, see especially Hollister, *History of the Lackawanna Valley*, 228.

¹⁵ Henry's letter to Armstrong is in ETLC, Box 26; it is undated but internal evidence indicates that it was written on or about Feb. 28, 1840. See also William Henry (hereinafter cited WH) to Selden T. Scranton (hereinafter cited STS), Mar. 1, 1840, ETLC, Box 9. Henry puzzlingly refers to the tract as being in the Wyoming Valley, which may indicate that he was not as familiar with the area as he later recalled.

on the Scrantons' behalf. Early in May he finally visited the Lycopom site. The furnace, he wrote Selden, was "a slight affair, stuck up into a tremendous wooded & rocky ravine," and was badly constructed. The buildings on the tract were mostly "low and dirty log huts," and the immediate locale he termed a "wild & desert country" in which he was unwilling to live. He also considered locating at Easton, but made no firm arrangements, complaining to his son-in-law that "everywhere we find some difficulties to intervene." To make matters worse, he was also having trouble winding up his previous obligations incurred in the Analomink venture, further deepening his downcast mood.¹⁶

By early July Henry had reopened negotiations on the Slocum's Hollow tract. In a memorandum of July 3 he estimated the cost of erecting an anthracite furnace on the site, constructing dwellings for workmen, and buying necessary tools and equipment. The purchase price for the real estate was now \$8,000. The cost of a sixty-ton furnace with blowing apparatus, casting shed, water wheel, and shafting he calculated at \$7,650. Homes for the workers, expenses connected with opening an ore mine, and the cost of animals and wagons added \$7,300 more, for a total outlay of \$22,950. Throughout the month he checked and rechecked his figures, dispatched letters to Armstrong and other prospective sources of financial aid, and grew increasingly impatient as delays in receiving instructions prevented him from closing the transaction.¹⁷

Finally, on July 21, despite news of sickness in the Armstrong household, he completed arrangements in Wilkes Barre to acquire the property, drawing on Armstrong for \$2,500 at thirty days as a down payment. He did take the precaution of arranging that the deed of conveyance from the previous owners would not be recorded until funds from Armstrong were actually forthcoming, but his mood was optimistic. He had studied engineer William B. Foster's 1839 survey of the Lackawanna Valley for the Pennsylvania Canal Commission, as well as an article on mineral deposits in *Silliman's*

¹⁶ WH to STS, Mar. 8, 9, Apr. 8, 9, 24, May 7, 11, 26, and June 30, 1840; W. P. Robeson to WH, Mar. 23, 1840, ETLC, Boxes 9 and 26.

¹⁷ The account here and immediately following is based upon a series of photostats in Henry's handwriting at LHS, summarizing his correspondence for July, 1840, and containing various cost estimates and drawings of projected improvements to be made on the site.

Journal, and estimated on the basis of facts contained in these sources that there were 10,200,000 tons of anthracite and 2,040,000 tons of iron ore in the Slocum tract. He was less definite about limestone, but some quantities of this material had been found nearby, and he hopefully asserted that a deposit of it "no doubt underlays this property at some unknown depth." In short, all the prerequisites for the profitable manufacture of iron were present. Even though one of his cost estimates had mounted to more than \$28,000, there seemed to be no reason for worry.

But there was. On the day before the \$2,500 draft which Henry had drawn on Armstrong was presented for acceptance at the latter's mansion on the Hudson, the landowner upon whom Henry had pinned his hopes for financial support died of scarlet fever. Henry notified Albro, Ricketson, and Merrifield of this dismaying news on August 5, but held out yet another hope. If they would give him an extension on his contract, he would try to find another source of money. Among the possibilities he considered was Selden Scranton, to whom he wrote on the following day. His son-in-law's decision, reached shortly thereafter following family discussions and a trip to Slocum's Hollow, launched a series of events which ultimately led to the establishment of a successful ironmaking enterprise, but Henry's connection with it would be short.¹⁸

In asking Selden to help rescue him from the crisis precipitated by Armstrong's death, Henry was turning in effect not to an individual but to a family which collectively possessed the varied talents, resources, and characteristics needed to get the fledgling ironworks going. Selden himself had neither the funds nor the full range of abilities required. Born at Madison, Connecticut, in 1814, he is a somewhat elusive figure in that he was usually the recipient rather than the sender of the correspondence surviving from the early years of the enterprise. Although he was kept constantly informed about developments on the scene, he was only occasionally at the Lackawanna works until he finally moved there in 1844, staying until then at Oxford and allowing others to supervise the erection of the new plant. He was the first president of the Lackawanna Iron and Coal Company which eventually grew out of the succession of

¹⁸ WH to Albro, Merrifield, and Ricketson, Aug. 5, 1840, photostat, LHS; WH to STS, Aug. 6, 1840, ETLC, Box 9.

smaller enterprises that were organized and reorganized throughout the 1840's, but resigned in 1858 and went back to Oxford, remaining there until his death in 1891. He went through bankruptcy in 1884, and was virtually penniless from then to the end of his life, existing on a meager pension from the Delaware, Lackawanna, and Western Railroad. Local histories stress his geniality and resourcefulness in dealing with impatient creditors or disgruntled workmen, but generally devote far more attention to other members of the family.¹⁹

A more impressive person was Selden's older brother, George Whitfield Scranton, born at Madison in 1811. The eldest of seven children, he possessed a varied business experience including a stint as a supercargo on a sloop plying between Connecticut and Georgetown, D. C. In 1828 he accepted an offer from his uncle, Chapman Warner, to go to Belvidere, New Jersey, where he worked as a teamster and then became successively clerk and partner in the firm of a local storekeeper and judicial officer named John Kinney, Jr. He sold his interest in Kinney's enterprise in 1835, married Jane Hiles of Belvidere, and farmed in the vicinity until 1839, when he joined Selden in taking over management of Oxford Furnace. Though tending at times to fluctuate rapidly from almost boundless optimism to near-despair, he had a driving energy and dogged fortitude which served the family business well and helped carry the Lackawanna ironworks through some extremely discouraging circumstances in its early years. In addition to his key role in the company, he became a leading promoter of railroads in eastern Pennsylvania and was elected to Congress in 1859 as a Republican with strongly protectionist leanings. Burned out before he reached the age of fifty, he died in 1861, but not before he had made an indispensable contribution to the ironmaking venture and the community which grew up around it.²⁰

Whatever their personal traits and business talents, the Scranton brothers were hardly well off when Henry turned to them for financial assistance in 1840. Although it cannot be determined how much

¹⁹ Clark, *Wyoming Valley*, 124-126; Hitchcock, *History of Scranton*, I, 86; Dickey, "Development and Feasibility Study of Oxford Furnace Historic Site," 11-13.

²⁰ Among the relatively plentiful sources on his career, see his obituary in *Scranton Republican*, Apr. 5, 1861 (clipping in LHS); the sketch of his life by John H. Frederick in *Dictionary of American Biography*, XVI, 513-514; and Clark, *Wyoming Valley*, 113-120.

money they actually committed to the Lackawanna works in its early development, their means were quickly exhausted and its future would have been dubious indeed but for timely help from another branch of the Scranton family, led by two cousins of George and Selden who had established a successful mercantile business in Augusta, Georgia. Of these men, Erastus C. and Joseph H. Scranton, the latter was much the more important in making funds available to his northern relatives and maintaining his faith in the venture despite the obstacles which it encountered. Indeed, he became so deeply involved that he ultimately moved to Pennsylvania in 1847, assumed the presidency of the Lackawanna Iron and Coal Company in 1858 after Selden's resignation, and continued in that capacity until his death in 1872. A man of great executive ability who combined shrewdness with the courage to assume risks at critical moments, he was born in Connecticut in 1813, worked for a time in helping build wharves, lighthouses, and breakwaters, and then served a mercantile apprenticeship before moving south with his brother Erastus to start his own business in Georgia.²¹ It is interesting to note that Selden and George were entertaining guests from Augusta at Oxford Furnace in July, 1840, including Joseph himself. This was shortly before William Henry turned to the Scrantons for financial backing, but the Lackawanna project of Selden's father-in-law must inevitably have come up for discussion among the kinsmen gathered in New Jersey.²²

²¹ Throop, *Half Century in Scranton*, 111-112; Hitchcock, *History of Scranton*, I, 87. I have attempted without success to gain further information about the nature of the business which Erastus and Joseph conducted in Georgia through correspondence with the Richmond County Historical Society in Augusta. Clues contained in letters from Joseph to Selden give the impression that it dealt in general merchandise, involving it in numerous accounts with residents scattered throughout the outlying area. See Joseph H. Scranton (hereinafter cited JHS) to STS, Feb. 28 and Mar. 13, 1843, ETLC, Box 9.

²² WH to STS, July 11, 1840, ETLC, Box 9; JHS to STS, Aug. 1, 1840, ETLC, Box 24. Unfortunately, it is not possible to determine what, if any, consultations took place between Selden and George and their Augusta relatives during the brief interval between Henry's invitation and the Scrantons' decision to take part in the Lackawanna venture. By August 1 the Georgians had gone on to Connecticut to visit the family home. In a letter written three years later, however, Joseph implied that he had been associated with the Pennsylvania ironmaking project from the start; see JHS to STS, Feb. 28, 1843, ETLC, Box 9. My impression, therefore, is that Selden and George did have some assurance of aid, if and when they needed it, from their Augusta cousins before they committed themselves to the enterprise.

Henry's overtures to the Scrantons in early August resulted in hasty consultations between Selden and George and a decision to visit the Lackawanna Valley. On August 17 they set out from Oxford, accompanied by Sanford Grant, a Belvidere businessman who was to become their partner in the venture until 1847 and manager of the company store which they established at the Pennsylvania ironworks. After arriving at the site the three men examined its outcroppings of ore and coal and listened to Henry's enthusiastic analysis of its potential. Acting quickly, they made preliminary arrangements to take title to the property on August 20 and were in formal possession by September 8. After some discussion concerning the feasibility of acquiring a corporate charter, which would have required an initial capital of \$25,000, they finally decided to set up a special partnership with a total stock of \$20,000, a sum less than any of the estimates which Henry had made the previous month.²³ A further indication that the firm was started on a shoestring is the fact that Henry, the Scrantons, and Grant found it necessary to add one more partner in the person of Philipp H. Mattes, a German immigrant who was manager and cashier of the Bank of Pennsylvania's Easton branch and was acquainted with the Scrantons through previous dealings. Mattes took a one-fourth interest of \$5,000, and his backing may well have been crucial pending receipt of funds from other sources, such as Georgia.²⁴

In the absence of ledgers and other account books, which were in any case haphazardly kept during the early years of the enterprise, it is impossible to determine how much cash was paid into the firm by its backers and partners, and at what times. To commence operations the active proprietors needed \$2,500 for a down payment on the \$8,000 purchase price (the remainder to be secured by a mortgage), and funds with which to purchase equipment, labor, and supplies for building the physical plant. Henry had hoped at one time to have a one-third interest in the venture while Armstrong was yet alive, but after some negotiation with the Scrantons he agreed to settle for a share of one-fifth plus an annual salary of not less than

²³ Hitchcock, *History of Scranton*, I, 7; Clark, *Wyoming Valley*, 108; Hollister, *History of the Lackawanna Valley*, 230; WH to STS, Aug. 23, 25, 28, 1840, ETLIC, Box 9.

²⁴ For biographical information on Mattes, see Dorothea Mattes, "The Mattes Family Came to Scranton," typescript, LHS.

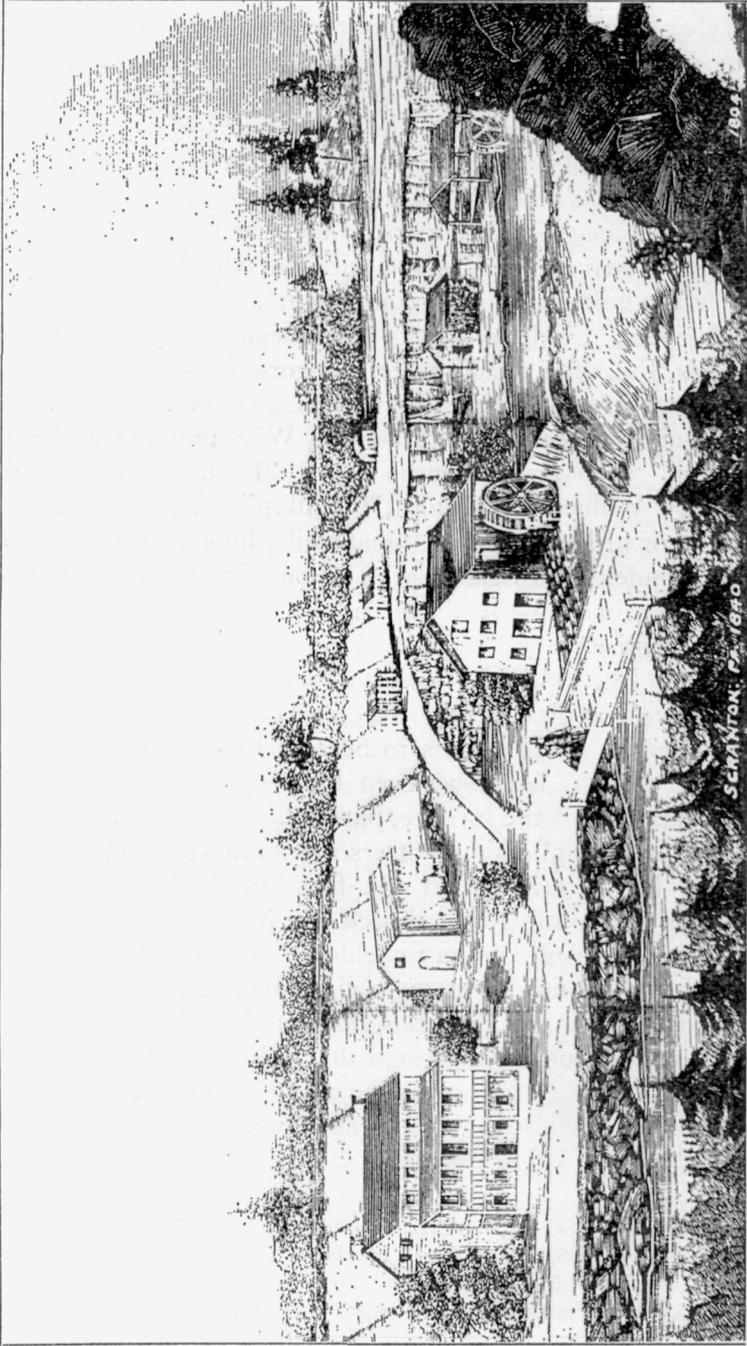
\$2,000. He made it clear that the other members of the firm should not expect to see his portion of the capital paid in at all quickly. Mattes' investment never expanded much if at all, and was probably paid in at the outset. When the firm was reorganized for the first time in 1843 he was put down at one point for \$7,000, but in the second reorganization of 1847 he was still listed at \$5,000 as in 1840. Grant's initial stake is also not known. In one memorandum connected with the reorganization of 1843 he was credited with \$6,000 in a projected new capitalization of \$86,000, but his share in the original company must have been smaller. With Henry holding a one-fifth interest and Mattes one-quarter, the Scrantons could hardly have allowed their Belvidere associate to have so large a proportion without endangering their control of the business, which it is clear lay in their hands from the start.²⁵

In all likelihood, therefore, the firm began operations with Mattes' \$5,000, a smaller amount from Grant, such funds as Selden and George could spare from their Oxford operations, and periodic installments of cash from the Georgia cousins. Correspondence indicates that remittances from Augusta were being received by 1841 in amounts ranging from \$1,000 to \$3,000 at a time and constituted the financial life blood of the enterprise at that point. Writing to Selden in September, 1843, George indicated that \$13,000 had come at intervals from Erastus and Joseph as the state of their southern operations permitted. Without this help, the firm could not have survived.²⁶

Whatever the newly-formed company's financial resources, Henry had supplied none of them and consequently had little defense against being squeezed out when his managerial and technological abilities were ultimately called into question. This, however, lay in the future as he established residence in the hamlet of Hyde Park during the autumn of 1840 and began to supervise the construction of a blast furnace and other supporting facilities on the former Slocum tract for Scrantons, Grant, & Company, as the fledgling

²⁵ WH to STS, Aug. 25, 1840; undated memorandum, probably September-October, 1843, ETLC, Box 9.

²⁶ JHS to STS, Mar. 8, Apr. 24, 1841, Feb. 28, Mar. 13, 1843; George W. Scranton (hereinafter cited GWS) to STS, Sept. 26, 1843, ETLC, Box 9. In his letter, George indicated that the firm's past bookkeeping practices had been slipshod and urged the need for better accounting in the future.



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firm styled itself. Upon his recommendation, and despite the reservations of Philipp Mattes, 3,750 acres of ore and timber-bearing land adjoining the original purchase were acquired on credit from the Bank of North America. The foundations of the furnace were laid in early October and the building of the stack got underway about three weeks later. Workmen began to dig iron ore in preparation for the eagerly anticipated time when the works would go into blast, contracts were made with outside firms to supply fire brick for the lining and other components, and a number of houses and "shantees," as Henry called them, began to appear throughout the woods. Full of enthusiasm for the work, Henry also busied himself in being a town planner, laying out a community of the future which, in accordance with his staunchly Whig preferences, he named "Harrison," with streets to be called "Lackawanna," "Selden," "George," "William," "Sanford," "Phillip" [*sic*], and "Mary," the last in honor of Henry's wife. Meanwhile, he kept up a steady flow of correspondence to Selden, who along with George remained at Oxford, coordinating the dispatch of money and supplies to the infant enterprise.²⁷

By early 1841 Henry's mood was becoming less buoyant. In January two complaints that were to become more and more frequent appeared in his letters to Selden. First, money was getting short, and he was being besieged by people wanting to be paid. Second, supplies for the furnace, particularly fire brick, were coming in too slowly. Complicating matters was a request from local Methodists and Presbyterians that the firm supply land, and perhaps money, for the building of a church. By March Henry was increasingly desperate; complaining to Selden that he had "not twenty five cents in hand" to meet pressing obligations, he begged the latter to supply "your promised remittances." Casting about for any source of available revenue, he suggested that this might be a good time to sell lots at \$50 to \$75 per quarter-acre to prospective residents of Harrison. He was also by this time having differences of opinion

²⁷ See especially WH to STS, Oct. 1, 15, 22, Dec. 4, 1840, and Philipp H. Mattes to STS, Dec. 13, 1840, ETLC, Box 9; "Plan of Harrison [*sic*] Providence Township Luzerne County, by William Henry," LHS. Of the street names Henry devised, only Lackawanna was ultimately used. Hitchcock, *History of Scranton*, I, 97. The works was at this time in Luzerne County, Lackawanna County not being set apart until 1878.

with George Scranton and Philipp Mattes over who should be hired to build the water wheel which would power the bellows, and had apparently quarreled over personal matters with George, who served as a periodic emissary from Oxford. Nevertheless, he pushed forward, urging Selden to expedite the shipment of hot air pipes, crank wheels, piston rods, and iron plates as soon as the roads from Oxford were passable for goods of this type and predicting that the furnace could be in blast by the end of May if everyone did his part.²⁸

This, however, was a wildly optimistic estimate. Unfortunately, April was snowy and the Delaware and Hudson Canal, over which refractory linings were to be shipped from Rondout on the Hudson River, did not open until late that month. By this time another worry had appeared in Henry's letters, for iron castings that were to be part of the air-heating apparatus were also slow in arriving. Perhaps it was just as well for Henry's composure that he did not know just how slow they were going to be. The money situation did ease somewhat with the receipt of \$1,000 from Georgia, but this could not have gone far in meeting the firm's ever-mounting debts. Meanwhile, Henry and Mattes continued to bicker about the water wheel.²⁹

Two new faces were on the scene at the Lackawanna works by early May. Sanford Grant now moved up from Oxford to run a company store at which local residents might purchase supplies and in so doing bring in revenue pending completion of the blast furnace. And from Easton came young Charles F. Mattes, son of the banker, to be a general handyman and apprentice. Writing to his father shortly after his arrival, Mattes reported that the stack, which was to measure thirty-five feet from the ground to the tunnel head when completed, was now about twenty-five feet high and constituted a "fine substantial piece of masonry." A house for Grant had now been finished, along with two habitations for workmen. Large quantities of timber had been cleared from a nearby area in preparation for digging anthracite. Further progress was chronicled by Mattes at the end of May, by which time the stack was five feet higher. He marveled at the sheer quantity of stone which it required: "heap after heap has been disappearing, and yet one can scarcely see

²⁸ WH to STS, Jan. 4, 24, Mar. 5, 10, 13, 28, 31, 1841, ETLC, Box 9.

²⁹ WH to STS, Apr. 5, 7, 16, 19, 20, 1841; JHS to STS and GWS, Apr. 24, 1841, *ibid.*

where they have gone to." Henry, who must have been deeply chagrined by this time, had still not received all the fire brick he had ordered, but the water wheel which had caused so much debate was now completed except for the shaft and millwrights were busy constructing a housing for the wheel and bellows. The casting shed, to be located in front of the tapping hearth, was to go up the following week, and a road, "level as a floor the greater part of the way," was almost finished from the ore beds. The rising town of Harrison, Mattes reported with tongue in cheek, now had two houses of two stories, two of one story, three "shantees," and two barns, "besides several stables, pig stys, and other buildings not mentionable."³⁰

Despite the undeniable progress Henry had made, summer came and passed without seeing the much-desired beginning of pig iron production. If only the castings for the heating oven would come, Sanford Grant wrote Selden in July, the furnace could be quickly put into blast, for the stack was now completed except for the hot-air equipment. He praised Henry for doing a job that had "done honor to himself and Justice to his Employers." By late August most of the missing parts had arrived but Henry was still without connecting pieces for the hot air pipes and some slides and plates for the oven. To compound his problems, the pipes themselves did not match his specifications. There was some consolation in the fact that the operation was not using up funds quite so rapidly as before; with the completion of the road from the ore mine and the masonry work on the stack he had been able to discharge much of his labor force, but he still needed cash for skilled workmen and other incidentals. The church was now being built, in part with company money, and this was an added expense. Nor was he succeeding in selling town lots as he had hoped. Potential customers were skeptical about the success of the entire venture. As he told Selden, "people look on, as if an Anthracite furnace was a new experiment." In desperation he was turning for loans to banks in nearby Wilkes-Barre, but their managers were cautious too.³¹

The doubts of bankers and local residents alike were well justified. During late August and early September, Henry was overseeing the

³⁰ Charles F. Mattes to Philipp H. Mattes, May 2, 30, 1841, LHS.

³¹ Sanford Grant to STS, June 2, July 9, 12, 1841; WH to STS, June 8, July 4, Aug. 24, 1841, ETLC, Box 9.

stockpiling of ore, anthracite, and limestone and continuing to scrape away the Scrantons' nearly-exhausted financial resources while trying to evade creditors who were dunning him to meet the firm's obligations. Hopes mounted, however, as the remaining components finally arrived and the long-awaited moment neared when the furnace could be put in blast. On September 28, Henry and his chief founder, Samuel Templin, started a carefully controlled fire in the crucible at the base of the stack to begin the process of drying out the hearth and lining, which normally took about a week to ten days. On the morning of October 9 all was in readiness for the commencement of the first "campaign," as periods of blast were called. Selden and Ellen Scranton were in all probability on hand, for they had been invited up from Oxford to witness the event; whether George too was present is not clear, but it is doubtful that he would have missed such an eagerly anticipated moment. The furnace was now filled to about half its height with raw materials, and at 10 o'clock the blast was turned on.³²

The outcome was disastrous. At 3 o'clock in the afternoon the hearth was opened and small quantities of iron were observed starting to collect in the crucible. However, Henry and his crew could also see a phenomenon dreaded by every ironmaster. Combustion in the center of the crucible was not sufficiently intense to liquefy completely the materials coming down from above. In the parlance of the trade, the slag was "chilling before the blast" and obstructing the flow, causing the tuyeres through which the heated air was pumped into the furnace to clog. Henry and his forces labored for hours to keep the tuyeres functioning, but it became impossible to keep the rear nozzle cleared, making matters worse by reducing the supply of oxygen. Finally all the tuyeres became too clogged to go on, and the blast was turned off near daylight on the morning of October 10 after an all-night effort.³³

Henry, no doubt mortified by this unfortunate sequel to so many months of preparation, had the furnace cleared and made ready for a second attempt, which began on October 25. Having relined the

³² Memorandum of Aug. 26, 1841, in Henry's handwriting, William Henry photostats, LHS; WH to STS, Sept. 4, 28, 1841, ETLC, Box 9; "Memo. Lackawanna Furnace . . . 1841," ETLC, Box 26. On the drying-out process, see Frederick Overman, *The Manufacture of Iron, in All its Various Branches* (Philadelphia, 1850), 184.

³³ "Memo. Lackawanna Furnace . . . 1841," ETLC, Box 26; cf. Overman, *Manufacture of Iron*, 186.

hearth, he and his helpers started the fire with 1,000 bushels of charcoal and did not begin charging the furnace with anthracite until the third day of operations, making sure that the fuel was hard and clean and using ore which had been "well prepared, burnt & selected." Things seemed to be going well on the 29th, but the next day disaster struck once more. This time Roaring Brook seems to have been partly responsible, for falling water levels reduced what may have been an inadequate amount of air pressure to begin with, and the tuyeres again started to clog. Changing the nozzles failed to improve matters, and the heat was inadequate to smelt the charge. Henry finally resorted to the desperate expedient of throwing bags of sulfur and salt into the hearth to promote combustion. This was temporarily successful, but with the sudden melting of the semi-congealed materials that had been clogging the central and upper parts of the crucible there was an abrupt descent of heavier matter from above and it became impossible to keep the input of air at anything approaching a satisfactory level. Accordingly, the blast was stopped, the burden was allowed to cool down, the tympan stone was removed, and the furnace was laboriously cleared once again—an onerous as well as a heartbreaking task.³⁴

After this second debacle, the Scranton brothers decided that Henry could no longer be left in sole command of operations at the Lackawanna works. While Selden remained at Oxford, George left his family behind and took charge of repairing the new furnace. Driving himself unsparingly, he assisted the workers in prying out the mass of hardened materials with sledge hammers and crow bars. It was later said that he went two weeks without once sleeping in his bed and had part of his meals taken to him rather than be interrupted. A local physician believed it was at this time that he weakened his heart in a way that led, twenty years later, to his premature death.³⁵

It is difficult after more than a century to diagnose precisely what had gone wrong in the construction of the furnace and the preparations for its use. William Henry later blamed his founder, Templin, and also mentioned his own inexperience in dealing with an-

³⁴ "Memo. Lackawanna Furnace . . . 1841," ETLIC, Box 26.

³⁵ Obituary of GWS in *Scranton Republican*, Apr. 5, 1861; Throop, *Half Century in Scranton*, 108.

thracite. A long-time resident of the area who was on the scene at the time stated that the limestone which Henry had found on the site was useless for metallurgical purposes, causing the Scrantons to purchase a tract at Lime Ridge in Columbia County from which a better flux could be obtained. On the other hand, such an acquisition does not show up on a list of assets prepared at the time of the firm's second reorganization in 1846. While the quality of the Lackawanna limestone may well have been a factor, it is evident from later developments that there were fundamental shortcomings in the design of the furnace, particularly in the nature of the heating equipment. In repairing it, George Scranton had the inwalls torn out and rebuilt, narrowing the bosh in the process from twelve to eight and one-half feet. This, he reasoned, would allow the furnace to fill more evenly, and also reduce the mass directly above the crucible. He also completely rebuilt the hearth, changing the crucible from a cylinder with a diameter of three feet, nine inches to a more traditional square form measuring twenty-seven inches to a side. Finally, he installed a new heating oven and put different nozzles on the tuyeres.³⁶

With all this activity going on, November was a busy month indeed. Writing to his father, Charles Mattes stated that "Since Mr. Scranton's arrival the aspect of things has changed considerably—Mr. Henry looks pretty blue, though all the rest are in very good spirits." After the repairs were completed, another attempted campaign was begun on December 14, when the furnace was filled with anthracite and the blast was turned on. Henry appears to have been once more in charge of the effort, assisted by a new founder named Clarke, who had been brought in from Stanhope, New Jersey, where a group of four anthracite furnaces were in operation. After the initial charge of fuel had burned its way down, experiments were conducted with a series of mixtures in which the amount of anthracite was kept constant but the proportions of ore and limestone were varied. The preliminary results were encouraging, but shortly after

³⁶ "Memo. Lackawanna Furnace . . . 1841," ETLIC, Box 26; Throop, *Half Century in Scranton*, 108; undated prospectus proposing formation of a new company, late 1846, ETLIC, Box 10. Two new furnaces were built in 1848, and by 1859 the original one was in ruins, probably indicating that its structural deficiencies were ultimately found too great to overcome, even with the changes made by George Scranton and later by John F. Davis. See Hitchcock, *History of Scranton*, I, 28.

the beginning of the new year there was again a setback when clogging took place above the tuyeres and the blast had to be terminated. Two brief accounts of the episode do not shed much light on the reasons for this latest failure except to indicate that "the blast was put on too soon, and not sufficiently hot." Evidently Henry was still having trouble achieving the sustained temperatures necessary for successful smelting with anthracite.³⁷

Selden Scranton, who was present during at least part of this third abortive attempt, now took a personal hand in attempting to solve the problems plaguing the enterprise. Going to Danville, Pennsylvania, where two successful anthracite furnaces were already in operation, he secured the services of a Welsh ironworker named John F. Davis. The latter arrived at the Lackawanna works on January 10, directed some repairs, and on the 18th began a period of blast that went on until February 26, by which time slightly more than seventy-five tons of pig iron had been produced. Davis found that, even with George Scranton's modifications, the air-heating apparatus was still insufficient, and as a result he modified the old oven and installed two new ones. He also rebuilt the hearth and put the furnace in operation once more on May 23, leaving it in blast until September 25. This campaign was terminated because the blowing equipment proved inadequate to go on any longer, having been too light from the beginning. The total production for the four months had been not quite 375 tons, hardly impressive by contemporary standards, though certainly encouraging after the dismal failures of the previous winter. After the blowing cylinders had been repaired and outfitted with new pistons, another period of blast was begun on October 11. This campaign lasted until the following March and yielded 600 tons, a modest improvement but still not up to the standard of some other anthracite furnaces in eastern Pennsylvania.³⁸

³⁷ Philipp H. Mattes to STS, Nov. 25, 1841, in folder marked "Selden T. Scranton—1841 Letters Received," LHS; addendum in Henry's handwriting to "Memo. Lackawanna Furnace . . . 1841" and "Analysis of the Compact Argillaceous Ore at Briarbrook Mines," ETLIC, Box 26; Johnson, *Notes on the Use of Anthracite*, 28; Joseph C. Platt, *Reminiscences of the Early History of Dark Hollow, Slocum Hollow, Harrison, Lackawanna Iron Works, Scranton and Scranton, Pa.* (Scranton, 1889), 19.

³⁸ Platt, *Reminiscences*, 20–21; obituary of GWS, *Scranton Republican*, Apr. 5, 1861. According to one local historian, it was after Davis' arrival that the deficiencies of the Lacka-

William Henry's position in the firm had become steadily more untenable, particularly after the arrival of Davis. By April of 1842, if not before, he had departed from the scene and was in Kingston, Pennsylvania, considering whether or not to take a leasehold on a furnace located there. He was still encumbered with obligations stemming from his partnership with Jordan and Wolle and was in a despondent mood. He remained in Kingston for more than a year, trying among other things to interest Selden in one of his perennial railroad schemes. By the end of 1843 he had found a new financial benefactor and set up a store at Plymouth on borrowed funds after apparently going through bankruptcy to get out from under his previous debts. He had never reached a firm understanding with the Scrantons about his precise role in the Lackawanna partnership, and had no leverage other than his personal relationship with Selden to obtain assistance from the brothers, who were in any case too overwhelmed with problems of their own to come to his aid. His situation was discouraging at best, and it is not surprising that in one letter he described his mind as "much afflicted and my prayers for faith & patient endurance, constant before the Lord."³⁹

Henry's role as overall supervisor of the Lackawanna establishment was assumed by George Scranton, who occupied himself partly during the spring of 1842 with an assessment of the firm's resources and prospects. Under Grant's management the store was doing a good business and thus providing at least some cash return on the company's mounting investments. The furnace had at long last proved capable of making pig iron, though in yet unsatisfactory quantity. Having surmounted part of its technological problems, however, the enterprise faced formidable difficulties financially. From Easton, Philipp Mattes wrote in June that the Bank of North America was pressing hard for payment of more than \$1,600 still due on the extra ore lands acquired in 1840. He recommended that

wanna limestone were discovered and the Columbia County deposits utilized. Hitchcock, *History of Scranton*, I, 19. Other Pennsylvania anthracite furnaces were producing substantially more iron than the Lackawanna installation achieved during this period; the one at Catasaqua had a capacity in 1840 of about 50 tons per week, while others were averaging between 30 and 40. Firmstone, "Sketch of Early Anthracite Furnaces," 154-155.

³⁹ WH to STS, Apr. 10, 1842; June 30, July 28, Aug. 5, 1843, ETLIC, Box 9.

the brothers turn once more to their Georgia cousins for aid.⁴⁰ Even more distressing were indications that the company's output of pig iron, meager to begin with, was not likely to bring in much financial return. A Boston rolling mill to which the Scrantons had hoped to sell their product reported unfortunate experiences with anthracite iron in the past. Its managers were not willing to make any more attempts to use it unless the Lackawanna firm would assume the entire risk. In that case, the Boston works would buy it at \$25 per ton on condition that it must prove satisfactory and be shipped to New England free of charge. The Boston mercantile firm of Ellis and Meriam also corroborated this discouraging state of affairs, taking a trial shipment of Lackawanna pig but commenting that rolling mills in and around the city were highly prejudiced against anthracite iron and that the market for iron of any kind was very dull.⁴¹

Throughout late 1842 and early 1843 there was a deepening atmosphere of crisis at the Lackawanna works as prices for pig iron sagged, transportation costs cut deeply into such meager returns as the Scrantons could obtain for their product, and a lengthening succession of the firm's notes were protested for nonpayment at a number of Pennsylvania and New Jersey banks. Estimating conservatively, George later calculated that the company lost between \$6,000 and \$7,000 on its operations throughout the year ending in June, 1843. Selden set the figure even higher, at about \$10,000. Writing despondently at one point to his sister Caroline back in Connecticut, George described the incessant energy he had devoted to the business and his homesickness for his wife and family in Oxford. "The prices for iron were never as low as they have been. . . . Our debts are heavy and some pressing. Money is scarce and impossible to collect or borrow. I have many a time wished I had never seen this place." He still had faith in the ultimate prospects of the enterprise, but it was hard to keep from yielding to despair. "It is a great trial to me to be from home so much," he stated, "and I often think I had rather be poor and hoe corn by the day

⁴⁰ GWS to STS, May 8, 1842, ETLC, Box 9; Philipp H. Mattes to STS, June 23, 1842, in folder "Selden T. Scranton—1842 Letters Received," LHS.

⁴¹ Horace Gray & Co. ("Boston Iron Company") to STS, June 17, 1842; Ellis & Meriam to STS, June 22, Oct. 19, 1842, folder "Selden T. Scranton—1842 Letters Received," LHS.

than to be deprived the happiness and pleasure of my sweet little family.”⁴²

Rather than give up, perhaps partly because it was doubtful where a purchaser could be found to take the venture off the Scrantons' hands under the prevailing conditions of business, the brothers decided upon a new strategy which would either rescue them from their present predicament or mire them even deeper in debt. Instead of making only pig iron, they would erect facilities to convert it into nails, a commodity which they believed would find a readier market and also better bear transportation costs. This, of course, would require an infusion of new capital. Part of this the Scrantons hoped to obtain from the Howlands of New York City, a mercantile family with whom they had established business relations. The rest, if Joseph and Erastus were willing, would come from their Georgia cousins. In early 1843 they sent several letters southward outlining their ideas and asking for further financial backing. These have apparently been lost, but their substance can be gleaned from the replies which came back.

In his response, Joseph made it clear that it was he, rather than Erastus, who had the greater faith in the ironmaking enterprise and was willing to assume the larger risks in keeping it going. His brother, away from Augusta on business at the time, was “entirely unwilling to have the liabilities of the concern increased. In fact he is strongly disposed to sell his entire interest, as he seems to have a strong presentiment that no money can be made at least for a long time to come.” But Joseph was yet hopeful. “I have no fears of the ultimate success,” he stated. “I have invested in it. Should remain till it is *doubled* or *lost* as the case may be—and If it were in my power without injuring our business here . . . would willingly double the amount I now have at stake.” Conditions of trade in the South were currently bad, and “extreme low prices of the great staple of this section of the country” had retarded his recent collections. He was not sure the times were propitious to make the

⁴² See letters from E. Lynch, Wyoming Bank, Apr. 13, 1842, J. and A. Wilson, Easton, June 3, 9, 1842, and notices from the Belvidere Bank and Merchant's Exchange Bank in folder “Letters Received by George W. and Selden T. Scranton, 1842,” LHS; GWS to STS, June 11, 1843, ETLC, Box 9; typescript of letter from GWS to Caroline E. Scranton, Feb. 21, 1843, LHS.

additions to plant and capacity which George and Selden were planning. Nevertheless, "as it has been entirely left to you from the start to manage, I feel perfectly willing that you should continue thus to do. . . . If in obtaining a loan from Howland & Co and putting up a Mill to finish your iron on the spot you are quite sure you are not assuming a greater burthen than you can sustain, why then so far as I am interested go ahead." On his own part, he would tell Erastus that "if he feels dissatisfied with what you propose doing—I will take his interest . . . and shall not be surprised if he takes me up." Meanwhile, he was sending as much money as he could now spare. "I expect Erastus will scold me for accepting the drafts enclosed," he predicted, "but I shall give him a written guarantee that he shall be held harmless."⁴³

Fortified by this crucial endorsement, George and Selden went ahead with their plans. George contacted several of the firm's creditors in the immediate vicinity, informing them of the steps which the company was taking and pleading for more time to meet past obligations. Selden meanwhile went to New York City, where he negotiated with the Howlands for a loan of \$15,000 to \$20,000 to start a nail factory. The Howlands sent an agent to the Lackawanna Valley to verify the information he gave concerning the firm and its resources, and by May a loan of \$20,000 had been approved. Early that month two new installations were begun on the company's tract. One of these was a rolling mill, 110 by 114 feet, which would use the puddling process in converting pig iron into sheets and bars. It was to have five reverberatory furnaces and two trains of rolls, driven by a ninety horsepower water wheel. The other building was a nail factory, 50 by 70 feet, with twenty nail machines and one spike machine, driven by a forty horsepower water wheel and having a capacity of 100 kegs of nails per day.⁴⁴

Throughout the spring and summer of 1843 work went ahead on the new facilities while the partners struggled to avert financial

⁴³ JHS to STS, Feb. 28, Mar. 13, 1843, ETLC, Box 9.

⁴⁴ Obituary of GWS, *Scranton Republican*, Apr. 5, 1861; Hollister, *History of the Lackawanna Valley*, 239; undated description of the Lackawanna property, late 1846, ETLC, Box 10. At some point in 1843 the Scrantons purchased an additional 140 acres of land, mentioned in the 1846 description; this may have been connected with the rolling and nail-making expansion.

disaster in face of a steady series of dunning letters from exasperated creditors. Sending Selden a list of the firm's outstanding notes and obligations at one point, George commented laconically that "it runs up high & dont include *all we owe either*."⁴⁵ By September it was evident that the company needed even more money than it had secured from the Howlands and the Augusta cousins, and that its credit position would be greatly strengthened by taking the New York City mercantile firm into partnership instead of merely obtaining funds on loan. Accordingly, Scrantons, Grant and Company was reorganized under the almost identical name of Scrantons and Grant. This was a limited partnership, with George W. Scranton, Selden T. Scranton, and Sanford Grant being designated as the active partners while Philipp Mattes, Joseph H. Scranton, Erastus C. Scranton, and John Howland were identified as special partners whose liability was confined to the extent of their individual investments. Howland had by far the largest share of any single member, \$28,000. The total capitalization of the firm was \$86,000, of which Mattes was credited with \$7,000, Grant \$6,000, Joseph and Erastus Scranton with \$7,500 each, and Seldon and George Scranton with \$18,000 and \$11,400 respectively. As a block, the various members of the Scranton family represented \$44,400 of the stock, or 51.6 per cent, thus retaining control in their hands. They must have supplied considerably less than that amount of the paid-in capital, however, for the shares credited to Seldon and George undoubtedly represented time, effort, and expertise much more than actual cash.⁴⁶

While these steps were taken to ease the financial situation of the enterprise, work continued on the rolling and nail-making apparatus. At one point George informed Selden semi-prophetically that the

⁴⁵ GWS to STS, June 11, 1843, ETLC, Box 9. Italics and spelling are as given. See also GWS to STS, May 6, 1843, in *ibid.* The folder, "Letters Received by George W. and Selden T. Scranton, 1843," LHS, contains many dunning letters. See for example correspondence from the following New York City business establishments: E. C. Boughton & Co., May 25; Oakley & Loomis, June 17; Samuel Judd's Sons, July 17; Coursen & Sloan, July 20; John H. Talman, August 7; Veght & Bergh, August 18.

⁴⁶ Platt, *Reminiscences*, 23; undated memorandum, September-October 1843, ETLC, Box 9. I have been unable to locate the formal articles of agreement. Platt erroneously states that the rolling mill and nail factory were commenced in 1844 rather than 1843, and fails to connect the reorganization with the new expansion and equipment.

rolls had been cast longer than normal, "with a view of making some other kinds of iron than nail plate," though there is no indication that he envisioned the rail-making activities that were ultimately to save the company from failure. George held out some hope that rolling operations could commence by the beginning of 1844, but this was far too optimistic. A near disaster occurred in November, 1843, when a portion of a newly completed dam broke open and the entire barrier threatened to wash away, but the water was diverted and no serious damage was done. A greater problem was that of obtaining nail machines and other equipment scheduled to arrive by canal before the waterways froze over for the winter. This hope was not realized, and in December George made arrangements to have the apparatus delivered by sled. The target date for opening the new mills had now been shifted to April, and George was growing increasingly weary of the heavy burden of work and responsibility he had carried for more than two years. In one letter he stated he had "often concluded that my lot was a little harder than any one else that I know of & sometimes think as little appreciated." Probably because of these feelings and his continued longing to be reunited with his family, arrangements were made for him to return to Oxford at the end of 1843 and for Selden to replace him in charge of operations at the Lackawanna site sometime that spring. Meanwhile, supervision was placed in the hands of a younger brother, Charles Scranton, who had come the previous winter to learn the business and assist in running the furnace.⁴⁷

Despite continuing frustration in getting the rolling and nail-making equipment ready for production, an expectant mood prevailed at the Lackawanna works in early 1844. The furnace was put in blast in mid-January, and pig iron was stockpiled for eventual conversion into nail plate. In early February Charles informed Selden that the company was turning out iron "second to none made in America." The furnace was yielding about five tons per day, which he predicted would soon increase to seven. The ores mined on the site were proving richer as workers went deeper into the deposits, with an output of about one ton of pig iron for every three tons of ore. Taking all costs into account, Charles estimated that Lacka-

⁴⁷ GWS to STS, Nov. 16, 18, Dec. 5, 10, 14, 26, 1843; Philipp H. Mattes to STS, Nov. 21, 1843; Charles Scranton to STS, Jan. 15, 1843, Jan. 7, 1844, ETLC, Box 9.

wanna pig was being made for about \$13 per ton, which if true was quite creditable. He estimated that the nail factory, when completed, would be able to manufacture 20,000 kegs per year at a profit of \$1.50 each, thus netting the firm a potential \$30,000. Visiting the works after a month with his family in Oxford, George assisted one of the employees in devising means of avoiding a frequent changing of rolls and enabling the puddlers to work day and night without interfering with other operations; this, he said, would enable the company to make up for lost time once nail production got underway and get a large stock to market before navigation closed with the onset of winter. He was likewise enthusiastic about the firm's prospects, estimating a possible gross of \$60,000 on the first year's output. In addition, the company store was doing what Charles termed a "cracking business." In the words of the latter brother, "time only can tell what this place may be yet. This property is intrinsically worth a million of dollars."⁴⁸

In April the rolling mill finally went into operation, followed by the nail factory in July.⁴⁹ Selden had moved up from Oxford in March, and later that spring George went to New York City on a double mission of borrowing more money from the Scrantons' backers and buying furniture for Selden and Grant. It was apparent that these two men intended to live in a style befitting rising industrialists, for George was shortly writing about purchases which would "astonish the natives" in the Lackawanna Valley, including two "splendid" mirrors with "rich Gilt frames, highly carved & ornamented" and French plate glass. He was also highly enthused about another of his acquisitions for Selden, "one of the most superb pianos you ever saw," with "a grand action and very sweet tones." He was being assisted in his searches by some of the firm's financial supporters, including John Howland. "I guess he will do something nice in the way of *presents for you*," George confided. "The fact is

⁴⁸ Charles Scranton to STS, Jan. 7, 28, Feb. 3, 1844; GWS to STS, Dec. 14, 1843, Feb. 4, 11, 1844, ETLC, Box 9. See also Philipp H. Mattes to STS, Jan. 18, 1844, *ibid.* Calculating costs of smelting pig iron with anthracite about 1850, Peter Temin has arrived at a representative estimate of \$18 per ton. A figure of \$13 six years earlier, if accurate, must have been highly satisfactory to a producer. Temin, *Iron and Steel in Nineteenth Century America*, 64.

⁴⁹ See Platt, *Reminiscences*, 24. Platt's information about the dates on which these operations began is consistent with clues in contemporary correspondence, although he again is in error on the year, giving 1845 rather than 1844.

you will get rich by & by with presents when these folks begin to come out & see how you make things go." Business friends of the enterprise were anxiously awaiting the initial shipment of its new products; one Wall Street merchant told George that the first nail from Lackawanna "will *electrify the parties here.*"⁵⁰

Unfortunately for the dreams of the Scrantons, the long-awaited product proved much less than electrifying, and the firm once more encountered a major setback. According to Benjamin Throop, a local physician who came to the Lackawanna Valley in 1840 and was familiar with the early years of the ironmaking venture, the company made thousands of tons of nails, shipping them to New York City and other destinations in such quantities as to be a glut on the market. But the quality of the iron ore at the works was unsuitable for good nails, and the resulting product was so brittle that "at least every third nail would break in driving, unless a thoroughly instructed expert had a hand at the hammer." Another contemporary, Joseph Griffin, recalled the firm's nails as being "practically worthless." According to local folklore, they were so fragile that they would "break in one's pocket whilst being carried," while it was said that "farmers coming to the works with heavy lumber wagons" to pick up shipments of nails "carried sieves with them, for the jolting of the vehicle snapped the worthless ones, and the sieve let the parts out." Another story was to the effect that Selden Scranton "practised on an old oaken block, until he could drive a nail down every time with a stroke or two, and when the doubting yeomanry came to purchase he tested the nails in their presence."⁵¹

That these accounts were not completely fanciful is indicated by a surviving letter of March, 1845, in which John Howland warned the Scrantons about the imperative necessity to improve the quality of their product, having been informed that "all the parties who purchased the nail plate last fall, have made most grievous [*sic*] complaints." As was pointed out in a classic treatise on ironmaking which was published not long thereafter, satisfactory nailmaking required an iron of very close grain, referred to in the trade as "cold-short." By contrast, the iron made from ore on the Lacka-

⁵⁰ GWS to STS, June 8, 10, 21, 1844, ETLC, Box 9. Italics as given.

⁵¹ Throop, *Half Century in Scranton*, 113-114; Hitchcock, *History of Scranton*, I, 20; Clark, *Wyoming Valley*, 125-126; obituary of GWS, *Scranton Republican*, Apr. 5, 1861.

wanna property was, as Throop indicated, "red-short," and had a coarse fiber which made it anything but a promising material for the plans the Scrantons had been carrying out since 1843. In the long run this turned out to be a blessing in disguise, for had the local iron been cold-short it would have been impossible to use it for rails, which proved the ultimate answer to the company's dilemma.⁵² In the short run, however, this latest reverse was dismaying indeed.

The Scrantons did attempt to improve the quality of their nails, eventually mixing Lackawanna ore with a richer variety from Columbia County and combining the resulting anthracite iron with a small amount of charcoal pig. Refusing to concede defeat, they informed the Howlands in June, 1845, that they had put seven new nailmaking machines in operation, with three more set to go. Regardless of whether or not their nails actually did get better, however, the market for them did not. Charles Scranton wrote to Selden in May of the same year from New York City, where he had gone in an effort to secure another loan, that the Howlands had not been able to sell a single one of the kegs shipped to them that spring. The Howlands confirmed this shortly thereafter, informing the company that it was impossible to dispose of the nails at any price which would defray the cost of their manufacture. Yet the Scrantons kept on producing in the vain hope that the market would improve and their product would gain a satisfactory reputation. They seem temporarily to have reached a state of being unable to face the realities of their situation.⁵³

Obviously the Scrantons could not pursue their self-defeating policies indefinitely and stay in business, though they did continue these futile attempts until November, when both George Scranton and Sanford Grant went to New York to implement a new strategy which turned out to be much more rewarding. There they made an arrangement with John Talman, a leading merchant who was in the process of amassing a fortune in the cotton trade and with whom they had been doing business since at least 1843, to take and dispose of their accumulating stock of nails. Conditions of trade were far

⁵² John Howland to STS, Mar. 1, 1845, ETLC, Box 9; Overman, *Manufacture of Iron*, 290-291; Throop, *Half Century in Scranton*, 113.

⁵³ GWS to STS, Jan. 28, Feb. 7, 24, Mar. 14, Apr. 10, 1845; Charles Scranton to STS, May 28, 1845; Scrantons and Grant to Wm. H. Howland & Co., June 9, 1845; STS to JHS, Feb. 2, 1846, ETLC, Box 9.

better than earlier in the year, and there was some prospect that the firm could recoup at least part of its investment through his efforts.⁵⁴ The other part of their plan involved switching from nail production to the making of rails as quickly as new funds could be obtained and the necessary equipment acquired. As early as May, George had been discussing with John Howland the possibility of manufacturing railroad iron, and Charles had written Selden later the same month that "If I was in your situation now, I would stop sending nails for the present and get Contracts for Carbondale Rail Road for there certainly would be more profit in making R R iron at \$70 than to sell nails in New York at 4 *cts* which is in my opinion as high as you will get for them."⁵⁵

By November the logic of this advice had become inescapable, and the Scrantons at last began plotting a course that was consistent with financial and technological realities. During the 1840's the American railroad network tripled in size, growing from about 3,000 miles to nearly 9,000 over the course of the decade. This construction required great quantities of rails, especially because the earlier practice of laying iron straps on wooden stringers had proved unsafe and uneconomical. Until 1844, when the newly established Mount Savage works at Lonaconing, Maryland, performed the feat, the United States had no industrial facilities capable of rolling heavy rails, which were imported from Great Britain. British ironmasters were again to dominate American rail supply for a time after 1847, but during the middle of the decade they were preoccupied with a massive railroad boom in their own country, and the resulting high price of their output opened up opportunities for producers in the United States. This coincided with the development of ironmaking with anthracite in eastern Pennsylvania, and a considerable number of the new rolling mills which sprang up to take advantage of the rail situation were located in that region. From this point of view, the Scrantons were in the right place at the right time.⁵⁶

⁵⁴ Sanford Grant to STS, Nov. 2, 1845; GWS to STS, Nov. 2, 14, 1845, ETLC, Box 9. For biographical information on Talman, see Walter Barrett, pseud. for Joseph Alfred Scoville, *The Old Merchants of New York City* (New York, 1885), V, 166-169, 254.

⁵⁵ GWS to STS, May 15, 1845; Charles Scranton to STS, May 28, 1845, ETLC, Box 9.

⁵⁶ John F. Stover, *American Railroads* (Chicago, 1961), 20-27; Dorothy R. Adler, *British Investment in American Railways, 1834-1898*, ed. by Muriel E. Hidy (Charlottesville, Va., 1970), Chapters 1 and 2.

It is not surprising, therefore, that everywhere George Scranton and Sanford Grant turned during their New York visit they heard excited talk about railroads. Furthermore, financial conditions being now temporarily buoyant, it was likely that money would be available for the retooling and expansion required for entry into rail production. "We must begin to think about making R. R. Iron T rail," George wrote to Selden soon after his arrival. "I am now satisfied that its going to be a great business for 15 yrs with great prices." He assured his brother that it was no more difficult to roll rails than anything else, "when fixed for it," and that the Lackawanna site possessed ample power and other necessary resources for this type of manufacture. "Our iron would be just the thing," he continued, pointing out that it performed better when left in "large sizes" but seemed to "lose tenacity" when brought down to the shape of a nail. Sanford Grant was, if anything, even more insistent. "The Iron Market has never looked more promising," he wrote Selden on the same day. "The tremendous Rail Road Mania continues to *increase* and from present appearances the orders for Rail Road Iron will more than keep pace with the manufacture—Stop your Nail Machines and Commence making R. R. Iron as soon as you can."⁵⁷

Although the nail machines were not immediately stopped, for the firm still needed income from current operations while adding the new equipment required for the making of rails, a major shift was soon underway. Continuing to work on improving the quality of their nails and utilizing the new arrangement with Talman, the Scrantons now planned a major addition to their plant which would double the size of the present rolling mill, with at least eight extra puddling furnaces and a train of rolls designed for the manufacture of T rails. Despite George's confidence in the amplitude of the available water power, they decided that the new equipment would be better served by the adoption of steam, and contracted for an engine of eighty horsepower after securing bids from various potential suppliers. In an effort to gain familiarity with a process completely new to them, Selden and Charles visited Danville early in 1846 to inspect the Montour Iron Works, which began in that year to roll

⁵⁷ GWS to STS, Nov. 2, 1845; Sanford Grant to STS, Nov. 2, 1845, ETLIC, Box 9. Italics, spelling, and capitalization as given.

rails and had already received much attention for its pioneering activities.⁵⁸

To carry out their plans, the Scrantons of course needed a new infusion of capital. This looked easy in November, when the optimism prevailing in New York led them to believe they would have no difficulty securing funds from the Howlands, Talman, and other commercial contacts. Things went sour, however, within a few months. Writing from New York in the spring of 1846, George informed Selden that the impending passage of President Polk's sub-treasury bill was sapping the confidence of the mercantile community, and that even greater anxieties were being expressed should the proposed Walker Tariff be approved by Congress. If these things happened, George prophesied, "our cake will be dough with regard to getting any assistance from any quarter." Evidently George's mission in quest of money was at best only partly successful, for by May the Scrantons were once more in extreme financial straits, threatened by a mounting deluge of bills and wondering anxiously where to obtain the means of carrying on. Writing to Selden about various obligations coming due, George stated that he was "worried most to death for fear we cant meet all." As in previous crises, he was having difficulty keeping his spirits up. "I am not well," he continued. "I cannot stand trouble & excitement as I could once. I dont sleep good. My appetite is poor & digestion bad. I have great fears for my health by spells. Whenever my mind is easy for a few days I feel better & I think if we can succeed in placing Lacka. out of debt it would help me much. . . ."⁵⁹

By this time, however, the eventual solution of the firm's financial quandary was in sight, for in the same letter containing these melancholy reflections George also urged Selden to contact Benjamin

⁵⁸ STS to JHS, Feb. 2, 1846; Philipp H. Mattes to STS, Jan. 17, 1846; Dotterer & Taylor to Scrantons & Grant, Jan. 30, 1846; Haywood & Snyder to Scrantons & Grant, Feb. 2, 1846; undated document, late 1846, proposing formation of enlarged company, ETLC, Boxes 9 and 10. By the time of the Civil War, the Montour Works was the largest of its type in the country. The T rail, so named because of its configuration, was invented by Robert L. Stevens, president and engineer of the Camden and Amboy Railroad, in 1831. Combining strength with ease of installation, it became standard equipment on American lines in the 1840's. Temin, *Iron and Steel in Nineteenth Century America*, 109, 117; Stover, *American Railroads*, 21, 24.

⁵⁹ GWS to STS, Apr. 9, May 23, 1846, ETLC, Box 9. On the financial difficulties confronting the firm see also John Howland to STS, May 22, 1846, *ibid.*

Loder, president of the New York and Erie Railroad, asking for a loan of \$20,000 to be secured by a mortgage on the Lackawanna works and paid for in iron. Under the terms of a relief act passed by the New York legislature in 1845, the line which Loder headed had to complete a connection with Lake Erie at Dunkirk by 1850, and was also required to reach Binghamton by December 31, 1848, or forfeit a state subvention of \$3,000,000. The early history of the road had been plagued by disputes over which of various possible routes to take in proceeding westward from its eastern terminus at Piermont on the Hudson River, and in 1846 it was in the process of securing permission from the governments of New York and Pennsylvania to run its track through the northeastern corner of the latter state. Complicating the problems posed by political boundaries and the rugged terrain through which the line would have to pass was the difficulty of obtaining rails in the face of the abnormal British conditions which made this commodity impossible to get at a price which the New York and Erie could afford to pay, if indeed it could be secured at all. Under the circumstances the railmaking plans of the Lackawanna ironworks and the needs of the struggling railroad coincided, paving the way for a relationship which helped enable both to survive.⁶⁰

As a historian of the New York and Erie has indicated, it is possible that the Scrantons were already personally acquainted with William E. Dodge, the well-known New York financier who was a leading member of the railroad's board of directors. Like the Scrantons, Dodge was a native of Connecticut, as was his partner, father-in-law, and fellow board member, Anson G. Phelps.⁶¹ Although the Lackawanna firm did negotiate a contract for delivering 4,000 tons of rails to the New York and Erie at a price of \$65 per ton, George's suggestion involving a \$20,000 loan was not immediately acted upon. Correspondence for the summer of 1846 is extremely skimpy, but there were good reasons to proceed with caution. The firm was

⁶⁰ GWS to STS, May 23, 1846, ETLC, Box 9; Edward H. Mott, *Between the Ocean and the Lakes: The Story of Erie* (New York, 1901), 78-91. See also Edward Hungerford, *Men of Erie: A Story of Human Effort* (New York, 1946), 66-77, and Hitchcock, *History of Scranton*, I, 23-24.

⁶¹ Mott, *Between the Ocean and the Lakes*, 90; William B. Shaw, "William Earl Dodge," and Harold U. Faulkner, "Anson Greene Phelps," *Dictionary of American Biography*, V, 352-353, and XIV, 525-526.

facing the necessity once again to reorganize, not only because it needed fresh capital but also because Sanford Grant had now decided to withdraw from the enterprise, possibly losing nerve after his initial flush of enthusiasm for the railmaking idea and not wishing to get even more deeply involved in another risky venture. To replace him in charge of the company store, George and Selden had recruited Joseph C. Platt, a resident of New Haven who two years previously had married the sister of Joseph H. Scranton. Platt moved to the Lackawanna works in March, 1846, under an arrangement which gave him the privilege of joining the firm as a partner within one year. While he searched for money with which to buy into the business, Grant remained temporarily affiliated, but George and Selden fretted about whether they might have to give him a bond indemnifying him against any possible loss in connection with the expansion into rail manufacture. Their anxieties on this score were compounded by the knowledge that Erastus Scranton was again restive about continuing his association with the firm, which might require that his share be purchased by Joseph or some other party. In short, there was a real danger that in securing new capital the Scrantons might find themselves swallowed up by the same individuals who supplied the backing, and lose control of the company. In addition, Joseph H. Scranton was coming north during the summer, and the brothers were probably eager to talk to him at length before making commitments that might backfire.⁶²

On the other hand, there were also considerations making it advisable for the Scrantons to push ahead vigorously with their rail-making project, which they could not do without obtaining large sums of fresh capital. Writing to Selden in August, George exulted over the contract to supply the New York and Erie with rails, calling it "a providential circumstance in our history." Congress had just passed the Walker Tariff of 1846, which under any other

⁶² GWS to STS, Nov. 14, 1845, Apr. 9, Aug. 3, 1846; Joseph C. Platt to STS, Dec. 6, 1846; Philipp H. Mattes to STS, Apr. 9, 1846, ETLIC, Box 9; Platt, *Reminiscences*, 24-28; obituary of Joseph C. Platt, *Scranton Republican*, Nov. 16, 1887, clipping in LHS. Platt did raise his share and remained associated with the Scrantons throughout his entire career, becoming a director of the Lackawanna Iron and Coal Company. His memoirs are useful but contain a number of errors with regard to dates and sequences of events, and must be used with caution.

conditions would have been bad news for the firm, for it lowered the duties on imported iron. But the Lackawanna works already had a binding agreement from the New York and Erie to purchase a large quantity of rails, which was at least a temporary defense against the uncertainties of foreign competition. According to George, one of the tariff's effects would be to decrease the price of raw materials; in addition, the unsettled conditions caused by the new measure would diminish the cost of labor and lessen the danger of strikes. With a contract already in hand, the ironworks should benefit from both these situations, he asserted. It should hoard every available resource, avoid paying out a single unnecessary dollar, and go ahead with all possible speed to turn out the rails. This could be done, he believed, within twelve months, by which time better business conditions might have returned to the country at large, thus facilitating further progress on the company's part. There might even be an upward revision of the tariff in the not-too-distant future if the iron interests protested vigorously.⁶³

The new tariff, along with the subtreasury bill and other circumstances having an adverse effect upon general business confidence, helped intensify the forces pushing the Scrantons toward some sort of a *modus vivendi* with the managers of the New York and Erie, for money could not be obtained from other sources toward which the brothers had been looking for financial support. It was increasingly clear, for example, that they could expect little help from such men as John Talman in this regard. Furthermore, William Henry had picked this unpropitious moment to demand that the firm make some reckoning of the value of his past services, and Selden had already felt obliged to advance him some cash in partial satisfaction of his claims. To make matters worse, Oxford Furnace, which the Scrantons were still leasing from the Robeson family, was losing money, partly because George and Charles were spending so much time away from it in search of funds for the Lackawanna

⁶³ GWS to STS, Aug. 3, 1846, ETLC, Box 9. The Tariff of 1846 lowered the duties on pig iron, hammered bars, and rolled bars from \$10, \$17, and \$25 per ton respectively to a flat duty of 30% on all classes of iron products. See F. W. Taussig, *The Tariff History of the United States*, 8th ed. (New York, 1931), 114, 124-125. Taussig contends that, contrary to fears current at the time this tariff was actually beneficial to the anthracite iron industry, the previous high rates having artificially prolonged the era of charcoal. *Ibid.*, 131-135.

works. In order to meet these exigencies and move ahead vigorously with preparations to manufacture rails, it was imperative to secure new capital, and quickly. George therefore continued to push for a loan application to the New York and Erie, recommending by mid-August that the firm borrow \$40,000 from the railroad instead of the \$20,000 he had suggested in May. John Howland reinforced his arguments in a letter of August 21, warning Selden that the officers of the rail line were getting restive about when and if the Scrantons were going to fulfill their contract. He had been in contact with the chief engineer, who thought there was a good possibility that the railroad might repudiate its agreement with the Lackawanna works and take advantage of the new tariff by ordering the rails from abroad.⁶⁴

Despite their fears of making a misstep, therefore, the Scrantons were being pushed inexorably in the direction George had indicated. Finally, in mid-September George and Joseph, the latter having not yet returned to Augusta, went to New York and applied to the managers of the railroad line for a loan of \$50,000 to be secured by a mortgage on the Lackawanna installation and paid back by crediting the ironworks with \$6,250 plus interest for each five hundred tons of rails delivered as the New York and Erie advanced toward Binghamton. In an earlier letter George had calculated that the firm could make a profit of \$20 on each ton of rails at the \$65 contract price, so that under the arrangement the Scranton were proposing they could still recoup all costs and make a small cash surplus besides while paying off the loan with iron.⁶⁵

The response of the New York and Erie was two-fold. First, the directors of the line appointed a committee of Benjamin Loder and William E. Dodge to inspect the Lackawanna property, a prudent move under the circumstances. Second, the line was hardly in a position to advance large sums of cash out of its own funds, but the managers might be interested as individuals in the prospect of buying into the Lackawanna firm rather than extending a loan. From

⁶⁴ GWS to STS, Aug. 14, 1846; John Howland to STS, Aug. 21, 1846, ETLC, Box 9.

⁶⁵ Application, "To the President Directors & Co. of the New York and Erie Rail Road Company," Sept. 16, 1846; obituary of GWS, Scranton *Republican*, Apr. 5, 1861; Platt, *Reminiscences*, 27-28; GWS to STS, Aug. 3, 1846, ETLC, Box 9. In stating that the loan application preceded the contract, Platt reverses the actual sequence of events, and also errs in giving the price specified by this contract as \$80 per ton.

one of George's subsequent letters it can be inferred that they wanted \$100,000 in stock, a much larger stake than he felt it wise to give them.⁶⁶

From New York, George and Joseph went on to Boston by way of Providence, where they inspected a rail-rolling establishment whose operations led George to state that he was "more satisfied now than ever before that it is no trick to roll rails." This was not, however, the main purpose of the trip. While in Georgia, Joseph had established contacts with the Savannah firm of Paddleford and Fay, one of the partners of which had come from Boston and had important connections there. Joseph carried letters of introduction to these men, who might conceivably be an alternate source of capital should the family consider the terms of the New York and Erie too stiff. The Bostonians were very interested in acquiring coal lands in Pennsylvania, as well as in selling the Scrantons' product. They were willing to invest in the enterprise if the Lackawanna firm could get out of its contract with the railroad and sign a similar agreement to supply the New Englanders with 6,000 tons of rails.⁶⁷

The Scrantons could now play off two potential sets of backers against each other, strengthening their position in the upcoming negotiations when the inspection team of Loder and Dodge visited the Lackawanna works in October. These men spent two days examining the property and discussing possible arrangements for participating in the venture. By the time they left, well impressed by what they had seen, a satisfactory meeting of minds had been reached. Shortly after their return to New York, they and eight other associates advanced \$90,000 to the Lackawanna firm, and a new contract was negotiated for 12,000 tons of rails to be delivered by the Scrantons. Preparations were also made to draw up formal articles of agreement for a new partnership to be known as Scrantons and Platt. A surviving document describing the property of the ironworks in detail and proposing tentative terms for this agreement indicates that the Scrantons initially suggested a total capital stock of \$200,000, which by November had been increased to \$230,000.

⁶⁶ Obituary of GWS, *Scranton Republican*, Apr. 5, 1861; GWS to STS, Sept. 27, 1846, ETLC, Box 9.

⁶⁷ GWS to STS, Sept. 27, 1846, ETLC, Box 9; Platt, *Reminiscences*, 27-29, quoting in part from a letter of JHS written on September 23.

Platt later recalled that the new firm was organized on November 7 to take formal effect on the 15th of the month, but a subsequent letter from George to Selden shows that the final terms were not hammered out until a meeting in New York several days after the latter date. From Oxford Furnace, George wrote jubilantly to his brother that "I want to see you never so bad in my life. I have so much to tell you that it would be vain for me to attempt to write it out now. Suffice it to say that we have carried out our whole matter most *triumphantly*."⁶⁸

The basis of George's exuberance lay not only in the fact that the Scrantons now had the funds to carry out their railmaking plans, but that they had secured the money without being swallowed up by the New York and Erie in the process. Like its two predecessors, the new firm was a special partnership. Its active managers were to be Selden Scranton, whose share was put at \$18,000 as before; George Scranton, with \$10,000; and Joseph C. Platt, with \$7,000. Among the special partners were Joseph H. Scranton, who bought out the interest of Erastus and whose share in the enterprise was set at \$28,000; John Howland, with \$32,000; Edward Mowry of Charleston, South Carolina, apparently a friend of Joseph H. Scranton, with \$15,000; and Philipp H. Mattes, with \$5,000. Another \$15,000 was subscribed by John I. Blair, a wealthy resident of Warren County, New Jersey, whose association with the Scrantons went back to the mid-1830's and who was to work closely with the brothers in the future in establishing the Leggett's Gap Railroad to run north from the Lackawanna Valley and connect with the New York and Erie. His brother, James Blair, also invested a smaller amount in the reorganized firm. Although the Scranton family no longer held a majority of the company stock, the share of this entire group consisting of family and friends stood at more

⁶⁸ GWS to STS, Nov. 23, 1846, ETLC, Box 9; undated proposal, late 1846, ETLC, Box 10; obituary of GWS, *Scranton Republican*, Apr. 5, 1861; Platt, *Reminiscences*, 28-29. Although the actual 12,000-ton agreement has disappeared, it is likely that it specified a higher price than the original contract for 4,000 tons, possibly as high as \$75 or \$80 per ton. As partners, the directors of the New York and Erie would be reaping part of the profit from the transaction. The existence of two contracts at two different prices, one negotiated well before the reorganization of the firm and the latter during the formation of the new company, probably explains the confusion encountered in local histories and reminiscences about the actual arrangements, which these sources tend to oversimplify.

than \$130,000, or roughly 60 per cent of the total. The rest was subscribed by Dodge, Phelps, Loder, Henry Sheldon, Homer Ramsdell, Samuel Marsh, Philip Dater, Daniel S. Miller, William B. Skidmore and James Stokes, all connected in one way or another with the New York and Erie. While these men did not control the firm, they brought to it great prestige and financial substance. George estimated that their total wealth, along with that of the Blairs, amounted to as much as \$8,000,000, and exulted that with this type of backing Scrantons and Platt would be the strongest ironmaking firm on the North American continent.⁶⁹

With the formation of Scrantons and Platt, the Lackawanna iron-making enterprise had at last gained the financial capacity to realize its industrial potential, just as the decision to manufacture rails had finally provided a realistic solution to the firm's technological dilemmas. Correspondence and documentation in primary sources for the next few years are meager, but an adequate picture of the company's progress can be gained from other materials. According to Joseph Platt's later recollections, which are not always trustworthy, rail production did not get fully underway until August, 1847, but after that time there was a steady outpouring of this commodity, which was transported by horse and mule teams over wilderness roads to various points along the route of the New York and Erie. These shipments saved the line from bankruptcy, as it reached Binghamton just four days before the deadline specified by the New York legislature. By this time the firm of Scrantons and Platt had undergone two more reorganizations, partly to raise the capital to an 1848 level of \$400,000, and partly to make a place as an active partner for Joseph H. Scranton, who left the South in April, 1847, and took up residence in the Lackawanna Valley that June. George W. Scranton followed, moving with his family from Oxford a year later to join Selden and Joseph in superintending the works, while Charles remained in New Jersey to manage Oxford Furnace, which was subsequently purchased outright from the Robeson family. As the Lackawanna plant prospered, the community of Harrison, which Henry had begun laying out in 1840,

⁶⁹ GWS to STS, Nov. 23, 1846, ETLC, Box 9; obituary of GWS, *Scranton Republican*, Apr. 5, 1861. For a biographical sketch of John I. Blair, see Snell, comp., *History of Sussex and Warren Counties*, 655-657.

grew along with it, though the name he had selected for it was changed first to Scranton and then to Scranton. In 1853 the enterprise which gave the city its material underpinning was again reorganized with doubled capital under the title of the Lackawanna Iron and Coal Company, retaining this name throughout most of the nineteenth century.⁷⁰

While the Scrantons flourished, William Henry gained little material reward for his early vision and abortive efforts in trying to get the ironworks underway. Moving from one location to another in the Wilkes-Barre area, he attempted in storekeeping, farming, and periodic railroad promotions to seek the fortune which perennially eluded him. Although he seems to have maintained satisfactory relations with Ellen and Selden, who were, after all, his daughter and son-in-law, he engaged in occasional recriminations with other members of the family, especially George. The financial returns which he believed were due him through his early association with the enterprise were never settled to his satisfaction, and he also took part in a lawsuit against his erstwhile partner in railroad speculation, Henry W. Drinker. His sense of being victimized extended to his second wife, who refused to sign over her property to him and with whom he conducted a somewhat unseemly controversy concerning custody of her financial assets. He underwent the heartbreak of losing a son in the Civil War, and even had trouble raising the cash to have his picture included in a local history of the Lackawanna region. Although his letters abounded from time to time with accounts of illnesses from which he was suffering, he lived a long life and did not die until 1879, spending part of his time writing a series of memoirs, never published, explaining why he had failed to gain the fame and fortune he had so arduously sought.⁷¹

⁷⁰ Platt, *Reminiscences*, 10-12, 30-33; Throop, *Half Century in Scranton*, 114-116; Hitchcock, *History of Scranton*, I, 24-32; Mott, *Between the Ocean and the Lakes*, 90-91; JHS to STS, Apr. 18, 1847, ETLC, Box 9; "Memorandum of Meeting of the Lackawanna Iron Co. at the Counting Room of Messrs. Phelps, Dodge & Co., Oct. 2, 1847," ETLC, Box 10; *Charter and By-Laws and Regulations of the Lackawanna Iron and Coal Company: By-Laws Adopted October 1, 1853* (New York, 1853), *passim*; Scranton, "The Iron Interests of Sussex and Warren Counties," in Snell, comp., *History of Sussex and Warren Counties*, 79.

⁷¹ Box 26 of ETLC contains a large selection of correspondence from Henry's declining years and the series of autobiographical memoirs, previously cited, recounting his career and misfortunes. In addition, a series of photostats at LHS contains some correspondence and other materials pertaining to the later stages of Henry's life, including letters between him and Horace Hollister relating to the latter's *History of the Lackawanna Valley*.

It is instructive to speculate briefly on the reasons why the Scrantons ultimately succeeded while Henry failed. By the early 1840's, conditions were ripe for businessmen in the eastern Pennsylvania area to exploit the financial and technological opportunities afforded by anthracite, the hot blast, and the transportation revolution that was penetrating the region and linking it with the urban centers of the eastern seaboard. To grasp the potential inherent in the situation and extract profit from it required a mixture of vision, perseverance, adaptability, access to capital, and sheer luck. Henry had the first of these qualities, just as assuredly as he lacked the last. The other three were in the long run, however, the most important, and in all of them he proved wanting in one way or another. By 1840 he had clearly established a pattern of flitting from one vision or enterprise to another, whereas the Scrantons possessed the capacity to stick doggedly to a venture until it finally paid off. Within this framework, however, they were flexible to a degree that Henry, despite his diversity of aspirations, was not. While he had the tendency to make the same mistakes over and over, whatever his current field of activity, they demonstrated a capacity for pragmatic adaptation to individual circumstances and setbacks while managing somehow to keep the same basic business afloat. Finally, because they were a cohesive family rather than an isolated individual, they had access to capital and human resources which kept the firm going in its infancy until the time came when its prospects were sufficiently attractive to enlist dependable outside aid. It is interesting to note in this regard that well before 1840, Henry had fallen out with both of his brothers and been badly let down by the one who was to supply his Analomink Forge with pig iron.⁷² The Scrantons, by contrast, stuck together and brought a united weight to bear against the difficulties they encountered.

⁷² See Matthew G. Henry to WH, Feb. 3, 1838, ETLC, Box 26. This is an earnest plea for reconciliation indicating that severe differences had existed between these two brothers and a third, Joseph, who was by this time dead. In it Matthew speaks of the unnaturalness of brothers having no communication with one another, and asks "why should the feeling between relations and particularly Brothers be so easily & so deeply lacerated so as to prove almost incurable. . . ." In approaching William, Matthew sought certain conditions of reconciliation, one being that some distasteful past circumstances, possibly connected with his failure to keep William supplied with pig iron, be "not touched upon." In my opinion, this letter sheds considerable light on why the Scranton family was a much more effective business unit than the Henry family at this time.

In a broad historical perspective, it may be true that certain trends and developments can be predicted with confidence on the basis of given financial and technological realities. Undoubtedly, the tangible potentials for iron manufacture and the rolling of rails in eastern Pennsylvania would have been realized in some manner by some entrepreneurs, given the hot blast and other circumstances prevailing in the 1840's. The same is probably true of the Slocum's Hollow area, though here there is more room for speculation. But the specific ways in which the potentials of a given situation are realized have much to do with the human characteristics of the men involved, with fumbling trial and error, with unpredictable contingencies, and with circumstances containing elements of utter capriciousness. The historian must reckon with both perspectives, the broad and the narrow, if he is fully to understand the process of economic and technological development.

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