WILLIAM HENRY

Armsmaker, Ironmaster and Railroad Speculator

A Case Study in Failure

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Among other things, a conference session on "Factors in Business Success and Failure: may help remind us that "success" and "failure" are somewhat ambiguous terms. I am intrigued that my own dictionary defines success as the "favorable or prosperous termination" of a given endeavor.[1] I have deliberately underscored the use of the conjunction "or" in this case, because it suggests that "favorable" and "prosperous" may not necessarily mean the same thing. Perhaps this is true even in the entrepreneurial setting, particularly if we distinguished between the personal gain a businessman may secure from his activities and the benefits that society as a whole may realize from them. In his thoughtful book Apostles of the Self-Made Man, John G. Cawelti indicates that the contribution of an individual to the community in which he lives is a legitimate criterion of success, even though the individual himself may not become rich as a result.[2] Might not this point of view be just as relevant to the man of enterprise as it is to anyone else?

These thoughts apply with particular force to the entre-

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preneur with whom this paper is concerned. It is clear that William Henry looked upon himself as a failure in July, 1872, when he wrote some brief and bitter reminiscences entitled, "Why I Did Not Amass Wealth."[3] Certainly his restless pursuit of fame and fortune had been one long study in frustration, and I will try in this essay to explain at least tenatively why this was so. Nevertheless, it is legitimate to ask whether the term "failure" should be applied without some qualification to a man who helped introduce a significant new technological process to the United States, who founded an important Pennsylvania city, who started a firm that became one of the nation's largest producers of iron and steel rails, and who gave a strong impetus to the establishment of a key link in the American transportation network. If William Henry was a failure, let us at least record that he made creative contributions to the society in which he lived, even though his dreams exceeded his own personal grasp.

Present-day visitors to the Lackawanna Historical Society in Scranton, Pennsylvania, the city which rose on the site whose commercial and industrial advantages he was the first to appreciate, can view an oil portrait of William Henry in his old age, looking solemnly and a bit sadly at the world from underneath a somewhat too obvious hairpiece.[4] His sense of personal failure must have been heightened by the fact that he sprang from a notable line of ancestors for whom he had been

named but whose material successes he had been unable to emulate. He was not really born in riches, and he did not die in rags, but in a sense his life had been the Horatio Alger Story in reverse.

The original William Henry, who lived from 1729 to 1786, was an expert gunsmith who gained a "considerable fortune" making rifles in the thriving Pennsylvania frontier town of Lancaster and won renown throughout the colonies for the accuracy of his weapons. His technological ingenuity won him the respect of such men as James Watt and David Rittenhouse. In 1763 he built the first American steamboat, making an unsuccessful run on nearby Conestoga Creek; later he won recognition as the inventor of the screw-auger and devised a novel steam-heating system. During the Revolution he held a number of state and local offices and was elected to the Continental Congress in 1764.[5] His son William Henry Jr., born in 1751, did not attain the eminence of his father, though he held a long-time associate judgeship to which he was appointed by governor Mifflin He also carried on the family armsmaking business, moving it ultimately to the town of Nazareth in Northampton County.[6] Among the children born to him and his wife Sabina was yet another William Henry, the subject of this essay.

This third William Henry was born at Nazareth on August 15, 1794. His father was frequently away from home on business as a small arms contractor for the state and federal governments,

and he was reared chiefly by his mother, a devoted member of the Moravian Church who implanted in him a lifelong piety that is frequently apparent in his letters and other writings. At the age of five he began his formal education at the denominational school of Nazareth Hall, maintained by the Moravian Brethren. Probably it was here that he acquired his clear and somewhatstiffly dignified prose style, as well as the near, legible handwriting that makes his correspondence and accounts so easy for the researcher to decipher.

Only part of Henry's education took place in school, however, for he was quickly exposed to the routines of the parental business. His formal schooling ended in 1807, after which he began filing gun mountings and making rifle parts at his father's factory. Three years later he was sent to Philadelphia to serve an apprenticeship under his older brother John Joseph, who operated an arms works at the corner of Noble and Third streets. Here he became increasingly familiar with the trade and in the Spring of 1811 took a job as superintendent of another philadelphia gun-manufacturing plant which assembled musket parts rejected by federal arms inspectors and shipped them to South America for the use of revolutionaries. Thus at the age of seventeen he was in charge of an establishment that employed thirty or more workmen.

During these years Henry also became associated with a project which his father and brother commenced under a contract

with the United States government. Ihis turned out badly and did much, along with subsequent reverses, to discourage the young William from pursuing a permanent career in arms manufacturing. Decades later he was still complaining about it in reminiscences tallying up the misfortunes that had accumulated throughout his life.[7]

This unfortunate episode began in June, 1808 when William Henry the elder and John Joseph contracted with the federal Ordance Department to deliver 10,000 muskets and bayonets to the Philadelphia Arsenal at a rate of 2,000 per year and a price of $10.75 for each strand of arms. Receiving a preliminary advance of $10,750 from the government, the Henrys made necessary preparations at their Nazareth and Philadelphia establishments and placed orders with subcontractors for various components. In about three months they received what they took to be official patterns from the military authorities and began manufacture. To their dismay, however, their first shipments of completed weapons were rejected by the government inspector, Charles William, who criticized numerous details in the paterns with which the Henrys had been supplied and insisted he was under no obligation to accept the arms even though they conformed to the ostensible specifications.

At this point the Henrys made what turned out to be a colossal blunder. Instead of contesting Williams' decision, and despite being caught with a sizeable number of unacceptable

weapons, they acceded to the inspector's demands and made various alterations to satisfy both him and another government examiner who appeared temporarily on the scene. The resulting muskets were naturally more costly to produce, and the Henrys quickly found that they were unable to make a satisfactory profit under the stipulated price. They still had part of the $10,750 that had been advanced, however, and this may have constrained them to keep on manufacturing the improved muskets while they besieged government agents for additional compensation. Their principal target was Tench Coxe, who was at this time United States Purveyor of Supplies. After failing to get anywhere with him they finally made a formal claim to the War Department itself in November, 1810, for a retroactive twenty per cent boost over the $10.75 unit price originally agreed upon.

But the War Department procrastinated and the Henrys kept on producing muskets. By the end of 1811 the situation was becoming intolerable and the older William Henry went personally to Washington in an effort to straignten things out. On at least two occasions he called upon the Secretary of War, William Eustis, accompanied by the congressman from the Northampton County district, to demand the twenty per cent boost and a conclusive set of specifications which would protect him from future harrassment by federal inspectors. According to numerous depositions, Secretary Eustis made all sorts of verbal promises to grant extra compensation, but refused to put anything in

writing. Trusting in his assurances, the family patriarch returned to Nazareth and the Henrys kept turning out muskets. Indeed, encouraged no doubt by the deepening international crisis that was to thrust the United States into a second war with Great Britain by June, they made plans for a major expansion of the Nazareth facilities in the form of a new plant to be constructed in nearby Bushkill and Plainfield townships. By April of 1812 the younger William Henry had returned from Philadelphia and was supervising construction of what later came to be known as the Boulton Works.

It soon turned out, however, that nothing had been solved despite the solemn but unwritten assurances of the Secretary of War. By August, 1812 the Henrys had delivered more than 4,000 muskets under their contract, and the government was still paying only $10.75 per weapon. Furthermore, a new federal arms inspector made the situation even worse by demanding fresh alternations in the pattern which would add yet more to the cost of production. Exasperated by this unexpected turn of events, the Henrys stopped deliveries, hoping perhaps that this drastic step might force the government to take remedial action. It did, but not precisely as the Henrys had hoped. On December 4, 1812, the United States Commissary General, Callender Irvine, wrote them a letter observing that nearly 6,000 muskets were still due under the 1808 contract, reminding them that they had received an advance of $10,750, and stipulating

that from henceforth the government would withhold one-sixth of the price of each 1,000 weapons delivered until the deficit was erased. Evidently the Henrys made no satisfactory response, because on May 18, 1813, Irvin flatly demanded that they either refund the $10,750 in cash or deliver a sufficient number of muskets to make up for it. Lest there be a misunderstanding, it was made clear that these arms would of course have to pass inspection by federal agents.

By the time the Henrys responded to this ultimatum only twenty days were left before the expiration of the 1808 contract, and they were still nearly 6,000 muskets in arrears. It was evident that they remained hopeful of having their own way, and they made no move to have the contract rescinded. Instead, they argued that the government had been liberal in awarding extensions of time to other contractors, and asserted that they would long since have fulfilled their part of the bargain if the various federal inspectors had permitted them to deliver guns conforming to the original pattern. They would, however, consent to annul the contract if the government would grant them the twenty per cent retroactive compensation they had been demanding and submit the entire dispute to "three competent and impartial men who shall decide definitively whether we are entitled to any and what additional allowance under all the facts and circumstances in the case." They made no offer to return any part of the advance they had received, and were

clearly not going to supply any further muskets until the authorities met their terms.

The response from Washington was slow in coming but blunt and uncompromising when it arrived. On February 21, 1814, the elder William Henry and his son John Joseph were summoned to appear in federal district court along with two other defendants and answer why they sould not render up to the United States certain funds which they "owe and unjustly detain." Thirteen months later the suit was dropped for reasons which two surviving pieces of evidence make sufficiently clear. A brief entry of November 2, 1816, in a Henry family Day Book records the remittance of $1,129.80 to the government as "the 4th Installment of Advanced money repaid to the U. S. Somissy. Gen." Evidently the other installments had been considerably larger, for in his reminiscences written in the 1870's William recalled that some $10,000 had been returned. Making allowance for an understandable loss of exact details in his memory after so many years, it seems obvious that the Henrys had found their case hopeless and settled out of court for the full $10,750 demanded by the Ordance Department. In a move which must have added salt to their wounds, the remainder of their contract was taken over by M. T. Wickham, the very inspector whose call for further improvements in their musket pattern had precipitated the crisis of late 1812.[8]

The protracted squabble over the 1808 contract cast a long

shadow over the subsequent development of the Henry gunmaking enterprises, and over the career of the young man whose father and older brother had become enmeshed in this unfortunate debacle. Because of their controversy with the federal authorities, the Henrys were in no position to secure additional government orders which might otherwise have been theirs during the War of 1812. Despite some sales of weapons to the states of Maryland and Delaware, they came out of the way years in weaker financial position than competitors who had maintained a better relationship with Washington officials. In addition, they had made an ill-advised expansion of their facilities which appears to have cost them about $14,000, and they faced a difficult period of post-war adjustment to renewed competition from British imports with the extra disadvantage of having to remit badly needed funds to the government in repayment of their 1808 advance. It was a recipe for disaster, and one of the victims was young William Henry, who had been only fourteen years old when the contract was negotiated and had played no part in commencing the matter but who became caught in its backlash.

On March 25, 1817, in a transaction which had all the earmarks of an unloading operation, the elder William Henry turned over the recently-completed Boulton Works to his sons John Joseph and William, the latter now being twenty-three years old. The deed that recorded this transfer showed that in assuming ownership of the installation the two brothers became indebted to

their father for $10,000, payable "at the several times and in the manner as is expressed in the several Bonds or obligations and the conditions thereof bearing equal date with these articles of agreement."[9]

Saddled with these burdens in addition to the other problems they had inherited from the past, John Joseph and William struggled vainly to succeed in their joint interprise. William, who had built the Boulton Works and was thus familiar with its operations, stayed on at Nazareth as supervisor while his older brother remained in Philadelphia at his own shop there and served as a marketing agent for guns and components made at Boulton. Sales were sufficient to keep up their hopes throughout 1817 and 1818 despite some nagging worries caused by falling prices for their products, but they were in poor condition to withstand the business depression that hit the country in 1819. After February of that year demand fell off sharply, and their troubles were compounded by low water which plagued operations at Boulton during the Summer and Fall. The market revived to some extent in the Winter of 1819-1820 but then slumped again and continued dull until a fresh disaster struck when the dam burst at Boulton, necessitating repairs which the Henrys were ill prepared to finance.[10] A series of letters which John Joseph wrote to William from Philadelphia during these years are preserved in the Henry family papers and reveal a mounting sense of desperation. One bright spot occurred during the Winter of 1820-1821 when John

Joseph went to Washington and managed to secure belated compensation for the cost overruns which the family had suffered in its partial performance of the 1808 contract, but this only moderated their difficulties and they also failed to negotiate a new contract with the Ordance Department which might have salvaged their sagging fortunes.[11]

By 1822 the older brother was willing to continue the struggle, but William was not. Their father had recently died, and William siezed this opportunity to disengage himself from a business for which his enthusiasm was gone, even though he was left with virtually nothing after selling out to Joun Joseph at a loss and parting with $3,000 inheritance from his father in liquidating his debts. He was not twenty-eight years old and practically penniless. Furthermore, he had acquired weighty family responsibilities of his own, for in 1817 he had married Mary Barbara Albright of Nazareth and by 1822 the couple had a son and daughter to support.[12]

John Joseph now moved from Philadephia to the Boulton Works, where he managed to recoup his finances to some extent during the rest of the decade by making rifles for the American Fur Company.[13] Meanwhile, William rented an old store a few miles away from Nazareth at Wind Gap and stocked it with borrowed funds. During the next four years he slowly accumulated a capital of about $2,000. In 1826, finding that he could not renew his lease, he bought the store outright with the aid of

a $4,000 loan from his brother-in-law, John F. Wolle, and over the next two years did a business of about $18,000 annually. By the end of 1828, if his later reminiscences were correct, he was worth about $5,000.[14]

Although he was doing moderately well, William did not like working behind a counter and was suffering from a variety of ailments which he attributed to his growing occupational dissatisfaction. His "dispepsia and melancholy" combined with the persuasive talk of a nephew named John Jordan, Jr., who was living at the time in his household, led him to sell his store and stock sometime in late 1828 or early 1829. Together with Jordan and his own brother Matthew Henry, who operated a nearby blast furnace, he went into the ironmaking business. With the intent of refining pig iron from Matthew's furance, he and Jordan established a forge on Analomink Creek near Stroudsburg. Here, on a mill site with about eight hundred acres of adjoining woodland, the two associates built an ambitious plant with six hearths, a coal house, eight workmen's dwelling, a blacksmith shop, a barn, and other structures, and engaged a work force of sixteen men. At prevailing rates, they calculated that they could obtain pig iron from Matthew's furnace for $28 a ton, conduct refining operations which they estimated at about $31, and sell the resulting bar iron at Easton for upwards of $120 per ton, thus making a handsome profit.

Unfortunately, these flattering prospects were deceptive.

The building of Analomink Forge absorbed about $30,000, which was much more than they had anticipated. In addition, the market price of bar iron began to fall. Even worse, for some unexplained reason which contributed to great bitterness between William and Matthew, and latter failed to deliver pig iron as promised and the two associates at Analomink had to turn elsewhete for this vital raw material.[15] Looking around for an answer to this problem, they found on the other side of the Delaware River in nearby Warren County, New Jersey an old iron-making establishment named Oxford Furnace, which had by this time been out of blast for nearly twenty years and was in need of extensive repairs.[16]

Their own resousces exhausted at this point, Jordan and Henry fell back upon the latter's brother-in-law, Wolle, who came into their firm as a silent partner and provided them with enough funds to proceed. Leasing the Jersey furnace from its owners, William Robeson and John P. B. Maxwell, Henry left Jordan in charge at Analomink and moved to Oxford, where he repaired the old stack, built a new bridge and casting-house, procured up-to-date blowing machinery, erected storage facilities and six workmen's houses, and discovered a new ore mine. By August 4, 1832 the furnace was back in operation. The next Spring, Henry took up residence in the old mansion house at Oxford, which Robeson has now vacated, and settled down to enjoy the somewhat baronial life of managing a rural iron

plantation.

According to Henry's later recollections, he did a renumerative business at Oxford, making pig iron, stove plates, and other products and earning profits ranging from $4,000 to $7,000 per year. But the main purpose of his partnership with Jordan was to supply pig iron for conversion into refined bars at Analomink, and that end of the business became less and less rewarding. Ihe reasons for this are not completely clear, but there is enough evidence from surviving documents to suggest that the partners were caught between unexpectedly high transportation costs and declining prices for their product.

As a possible way out of this squeeze, Henry concluded that he would have to drive down the cost of the pig iron he was making at Oxford, and launched an experiment that was to make him a pioneer in American iron manufacturing. In 1828, James B. Neilson of Glasgow had patented the use of a heated air blast for smelting Scotch blackband ironstone, a mixture of ore and bituminous coal previously regarded as unsuitable for commercial exploitation. His initial success encouraged inventors in Britain and America to attempt using a hot blast in connection with anthracite as a smelting fuel. In Pennsylvania, for example, the Lutheran minister Frederick W. Geissenhainer conducted experiments with various air temperatures and pressures in conjunction with anthracite at a furnace near Pottsville from 1830 until his death in 1838, while in South Wales considerable progress

was made along the same lines by ironmaster George Crane and his assistant, David Thomas. Crane's acquisition of Geissenhainer's American patent rights and the subsequent success of Thomas in erecting a hot-blast anthracite furnace at Catasaqua, Pennsylvania in 1839 laid the basis for the rapid development of the anthracite iron industry in the United States during the 1840's.[17]

At Oxford, Henry reasoned that one might be able to produce cheaper pig iron by using the hot blast in a charcoal furnace. In 1835 and 1836 he rebuilt his equipment so as to permit cold air from the bellows to circulate through a series of pipes which were exposed to flame and radiate heat from the hottest parts of the furnace, deep in the interior of the stack. When blown into the furnace through the main tuyere, the heated air promoted combustion of the raw materials to such an extent that Henry now needed only 165 bushels of charcoal to smelt a ton of pig iron, as compared to 226 bushels previously. Furthermore, he found that less labor was needed to keep the tuyere clean, producing added savings. His experiments came to the attention of the Franklin Institute in Philadelphia, whose Journal carried a highly laudatory article on their significance in December, 1835.[18]

According to John M. Dickey, an architect-restorationist who has done research on early hot-blast furnaces, Henry's use of this principle at Oxford had "no significant precedent" in the United States.[19] Even Geissenhainer, for example, did not

seem to have achieved practical results in his experiments with anthracite until at lease 1836, when he succeeded in producing only a few tons of iron at most before his equipment broke down. The fact that Henry used charcoal instead of anthracite in no way detracts from his stature as an imaginative innovator.

On the other hand, Henry's resourcefulness failed to improve the fortunes of the Analomink-Oxford partnership to any significant degree. It is too bad that we do not have Jordan's side of the story, for we would then be in a better position to assess Henry's later assertations that it was the course of events at Stroudsburg, not Oxford, that made the joint enterprise unprofitable. According to Henry, bad health on Jordan's part interfered with operations at the forge, while sagging prices for iron, the Panic of 1837, some untimely fires and floods which destroyed large amounts of charcoal and washed away a dam, and the deceitfulness of some middlemen in the iron trade counterbalanced the profits which he was realizing at the New Jersey blast furnace.

By 1837 things were so bad at Analomink that Henry felt obliged to take personal charge, and he moved back from Oxford. He left the Warren County furnace in the custody of Selden Scranton, a young emigrant from Connecticut who had become his right-hand man and would in 1839 become his son-in-law by marrying his daughter, Ellen. Henry struggled on at the Stroudsburg forge for two years but became increasingly disillusioned with

the whole venture. In 1839 he persuaded Jordan and Wolle to liquidate part of the enterprise by selling their Oxford lease and equipment to Selden Scranton and his older brother George. A year later, Henry got out entirely my making over his Analomink interests to Jordan. The exact terms are not clear, but in the course of discharging his debts he lost the entire $5,000 which he had initially invested in the partnership. Except for the fact that he was now eighteen years older, he was in the same financial condition that he had been upon leaving the Boulton Works in 1822.

Henry's mind was now filled, however, with another of the new vistas which perpetually captured his imagination. He believed, with justification, that great things would happen in northeastern Pennsylvania during the coming decade. During the late eighteenth and early nineteenth centuries, while the course of settlement in the Keystone State 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 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 Dalaware, Lackawanna, and Western.[20]

As of 1840, some of these developments still lay in the future, but Henry had a clear grasp of the fact that the hot blast and the coming of the railroad added up to great potential profits for men of enterprise in the anthracite region. Indeed, he had been active since at least 1830 in attempts to pierce the wilderness stretching northwest into the Poconos from his Stroudsburg base with a railroad line which might ultimately link the region with the great cites of the seaboard on the one hand and New York's Erie Canal corridor on the other.

Io understand Henry's part in the events which led to the birth of the Lackawanna Iron and Coal Company, the founding of Scranton, and the development of the Delaware, Lackawanna, and Western Railroad, one must therefore return to the early years of his abortive venture at Analomink. Along with other

promoters in Pike, Luzerne, and Northampton counties, he took part in an effort to connect Pittston on the north branch of the Susquehanna with the Delaware Water Gap by means of a canal, railroad, or both. An act authorizing the incorporation of such an enterprise, to be known as the Susquehanna and Delaware Canal and Rail Road Company, was passed by the Pennsylvania legislature on April 3, 1826, but little was accomplished over the next four years to make it a reality. On April 6, 1830, a subsequent law changed the name to the Delaware and Susquehanna Rail Raod Company, the idea of a canal having apparently been dropped at that point. In the same year William Henry was designated as one of nine commissioners to conduct a survey of the rugged and heavily wooded terrain over which the projected line was to run. The backers of the venture managed to raise enough money to implement this essential step, and Henry as agent for the group engaged a well-known early American Civil engineer, Ephraim Beach, to locate a preliminary route. According to his later reminiscences, Henry himself spent three months on this task, and took part in the actual field work.[21]

The survey was completed by the end of 1831, and the resulting report by Beach and the commissioners was published the following year. The line which it set forth, destined in time to become a section of the Delaware, Lackawanna, and Western, ran from Pittston to the junction of the Susquehanna and Lackawanna rivers and from thence northeast to the mouth of Roaring Brook,

thus passing through the very site on which Henry was later to establish what ultimately became the city of Scranton. Continuing across the ridge dividing the Susquehanna and Delaware watersheds, it proceeded southeastward down the vally of Podono Creek to the Analomink River and Stroudsburg en route to the Delaware Water Gap.[22]

The conclusion of the survey and Beach's stamp of approval on the practicability of the railroad project stimulated a flurry of activity among the backers of the enterprise. A corporation was formally organized under the presidency of Henry W. Drinker, a wealthy Philadelphia Quaker who had moved to Luzerne County to supervise his family's extensive landholdings there and had opened up a pioneer turnpike into the area some years before. The deep involvement of the proprietors of Analomink Forge was underscored by the fact that John Jordan, Jr. became secretary and William Henry, treasurer. Together Drinker and Henry constituted a finance committee whose main task was to raise more capital among outside investors. In a marginal note in his later memoirs, Henry indicated that he and his associates had subscribed 3,000 shares at $50 each, for a total of $150,000. This would not go very far in building a line which was to include seven inclined planes to help overcome an aggregate rise of 1,366 feet in elevation between Pittston and the summit and of 1,599 feet coming the other way from Delaware Water Gap. Beach's report estimated the cost of

the road at nearly $625,000, and the commissioners calculated that locomotives and rolling stock would add an extra $78,960. They were therefore about $550,000 away from their goal.[23]

In attempting to raise this money, Drinker and Henry touted the agricultural, timber, and mineral resources that lay along their route, including a choice district "where thousands of millions of tons of the best Anthracite Coal can be most cheaply mined, a region of more than thirty three miles long and averaging more than two miles in width, all this underlaid by beds of coal, perhaps averaging fifty feet in thickness." They pointed to calculations of tonnage and tolls in the published survey report as indication that the enterprise could earn a handsome twenty-one per cent per year on the necessary invested capital. They also stressed the advantages of connecting their projected line with other contemplated railroads at both ends, one running westward to the Finger Lakes where linkages were available to De Witt Clinton's "Big Ditch," and the other going eastward across New Jersey, where canals to the New York City market were already in existance. Drinker and Henry were already engaged in an attempt to establish a railroad running northward from the projected Delaware and Susquehanna route to the New York line near Great Bend and from that point westward toward Oswego, Elmira, and the Finger Lakes. In May of 1831 the two men had attended a convention of railroad enthusiasts at Ithaca to promote such a plan, and on April 7,

1832, the Pennsylvania legislature authorized the incorporation of the Leggett's Gap Rail Raod in pursuit of this objective.[24]

Drinker and Henry were tireless in arranging meetings throughout a three-state area to interest prospective investors in their visions. Going to New York City, they exhibited maps and statistics to bankers and merchants in Wall Street. Similar forays were made into such New Jersey communities as Newark, Morristown, and Belvidere, where overtures were made to prominent capitalists including United States Senator Samuel Southard, officers of the Morris Canal Company, and a Dr. George Green who was promoting a "Belvidere Delaware Rail Road." In Pennsylvania, further support was courted in such placed as Easton, Kingston, and Stroudsburg.

But to no avail. There was a hopeful period starting in 1833 when the New York firm of Week and Taylor indicated they would provide financial backing if a continuous line could be incorporated running up the Susquehanna Valley to the New York boundary near Athens, with connections westward to Elmira, a move which was also endorsed by a Wall Street banker named John Delafield. Meeting were held with various businessmen at Delafield's mansion, after which Drinker and Henry managed to push appropriate enabling legislation through the Pennsylvania legislature and also secured a first installment of subscriptions on two thousand shares of stock. The legislation was submitted to the New York interests, who requested certain alterations

and additions, and the two promoters then lobbied through a supplimentary act at Harrisburg in 1835. By November they were back in New York City, but by this time business conditions had changed and their Wall Street friends were no longer enthusiastic. In the melancholy language of Henry's memoirs, "at first postponement was deemed necessary, but several of the parties were broken up by insolvency and death and all the trobles of many months was (sic) once more proved to be abortive."[25]

Two new prospective backers now came upon the scene. One of these was Edward Armstrong, a wealthy Hudson Valley landowner who was to figure prominently in Henry's plans over the next few years. The other was a young English aristocrat, Charles Augustus Murray, later fifth Earl of Dunmore, who was about to return home after an American visit. Murray professed interest in the Delaware and Susquehanna project and on June 18, 1836, attended a meeting at Easton, Pennsylvania with various promoters of the venture including Armstrong, Drinker, and Henry. At this conclave Murray proposed to raise $100,000 among his friends in Great Britain if the Americans could on their part obtain enough funds to make at least a beginning on constructing the line. Articles of agreement to this effect were drawn up with the aid of William F. Clemson, a New Jersey attorney, and Henry then went to New York City where he persuaded the Board of Directors of the Morris Canal to subscribe $150,000, thus fulfilling the American part of the bargain by the time Murray

sailed for England early in August. Hopes again ran high, but were dashed once more in December when letters from Murray indicated that he had failed to carry through his intentions.[26]

According to Henry's reminiscences, he had already suggested an alternate plan to his associates in case Murray should let them down. At the June meeting in Easton, he had mentioned to Armstrong the possibilities of erecting an ironwork somewhere in the northern anthracite coalfield, with the idea that "if success attended the manufacutre of Iron in the Valley above Pittston it was sure to result in the making (of) a Rail Road connexion to the East as well as West." The fact that Henry had been conducting his experiments with the hot blast at Oxford Furnace in the past year made this a logical suggestion on his part, and Armstrong seems to have expressed interest if Henry could come up with a suitable location. Whatever enthusiasm Armstrong felt, however, must have cooled quickly, for he soon became engrossed in building himself a mansion near Newburgh while Henry suffered on at Oxford and Analomink. Then, suddenly, Henry received word in 1839 that the interest of the wealthy New Yorker had revived. Dropping everything, he hastened to Armstrong's new mansion on the Hudson and laid plans for a furnace and rolling mill at some likely spot in the northeastern Pennsylvania wilderness.

The long and arduous series of promotional schemes through which we have now traced Henry's footsteps should, I think,

indicate that the difficulties he encountered in making a profit from his ventures at Oxford and Analomink were due to something more than Jordan's ill health, fires in the woods, floods, cost-price ratios, and other business misfortunes. It seems clear that he was concentrating more on future visions than present realities and trying to run his ironmaking enterprises with his left hand while his real interests lay elsewhere. One sees him tramping through the mountains with surveying parties; writing reports and prospectuses (it should be noted here that various parts of the commissioners' extensive contributions to the survey report published in 1832 savor strongly of Henry's prose style); making speeches to prospective investors in a string of cities and towns throughout eastern Pennsylvania, northern New Jersey, and the New York City area; dashing off to Harrisburg to help lobby yet another bill through the legislature, or traveling with Drinker to this or that railroad convention; courting Armstrong, Murray, the Morris Canal board, or the bankers of Wall Street; delegating more and more of his everyday duties to such persons as Selden Scranton and ultimately giving over control of Oxford Furnace entirely to the Scrantons when the responsibilities and disappointments associated with its administration became finally too much for his eternally restless spirit to bear. It is hard to see how any business could thrive under this type of absentee management.

For one type of discouragement Henry seemed to have an

infinite capacity. The setbacks he encountered as he pursued a pet vision merely whetted his appetite for fresh attempts. For the everyday round of problems and details associated with an ongoing enterprise, however, he seems to have had little tolerance. One imagines him relishing the excitement of building an over-ambitious physical plant at Analomink, reconstructing Oxford Furnace and discovering a new ore mine, and ripping out the interior of the Oxford stack to experiment with different combinations of air conducts in his work with the hot blast, but chafing under the ups and downs of normal operations once these spasms of creative activity were over. It seems clear that the "dispepsia and melancholy" which he had suffered in his growing but unexciting business at the Wind Gap store had stemmed not from the indoor nature of the work, as he later asserted, but from the sense of imprisonment he felt behind a counter dispensing such prosaic items as flour and eggs.

Some of Henry's surviving business records, such as a price book which he began at Boulton during the early years of his partnership with John Joseph, or a notebook which he kept from 1840 to 1842 at the Lackawanna iron works, abound in page after page of careful calculations relating to prices, labor costs, and the chemical composition of raw materials. In both cases, however, these details seem to have been connected more to plans he had in mind than to everyday realities with which he was trying to cope. They delighted him precisely because of their

hypothetical nature. He was a man of visions whose feet stayed only reluctantly on the ground, and his hopes tended to overrule his judgment when hard facts got inconveniently in the way.

Nor did Henry display much talent in an area of managerial skill which might have stood him well as he strove to actualize his dreams, that of choosing able associates upon whom he could count to supply the qualities or resources which he lacked. Time after time the partners with whom he mingled his fortunes or the prospective backers to whom he turned failed him in the moment of truth. This might be attributed to sheer bad luck except for the frequency with which it happened. Even in his relationship with the family whose destiny became so closely involved with his own, and whose material successes he was not to share, he displayed the same tendency. At Oxford, he came into close contact with both Selden and George Scranton. It was the less able Selden whom he picked to become his chief assistant and who ultimately became his son-in-law. He was never able to get along with the far more able George, with whom he was to quarrel bitterly once the Lackawanna ironmaking venture got underway. Interestingly, Selden eventually became as pathetic a figure in his old age as William Henry himself. It seems to have been in this sense a case of "like attracts like," though Selden never did have the creative energy of his father-in-law.

Much of the foregoing analysis rests not only on the pattern

of William Henry's business career up to the winter of 1839-1840 but on the events that followed as he siezed what seemed to be a great opportunity to establish a pioneer anthracite furnace and rolling mill with Edward Armstrong's financial backing. I have recounted the details of this, the culminating failure of Henry's quest for wealth, in an article on the early history of the Lackawanna Iron and Coal Company, and there is neither time nor space to give them equal consideration here.[27] Instead, it has seemed more worthwhile to dwell at length on his earlier business career, which has not previously been covered in print.

Nevertheless, a brief summary of the disappointments that awaited Henry in his new ventures and the long years of frustration that followed is necessary if his life is to be seen in proper perspective. Leaving Armstrong's mansion with his hopes and plans for a bold new undertaking in the Pennsylvania hills, he spent the Winter and Spring of 1839-1840 scouting a variety of possible locations. According to his reminiscences, however, he already knew where his first choice lay, and his most determined negotiations were with the owners of the Slocum's Hollow tract at the confluence of the Lackawanna River and Roaring Brook. His first attempt to purchase the property in February, 1840 proved abortive, but he returned that Summer and secured satisfactory terms. Drawing on Armstrong for a $2,500 down payment on the $8,000 purchase price, and making the necessary legal arrangements in the then county seat of Wilkes Barre,[28]

he made long lists of calculations on the resources of the tract as he waited for his draft on the Hudson Valley landowner to be honored. His analysis of the local areas was over-optimistic for the purposes he had in mind, his cost estimates proved to be too low, and he was also mistaken about the potential usefulness of fluxing agents available on the property. But these were difficulties which would become apparent only after the passage of months or years, and a more immediate blow was in the offing. On the day before Henry's $2,500 note was to be presented to Armstrong for acceptance, the latter died of scarlet fever.

Henry responded to this latest misfortune by securing an extension on his agreement with the owners of the Lackawanna tract and looking around for new sources of capital. His fateful choice fell upon his son-in-law, Selden Scranton, who hastily consulted with his brother George and made a trip to the proposed site in mid-August which resulted in a decision to participate in the venture. The Scrantons had little money of their own, but they did have two wealthy cousins who were running a mercantile business in Augusta, Georgia. With financial help from this source and the participation of two other investors, a partnership was set up, the Lackawanna site was purchased, and preparations were made to build a furnace for smelting iron with anthracite and the hot blast. Henry was to hold a one-fifth interest in the firm, direct the actual building

operations, and receive an annual salary of $2,000. However, he had no actual cash to contribute to the venture, and his investment was one of time, talent, and expertise. In addition, like his father before him in the ill-fated negotiations with Secretary of War Eustis, Henry failed to get all the terms of his agreement with the Scrantons put into writing. Consequently, he was in a weak position to avoid being squeezed out of the enterprise when his managerial and technological capabilities were found wanting.

Henry's mood was characteristically buoyant during the early months of the Lackawanna project as he began constructing the blast furnace, purchased some new ore lands against the advice of one of the partners, and busied himself with plans for the community that formed around the nascent ironworks. He called it "Harrison" after his political idol, the Hero of Tippacanoe, and gave the streets such names as "Selden," "George," "William," and "Mary," the last in honor of his own wife. But his frame of mind became less optimistic as money from the Georgia cousins dribbled in only slowly, as castings for the air heating equipment were delayed, and as the building of the furnace lagged. He also got into agruments with George Scranton, who thought that the water wheel which Henry was installing was too small (as it turned out, Scranton seems to have been right). When the time finally came to put the furnace in blast early in October of 1841, the result was a fiasco. Combustion in the

crucible area was not intense enough to melt the materials coming down from above, and the tuyers became clogged. Repairs were made and a second attempt took place later the same month, but again with the same consequences. Henry later blamed the failure on undue haste in putting the furnace into blast before the inside of the stack had been sufficiently dried out and on the incompetence of his chief founder, Samuel Templin, but a close reading of the surviving documents indicates that the furnace design itself was faulty and the air blast too weak, possibly because of the undersized water wheel.

These difficulties naturally caused Henry's stature to decline in the eyes of his colleagues, and after the second failure George Scranton himself came up from Oxford to direct furher repairs. A new founder was hired and a somewhat more successful trial took place in December, but once again the furnace clogged after a brief period in blast. Henry was still in charge of this third attempt, and its disappointing result was another blow to his prestige. The Scrantons then obtained yet another chief founder, a Welsh immigrant named John F. Davis, and after more modifications the furnace finally began to produce pig iron with some consistency, though not as much as some other anthracite installations that were now operating in other parts of northeastern Pennsylvania.

By the Spring of 1842 Henry's position had become untenable, and he had no choice but to leave. To make matters worse, his

wife of twenty-five years died only weeks before his departure. Going to the nearby community of Kingston, he leased a foundry and tried to get started again. His affairs with the other Lackawanna partners were still unsettled. He claimed that he was due $3,000 plus some back salary, but George objected to this, and an arrangement under which Henry was to get some of his back compensation in pig iron did not work out. After about a year of waiting he sued his old partners for $3,000 but won a settlement of only $500. He also became involved in a lawsuit against his erstwhile associate Henry W. Drinker, who was now working with the Scrantons to promote the same railroad ventures that had occupied so much of Henry's time in the 1830's. According to Henry, Drinker sold the Scrantons certain charter rights that were actually his; he finally recovered $2,500 after two years of litigation, but still felt victmized because he never received any interest on the money during the time it was unjustly kept from him. By the mid-1840's he had found a new financial benefactor after apparently going through bankruptcy, and was running a store which he had stocked with borrowed funds. After more than fifteen years of striving he was back at the same occupation that had caused him so much frustration at Wind Gap, 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."[29]

It would be too wearisom to follow Henry's subsequent career

in much detail as he moved from one location to another in vain attempts to seek the fortune that perennially eluded his grasp. Marrying a second time, he made the mistake of erecting a house on some farm land whose title remained in the hands of his wife, who refused to make it over to him. He farmed the tract for some years, but his wife and her brother finally denied him the use of it and also appropriated some livestock and fodder which he said had cost him about $500. On another occasion he was thwarted in trying to establish himself once more in the foundry business, and he also lost a pocketbook containing $275 while crossing the Susquehanna River. In a move which must have caused him some embarrassment, he was forced to fall back upon the good graces of his son-in-law, and from 1850 to 1855 he served as an agent for the Lackawanna Iron and Coal Company in receiving supplies that came into the area by canal and reloading them on railroad cars for shipment to the Scranton works. This role became unnecessary with the improvement of rail services into the region, and Henry then took over some unspecified business for the Lackawanna firm in Oneida County, New York before accepting a position as a mine agent and ore inspector in northern New Jersey until sometime in 1861. By the following year he was back in northeastern Pennsylvania running a sawmill near Wilkes Barre.

The trail of Henry's activities becomes more difficult to trace after this. He went through the grief of losing a son in

the Civil War and seems to have gone into semi-retirement after that conflict, becoming financially dependent upon another son to whom he made over his remaining assets. A somewhat pathetic pair of letters in the Edmund T. Lukens Collection at the Eleutherian Mills Historical Library reveal that in December, 1868 Henry did not have enough money to pay for the preparation of an engraved portrait of himself that appeared in Hollister's History of the Lackawanna Valley and had to rely on funds from relatives to finance this tribute to his pioneering role. He continued to be interested in railroads, and wrote a letter to the editor of an unidentified newspaper about the merits for northern Pennsylvania of a system of cheap wooden rails which he had seen described in the Scientific American. He corresponded with Selden Scranton on the iron deposits of northern New Jersey and quarreled with new geological theories about how they had been formed because they conflicted with his views of Scripture. But his career was finished at this point and he seems to have spent much of his time composing a series of reminiscences explaining why he had failed to win fame and fortune. One of the last documents in his surviving correspondence is a letter written to Selden on Christmas Day, 1973, thanking his son-in-law for "a prettyly bound book, of the Psalms of David." Surrounding the text of this short note on three sides is an intricately drawn design of intertwined foliage similar to patterns he had once inscribed on rifle and pistol parts at Bolton more than half

a century before. He was obviously living increasingly in the past, but he still kept going for six more years until his death at age eighty-five in 1879.[30]

It is easy to pick out the personal characteristics that hindered William Henry in his business career, as I have tried to do earlier in this essay. But it is equally important to underscore his many contributions to the development of northeastern Pennsylvania. He perceived at an early time the advantages of this region at a stage of industrialization that depended upon a technological trinity of coal, iron, and steam. He was one of the first men in America to appreciate the significance of the hot blast and perhaps the very first one to put it into successful practice. He selected the site of an important city and played a leading, if somewhat undistinguished, part in the early years of the enterprise which gave that community its economic and industrial foundation. Along with Drinker and other colleagues, he identified what later became the route of the Delaware, Lackawanna and Western Railroad and worked doggedly to make this line a reality. Ultimately he saw that he was putting the proverbial cart before the horse and that the best way to insure the establishment of the road was to build a productive enterprise in the wilderness whose output would necessitate improved mean of getting it to market. Although he did not share in the profits, this is finally what happened.

We should also remember that Henry was by no means the only businessman in the nineteenth century to fail partly because he could not lay his hands upon sufficient dependable capital to put his visions into practice. The productive period of his career spanned two generations in which the United States began to come of age as a great manufacturing nation, but these were years in which it was still easier to amass wealth in activities other than the actual fabrication of goods. Henry undoubtedly knew this, and this helps explain why he pinned so many of his hopes for personal gain on a transportation venture. The heavy equipment necessary for establishing ironworks was highly expensive, and Henry was not alone in having to go hat in hand to prospective backers whose fortunes had been secured in loaning money or selling and distributing goods rather than making them. Even the Scrantons found that bringing a manufacturing enterprise into existence and retaining financial control of it were two different things, and in the end they too encountered many of the same difficulties that had plagued him.[32] We should gain added perspective on this from the next paper, dealing with a highly significant and too long neglected financier into whose hands the control of the Lackawanna Iron and Coal Company eventually passed. For this reason, as well as because of my admiration for the infectious zest which he has revealed for business history in the course of our conversations together, I look forward eagerly to what Daniel Hodas will have

to say about the life and career of Moses Taylor.

Footnotes

1. Jess Stein and Laurence Urdang, eds., The Random House Unabridged Dictionary of the English Language (New York, 1971), p. 1419.

2. John G. Cawelti, Apostles of the Self-Made Man: Changing Concepts of Success in America (Chicago: University of Chicago Press, 1965), passim.

3. "Why I Did Not Amass Wealth! A Question That Has Been Asked Is Here Answered -- July, 1872," handwritten manuscript by William Henry in Edmund T. Lukens Collection (hereafter cited ETLC), Eleutherian Mills Historical Library, Wilmington, Delaware, Box 26.

4. This was apparently purchased in 1852 with assistance from his daughter, Ellen Henry Scranton. See letter of March 12, 1852, William Henry Box, ETLC.

5. See especially Carl W. Mitman, "William Henry," in Allen Johnson and Duman Malone, eds., Dictionary of American Biography (New York: Scribner's, 1928-1937), Vol. VIII, pp. 560-561.

6. Ihis material and the data on the early life of William Henry III which follows is taken principally from a handwritten autobriographical manuscript entitled "The Life & Times of William Henry," probably dating from about 1874, in EILC, Box 26.

7. My discussion of the episode that follows is based on a series of twenty-nine letters, petitions, and other documents in the Henry Papers, a microfilm collection now on deposit at the Eleutherian Mills Library. See Reel I, "Bolton Gun Works," Section D, "John Joseph Henry and William Henry III," Group 3, "Correspondence 1808-1811." In actuality, most of the documents involve William Henry II and some are dated as late as 1819.

8. See Day Book, 1816 in Henry Papers, Reel VII, "olton Gun Works," Section K. "Bound Volumes," Group 2, "Day Books . . . John Joseph Henry and William Henry, Jr., 1815-1820," and "Life & Iimes of William Henry," p. 26.

9. Henry Papers, Reel I, Section D, Group 1.

10. These trends have been reconstructed from a variety of account books in Henry Papers, Reel X, Section K, Group 6, "Miscellaneous," of which a Waste Book begun in 1814 and a Price

Book begun in 1815 are the most important. See also the Henry Ledgers for this period in Reel III and the John Joseph Henry Day Book in Reel VI.

11. This group of letters is in Henry Papers, Reel I, Section B.

12. In addition to "Why I Did Not Amass Wealth" and "Life & Times of William Henry," see Henry's handwritten statement "My Own Family, Genealogical Memo," EILC, Box 26.

13. See Henry Papers, Reel I, Section D. Group 4.

14. "Life & Times of William Henry," p. 27; "Why I Did Not Amass Wealth," p. 2.

15. On the bitterness resulting from this episode see especially Matthew G. Henry to William Henry, February 3, 1838, ETLC, Box 26; this is a plea for reconciliation by Matthew asking "why should the feelings 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 distasteful past circumstances, probably connected with his failure to keep William supplied with pig iron, be "not touched upon."

16. For historical material on Oxford Furnace see Charles Scranton, "The Iron Interests of Sussex and Warren Counties," in James P. Snell, compiler, History of Sussex and Warren Counties, New Jersey (Philadelphia, 1881), pp. 78-79, and John Dickey, "Development and Feasibility Study of Oxford Furnace Historic Site" (Xerox, Media, Pennsylvania, 1970), passim.

17. On various aspects of these developments, see Henry Hamilton, The Industrial Revolution in Scotland, reprinted ed. (New York, 1966), pp. 179-183; Sylvester K. Stevens, Pennsylvania: Titan of Industry (New York, 1948), Vol. I, p. 215; James M. Swank, History of the Manufacture of Iron in All Ages, 2nd ed. (Philadelphia, 1892), pp. 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, Vol. III (1874), pp. 152-156; Peter Temin, Iron and Steel in Nineteenth Century America: An Economic Inquiry (Cambridge, Mass., 1964), p. 52.

18. "Description of a Successful Experiment with the Heated Air Blast, Made at the Oxford Furnace, New Jersey," Journal of the Franklin Institute, Vol. XX (December, 1835), p. 361 ff.

19. Dickey, "Development and Feasibility Study," p. 8.

20. See particularly Chester L. Jones, The Economic History of the Anthracite-Tidewater Canals (Philadelphia, 1908) and 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), pp. 2-9.

21. Much of the material in this and subsequent paragraphs is taken from a set of handwritten reminiscences by William Henry, dates 1856 and entitled, "Historical Facts Relating to the Rise and Progress of the Southern Division of the Del: Lackaw: and Western Rail Road," ETLC, Box 26. Wherever possible I have cross-checked this data with independent sources, and am indebted to Mr. Hugh R. Gibb of the Eleutherian Mills propriate acts of the Pennsylvania state legislature as the railroad project went through its various states. The standard published history of the Delaware, Lackawanna, and Western is Robert J. Casey and W.A.S. Douglas, The Lackawanna Story: The First Hundred Years of the Delaware, Lackawanna, and Western Railroad (New York, 1951). Unfortunately, its account of the formative years of the enterprise and of Henry's own career is riddled with errors and imaginary conversations and cannot be relied upon.

22. Ephraim Beach et al., Report on the Survey of a Route for the Proposed Susquehanna and Delaware Rail-Road (New York, 1832), passim. See especially the accompanying "Map from Pittston on the Susquehanna to the Water Gap of the Delaware, Compiled from Original Surveys," by the cartographer Joseph Welch.

23. Henry, "Historical Facts," p. 3; Beach et al., Report, pp. 9-11, 30-32.

24. The visit of Drinker and Henry to Ithaca is mentioned in Casey and Douglas, Lackawanna Story, p. 28; I have been unable to verify it independently.

25. Henry, "Historical Facts," pp. 6-7; see also his separate handwritten document "Notes on Sundry Matters," ETLC, Box 26, Note III, pp. 3-4. Various standard secondary works on the history of Scranton and the Lackawanna Valley deal at some length with the early railroad ventures in the area; on the episodes covered here, see for example Horace Hollister, Contributions to the History of the Lackawanna Valley (Scranton, Pa., 1879), pp. 318-319.

26. Henry, "Historical Facts," p. 8; on Murray's career and American visit, see Leslie Stephen and Sidney Lee, eds., Dictionary of National Biography (Oxford, England, 1921-1922), Vol XXII, pp. 1085-1087.

27. The material that follows has been condensed from my article, "The Early History of the Lackawanna Iron and Coal Company: A Study in Technological Adaptation," Pennsylvania Magazine of History and Biography, Vol. XCVI, No. 4 (October, 1972), pp. 424-468, which provides detailed documentation on the episodes treated here. In addition, see Henry's handwritten manuscript, "Ihe Idea of Establishing Iron Works in Luzerne County, Penna.," ETLC, Box 26.

28. The area of present-day Scranton was at that time in Luzerne County. Lackawanna County was not set apart until 1878.

29. On the various business reverses suffered by Henry after his departure from the Lackawanna works, see especially "Why I Did Not Amass Wealth," pp. 4-6.

30. See Horace Holister to William Henry, December 18, 1868; William Henry to Ellen Henry Scranton, December 19, 1868; William Henry to Selden Scranton, March 15, 1868, March 14, 1870, and December 25, 1873, ETLC, William Henry Box; undated "Exposition" printed in unidentified newspaper by "H" (William Henry) in Henry Photostats, Lackawanna Historical Society, Scranton, Pennsylvania; "William Henry Sketchbook," Henry Papers, Reel X, Section K. Ihe last-mentioned source contains numberous patterns and cartouches for inscribing on weapons which are quite similar to the one drawn on the letter of December 25, 1873.