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JOHN N. HOFFMAN

Girard Estate

Coal Lands

In Pennsylvania

1801-1884

SMITHSONIAN INSTITUTION





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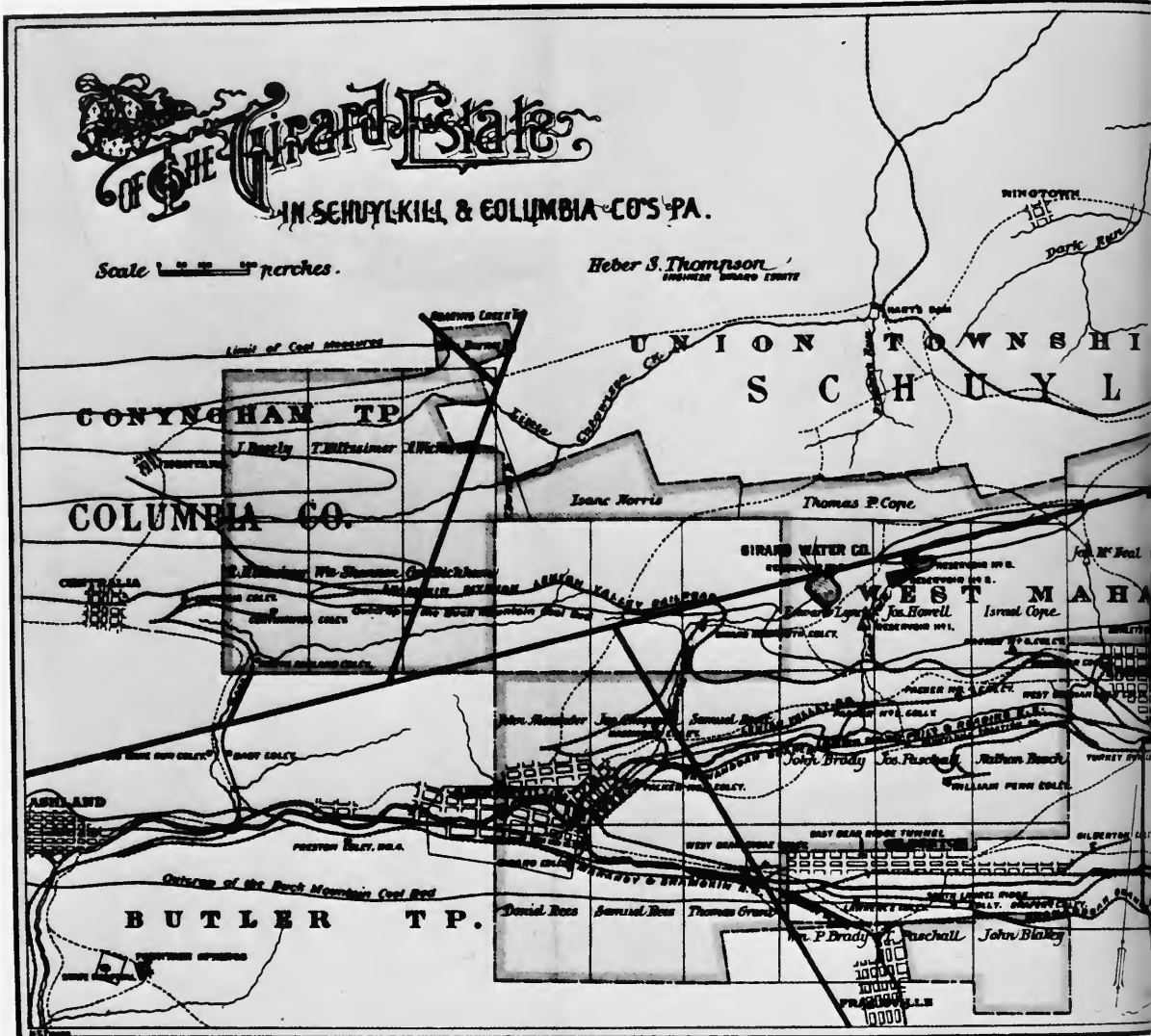
Girard Estate Coal Lands In Pennsylvania, 1801-1884

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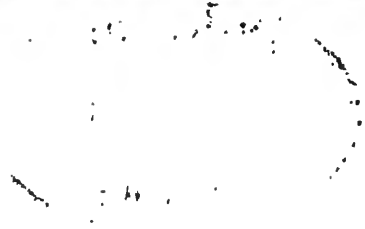
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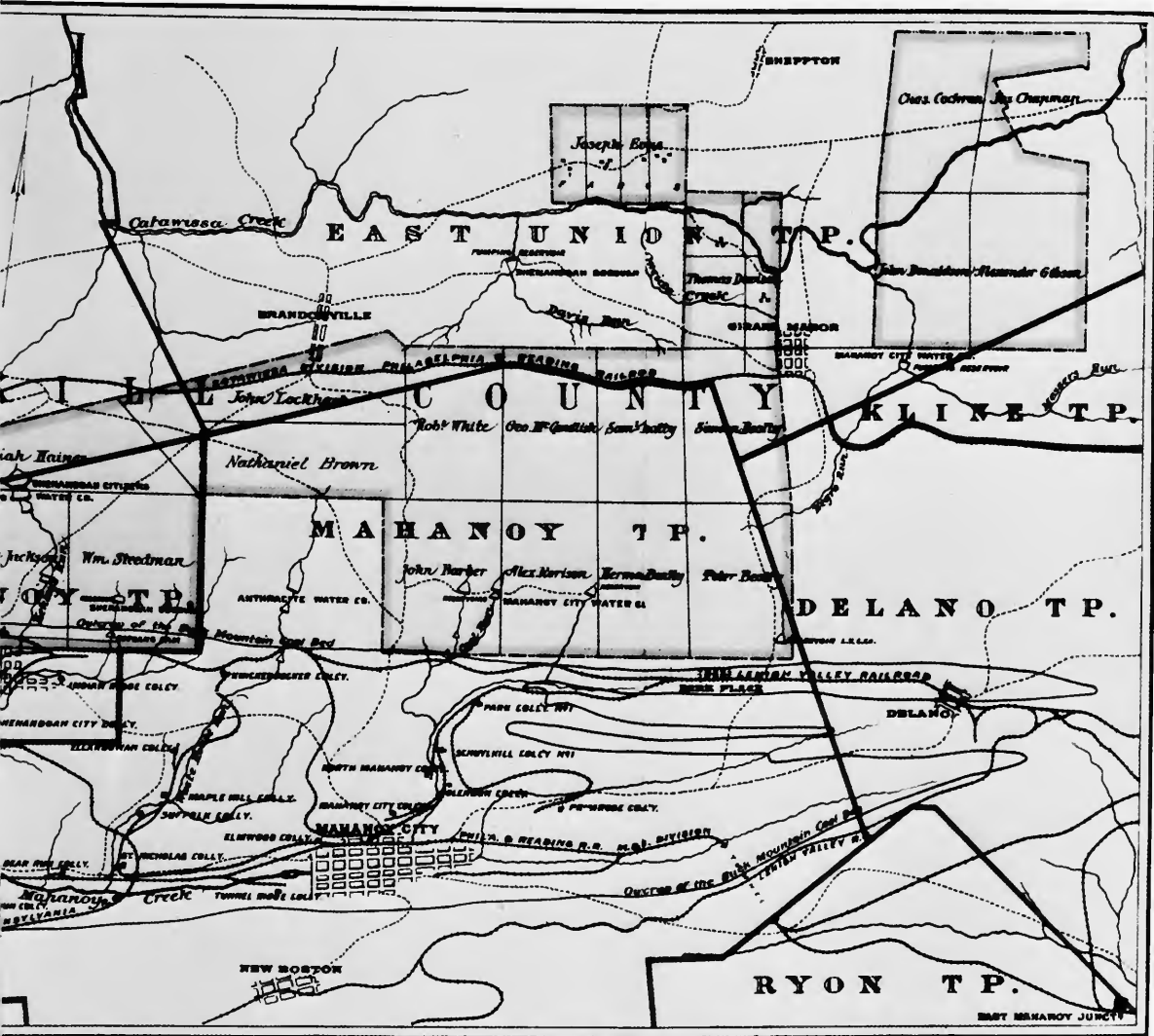
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In Pennsylvania, 1801-1884

JOHN N. HOFFMAN



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	PAGE
Stephen Girard, 1750–1831	3
Land Policy in Pennsylvania, 1681–1794	4
Girard's Purchase of the Coal Lands	9
The Girard Will	15
Girard Estate Coal Leases, 1862–1884	19
Breaker Boys	42
Summary	47
Notes	48
Appendixes	
1. <i>Tables</i>	52
2. <i>Development of Rail Connections</i>	
<i>Serving the Girard Estate</i>	62
The Danville and Pottsville Railroad, 1826–1840	62
The Mahanoy and Broad Mountain Railroad	68
The Lehigh Valley Railroad	68
Michel Chevalier's Report on the Railroad from Pottsville to Sunbury, 1841	69
3. <i>Form of First Lease Negotiated by the Girard Estate, 1862</i>	77
4. <i>Old Warrants and Interferences with New Warrants of Girard Estate Lands</i>	81
Index	85



FIGURE 1.—Girardville, 1889. (Courtesy of the Historical Society of Schuylkill County.)

THIS MONOGRAPH traces the historical development and consolidation of tracts of land on the frontier of Pennsylvania in the late eighteenth century. The tracts under discussion were a part of a land grant given to William Penn by King Charles II in 1681, and the proprietorship remained in the Penn family until 1775.

Early land promoters such as Robert Morris and John Nicholson, plagued by financial problems, lack of inhabitants, and the reluctance of investors to participate in the development of their land schemes, eventually lost control and ownership of the large tracts which they had obtained.

The material presented in this study entails one such land venture which, in later years, became known as the Girard Estate, having been purchased by Stephen Girard in 1830. Literally a financial tycoon of the period, Girard is reputed to have been worth some seven-and-a-half million dollars at the time of his death.

To better understand the problems associated with the ownership of land in Pennsylvania during the colonial period, a short resumé of land rules and regulations during this time is presented as an introduction to this study.

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FIGURE 2.—Stephen Girard, 1750–1831. (Photography courtesy of the Historical Society of Schuylkill County.)

Stephen Girard, 1750-1831

Stephen Girard, mariner, merchant, and philanthropist, was born on May 20, 1750, in a suburb of the city of Bordeaux, France. He was the eldest son and the second child of Captain Pierre Girard, a merchantman and a naval hero who was decorated by Louis XV in 1744 for heroic action against the British in the harbor at Brest. Stephen's mother, Ann Odette Lafargue, died in 1762. Because his father was at sea, the responsibility of taking care of his brothers and sisters fell to Stephen, then but twelve years of age.

Later, Stephen's thoughts turned to the sea, not only as a family tradition, but also to avoid his father's strict discipline when his father was at home. He obtained his father's permission to take to the sea and in 1764, at the age of fourteen, he sailed on the vessel *Pelerin* for San Domingo. Stephen enjoyed the life of the sea and made many voyages between Bordeaux and the West Indies. By the year 1772 he had attained the rank of lieutenant. In March 1773, Stephen took command of a ship leaving Port au Prince for a crossing to Bordeaux, where he arrived in May 1773. In October 1773, Stephen was granted his formal license as a Ship's Captain.

Unable to obtain a captain's berth, Stephen signed on as a mate aboard the *Julie* on a voyage to San Domingo. This trip provided him with the opportunity to enter the business world. He purchased goods on credit from Bordeaux merchants which he planned to dispose of in the West Indies.

He reached the West Indies in February 1774 and, as his goods proved difficult to sell, he was

soon out of funds. The lack of money combined with his long list of creditors in Bordeaux forced him to return to sea, at least for the time being, to earn the money he so desperately needed.

Girard signed on as first mate on the *L'aimable Louise*, a ship bound for New York. In July 1774, he arrived in New York, and immediately began to sell the supplies of coffee and sugar which he had obtained in the West Indies. Stephen's business ability attracted the attention of Thomas Randall of New York, a commission merchant and shipowner. For the next two years, Girard sailed for Randall on his ships which plied between New York and New Orleans. Not only was he a valuable navigator, but he developed quite a business by trading the merchandise he carried on each trip, which had been consigned directly to him.

Girard was returning to New York with a cargo of merchandise when he received word that the British were blockading the port. His ship contained no arms or powder for the American revolutionaries, but he decided against confronting the British and sailed up the Delaware River landing in Philadelphia in July 1776. As the Revolutionary War had greatly curtailed shipping activity, he decided to open a small store in Philadelphia and become a commission merchant. From the opening of this small business, Girard could no longer be classed as a mariner, though he still continued to be active in the shipping business.

On June 7, 1777, Girard was married to Mary Lum, the daughter of a shipbuilder, by the Reverend Mr. Stringer of St. Paul's Episcopal Church in Philadelphia. After many years under a doctor's care, Mrs. Girard became a patient at the Pennsylvania Hospital in Philadelphia where she remained until her death on September 13, 1815.

Girard continued his business activities during the period of his wife's illness, and his financial fortunes continued to grow. Perhaps because of her illness, the fact that they had no children, and his brusque and reserved personality, he concentrated on business affairs for which he had great talent. Nevertheless, he took a tremendous interest in his fellowman; this fact has been well described in the *Biography of Stephen Girard* written by Stephen Simpson in 1832. Such interest is fully substantiated by the generous provisions of his will, not only for his relatives but for many charitable institutions.

Land Policy in Pennsylvania, 1681-1794

In the course of the investigations of the development of the Girard Estate lands, it became apparent that a view of the procedures of acquiring land in Pennsylvania during the colonial period would be desirable. Grants of lands and confirmation of titles to these lands were matters under the personal control of either the proprietors, their representatives, or both. These officials disposed of their territory according to their own will and pleasure. This was purported to be handled by formal methods. According to the circumstances, however, it was frequently done by informal methods and agreements—the selection of new officers, with probably the most important consideration being that of the special influences of those persons requesting ownership of land.

William Penn obtained his charter, dated March 4, 1681, from King Charles II.¹ Before Penn's arrival in the new province in the fall of 1683, he sold to certain persons in England, called hereafter "first purchasers," a considerable quantity of land in the province and in return he received money for these land agreements.² Penn's grants were consummated by "deeds of lease and release" for land in the province without specifying location or limits.

A list of "first purchasers" and a warrant, signed and sealed by William Penn to his surveyor general to survey the land specified for each on the list, has often been presented as evidence in later legal

entanglements. The quantity of land involved in this list exceeded 300,000 acres.³

Penn's province, by calculation of the area within the charter boundaries, contained in excess of 35 million acres. The final adjustment of these boundaries with the adjoining states of Maryland, New York, and Virginia took place years later, as did the ownership of the Delaware River—including its lands—by a compromise with the state of New Jersey.⁴

Some of the territory included in Penn's charter contained Indian land, and land previously possessed by the Dutch, English, and Swedes along the Delaware and Schuylkill rivers. These portions were naturally excluded in the charter and Penn immediately started negotiations with the respective owners to obtain them. Purchases of land from the Indians by Penn and his heirs began in July 15, 1682, and continued periodically until 1768.⁵

After obtaining these lands from the Indians, Penn's problem was to establish a system whereby these lands could be further distributed to settlers. Two courses of action were available for him to follow. One procedure was to have the lands surveyed as they were sold. The other procedure was to have his lands surveyed as soon after their purchase as practical and have them separated into appropriate subdivisions. Penn chose the former procedure and numerous title disputes followed for years. Penn was frequently criticized for not initiating the latter procedure. Having no experience to guide him, however, it was natural for him to continue to follow the system that existed in his province as well as in the neighboring settlements.

In reading the form of the warrant used by officials of the colony, it appears that Penn's original design was to have his land surveyed and laid out in townships and any future surveys made should be consummated within these established boundaries. This plan is evident in the early warrants, which included the statement that the surveys should be carried out "according to the method of townships appointed."⁶

William Penn came to the colony late in 1682 and remained until August 1684 when he departed for England. His self-appointed commissioners of property administered his holdings during his absence and were empowered to purchase and to sell his lands according to whatever means seemed reasonable at the time. The commissioners of the

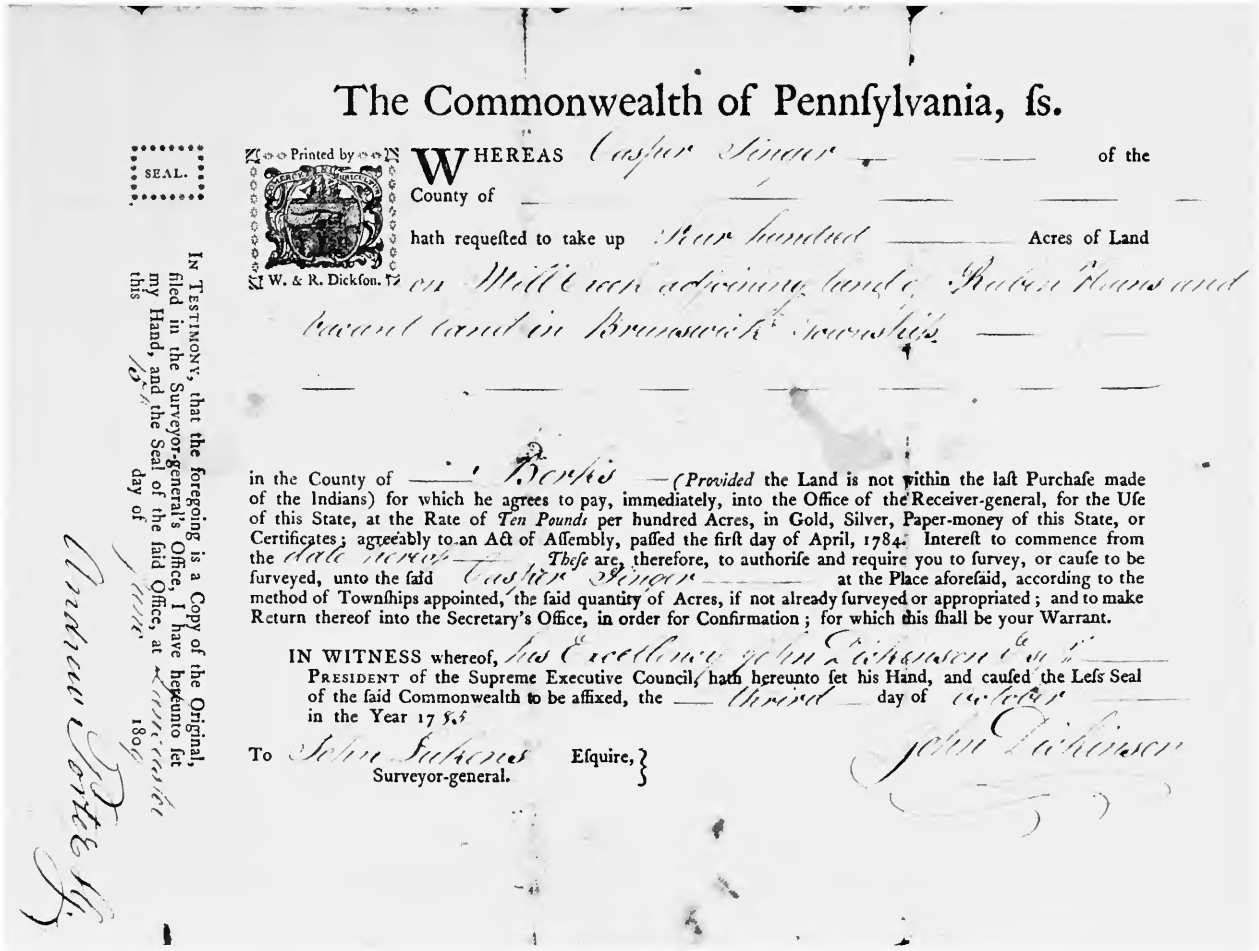


FIGURE 3.—Land warrant for the Commonwealth of Pennsylvania, 1785.

province at this time were: Thomas Lloyd, president; William Markham, secretary; Thomas Holmes, surveyor general; and Thomas Lloyd, James Claypoole, and Robert Turner, commissioners of the land office.⁷

The warrant was a formal document from the commissioners which was issued by the secretary of the land office, under his seal, that directed the surveyor general to make a survey according to certain specified terms stated therein.

When warrant applications were taken out, the warrantee usually paid the purchase price stipulated by law. There are many instances, however, where this practice was omitted and warrants were issued "by special order" of Penn's commissioners.⁸

William Penn died in 1718. By his will, the governmental aspects of the colony of Pennsylvania

were to be administered by his friends, while his lands and rents were bequeathed to his wife, Hannah. Penn's will, dated in 1712, was contested by his heirs over the division of his estate into real or personal property and the complication that before his death he had agreed to sell the province of Pennsylvania to the Crown for £12,000. The suit continued for some nine years when an agreement was effected between the heirs and the government. The province was placed in the control of John, Thomas, and Richard Penn, the surviving sons of his second wife, Hannah.⁹

In 1732 after the dispute of the will had been resolved and the mortgage debt settled, Thomas Penn (acting for himself and his two brothers) arrived in Pennsylvania and took possession of the holdings of land and the operation of the provincial

government. The province had been without an acknowledged proprietor and the affairs of the province had been handled by commissioners who lacked the vigor, influence, and efficiency of an active owner. There had been no land sales during 1718–1732, and Thomas Penn proceeded to adopt measures that would increase land sales and also induce settlers to purchase the land they occupied. Additional lands were purchased from the Indians in 1732, and in the same year a lottery scheme was devised and announced for the sale of 100,000 acres.¹⁰

No record has been found that all of the lottery tickets were sold or that a lottery was held; however, many years later these tickets were used as primary titles for land. Some surveys were made, and, as late as 1770, warrants were issued, on special terms, for the 100,000 acres which had been reserved for the lottery.

During the interval between the lottery and 1765, history records no new plan either having been proposed or adopted by the commissioners for the disposition of their lands.

A significant change in the procedures for granting and obtaining lands emerged during 1765, when a new system called the "Application System" was introduced.¹¹ The measures thus adopted highlight an important era of land titles in the province, and the influence of this procedure existed for many years.

The proprietaries, who were the commissioners, issued an advertisement, dated June 15, 1765, which prescribed the method that should be observed in the future for the granting of land within the province.¹²

The new system was simple, and the language was easily understood. The people could obtain lands when ascertained by survey, before paying any money or customary office fees, take out a patent, and could have twelve months of credit to settle their financial obligations.

Under the Penn regime, instructions were also issued during 1765 to the deputy surveyors as to the exact procedures to be followed in the performance of their duties. These instructions were very detailed and have often been referred to in subsequent court disputes over land titles and ownership. The deputy surveyors were required to post a bond and make a report of every warrant to the surveyor-general's office in Philadelphia. Each sur-

vey that was returned also had to have a name for each tract in addition to a complete description of its location.¹³

The last purchase consummated by the proprietaries was made from the Indians in 1768 at Fort Stanwix (Rome, New York).¹⁴ The lands, located in the northern and middle parts of the province, extended beyond the Allegheny Mountains to the western boundary. This area was to be opened to purchasers in 1769 under the "Application System."

The secretary of the land office announced in February 1769 that applications would be received for this land commencing April 3. Before the date arrived, however, it appeared that a great number of persons would apply and if the priority system, as established by the law of 1765 was followed, many applicants would contest the seniority of applications. To eliminate this condition, the land office placed all the applications in a trunk and then assigned them a priority number as they were withdrawn. In the land office reports issued for the process, they were called "lottery application or location of the year 1769," each having been given a number.¹⁵

Two exceptions were made before the lottery was applied. The first reserved acreage for inhabitants on the lands, and the other reserved acreage for officers of the provincial regiments who had served during the Indian campaigns. As a result, 104,000 acres were surveyed, removed from the lottery, and reserved for the officers of the provincial regiments.¹⁶ Many other individuals were also granted large special grants in payment for their services during the wars.

The land office opened for business in 1769, but shortly thereafter the great struggle between the colonies and England started and Pennsylvania became a battleground. Purchases of land became of minor importance to the settlers, as it was uncertain at the time who might be the eventual winner of the struggle.

After four years of war with England, it became apparent that the contest would end with a victory for the colonists and the independence of the United States. The young government also understood that individual ownership of large domains of land, such as was the position of the Penn family, was incompatible with the principles as declared in the Declaration of Independence. After due consideration, the Pennsylvania legislature on

November 27, 1779, passed a law to correct these inequalities. The law is referred to as the "Divesting Act of 1779," whereby the Commonwealth took ownership of the majority of the Penn family's landholdings and promised to pay the Penn heirs the sum of £130,000 sterling after the war ceased.¹⁷ Exempted from the act were private estates, manors, and quitrents that were reserved for the proprietaries.

The land office was closed from the passage of the "Divesting Act in 1779" until 1781. The legislature on April 9, 1781, established the land office and outlined procedures whereby holders of existing rights could pursue their rights to obtain patents.¹⁸ The selling of any then-vacant land was deferred for later legislative action.

The legislature attempted to preserve the ancient land-patenting procedures and also the use of standard forms which were familiar to all and upon which their existing titles were intricately connected.

The three officers that made up the staff of the land office were administrative officers given certain powers under the Divesting Act to perform specific functions.¹⁹ It was soon recognized that the establishment of a legal tribunal was necessary to rule on existing controversies and also to settle any new ones. On April 5, 1782, the legislature established this tribunal with limiting powers.²⁰ Its decisions were not to be binding, but its function was to guide the land office in the performance of its duties and bring the disputes to a proper stage of development. Subsequent laws extended and confirmed its power.

The legislature authorized the sale of vacant land in the Commonwealth by an act passed April 1, 1784. The date specified for the opening of the land office was July 1 and the purchase price for every hundred acres was set at £10. The quantity of land that one person could obtain was raised from 100 to 400 acres. There were the usual additional fees required for surveying and recording which were not included in the land price. The specified duties as given in the act of 1784 included the statement pertaining to procedures to be followed by land office personnel which alluded to the receiving, filing and entering locations, granting warrants, and issuing patents "as heretofore, agreeable to the former customs and usages of the land offices."²¹

By the passage of this 1784 act and the act of 1781, the entire land system of the Commonwealth became identified with that system that had existed in Pennsylvania from its settlement. Modifications would naturally be introduced from time to time, but its inclusive and extensive guidelines have been essentially preserved and continued.

The residue of Indian lands within the chartered boundaries of the Commonwealth were purchased from the Iroquois at Fort Stanwix on October 23, 1784. This purchase was confirmed by the Delaware and Wyandot Indians at Fort McIntosh (Beaver, Pennsylvania) by their deed executed on January 23, 1785.²²

Another act of December 21, 1784, directed that the land office should be opened for the sale of these Indian lands (except donation and depreciation land) on May 1, 1785, at the rate of £30 per hundred acres.²³ A limit of 1,000 acres was allowed for each applicant and each piece of land was to be located and surveyed in one tract or parcel. Before a warrant was issued, every applicant was required to submit to the secretary of the land office a receipt showing the purchase money had been paid.

A new policy for these lands was enacted by a legislative act passed on April 8, 1785.²⁴ The new regulation resembled in some ways, the earlier proposed lottery of 1769 and the instructions issued in 1765 to the Commonwealth deputy surveyors. This act further specified that beginning on May 1 and extending for ten days the secretary of the land office would receive applications for these lands after proof of payment from the receiver-general's office was furnished. Every application would include the number of acres requested, in words and figures, and be numbered consecutively by the secretary of the land office. A lottery would then be conducted to determine the sequence of processing the applicants. Those requests made after the ten-day limit were to be processed in the order in which they were received.

The legislature made several changes in the practices of selling land during the next seven years, with the major changes appearing in an act which was passed on April 3, 1792. The price of the land purchased in 1768 and the preceding years was reduced to two and one-half pounds per hundred acres; and the price of the land purchased in 1784 was reduced to £5 per hundred acres. The

maximum acreage of land that one person could make application for was reduced to 400 acres.²⁵

The surveyor general was directed to divide the lands for sale into districts and appoint a deputy surveyor for each district. The deputy was to survey warrants according to their priority and perform his work only in his assigned district.

On April 22, 1794, the legislature suspended the further sale of land.²⁶ In addition, the 1792 act had prohibited the issuance of warrants after June 15, 1794, for lands in the northwest areas of the Commonwealth except in cases where actual settlements

and improvements had been accomplished. By the same date, all applications on file for land on which the purchase money had not been paid were voided.

A supplementary act of September 22, 1794, prohibited receiving application for any lands in the Commonwealth except in those areas where a settlement had been made, residency established, and grain raised.²⁷ Many warrants were issued immediately after the passage of this act, but were unsettled for several years due to the war between the United States and the Indian nations which continued until December 22, 1795.

Girard's Purchase of the Coal Lands

In the early days of its history, the Commonwealth of Pennsylvania was not divided into as many counties as are found on present-day maps. For example, Northumberland County was established in 1772 and included all the coal districts of the Mahanoy and Shenandoah valleys, in addition to the area now contained in its present boundaries. Schuylkill County was created by a legislative act passed on March 18, 1811,²⁸ and included land that was originally Chester (1682), then Lancaster (1729), and then Berks (1752), from which it was previously taken. The townships in Schuylkill County were Brunswick, Manheim, Upper and Lower Mahantongo, Norwegian, Pine Grove, and Schuylkill, all taken from Berks County; and Rush and West Penn from Northampton County.

The first mention of these tracts, known as the Girard Estate, is found in the records for the year 1830 of the Recorder of Deeds for Schuylkill County in Pottsville, Pennsylvania.²⁹ A summary of the previous deed transactions also can be found in the Loeser manuscript collection in the Historical Society of Schuylkill County, Pottsville, Pennsylvania.³⁰

These tracts of lands had been deeded on July 8, 1795, by Robert Morris and his wife, Mary, to John Nicholson, his heirs, and assignees. This transfer action, listing the 68 individual tracts, and April 18, 1797, in the Northumberland County containing 27,471½ acres, were duly recorded on Court House in Sunbury, Pennsylvania.³¹ These same tracts had been mortgaged by Robert Morris

and John Nicholson to the president, directors, and company of the First Bank of the United States on March 18, 1797. This mortgage transaction also was recorded at Sunbury on April 18, 1797.³²

The 68 properties included in these transactions are shown in Tables 1 and 2 on pages 52 and 53. The information given in these tables includes the name of the warrantee, the number of acres in each tract, the name assigned to the tracts, the date the warrant was issued, the date the survey was made, and the date of patenting by Robert Morris. Mahanoy township, Northumberland (now Colum-

Five additional tracts of land situated in (bia), were later included in the final transfer effected by the Bank of the United States; however, later, they were found not to be a part of this transaction. These five tracts had been obtained by Robert Morris from Cunning Bedford on July 20, 1793, and recorded in the courthouse on April 18, 1797.³³ These lands contained 2,023¼ acres. These two land parcels totaled 73 individual tracts and contained 29,494¾ acres.

The president, directors, and company of the Bank of the United States filed a record of judgment against John Nicholson and Robert Morris in the April 1800 session of Northumberland County Court. This foreclosure action was deemed necessary by the Bank as it had been disclosed that their partnership was in financial difficulties and on the verge of collapse. Proceedings were continued in the August 1800 session, and the court's decision was against Morris and Nicholson. The court action involved the 68 tracts which Morris and Nicholson had mortgaged in 1797.

On January 30, 1801, Henry Vanderslice, the sheriff of Northumberland County, transferred 67 tracts of the original group of 68 to the president, directors, and company of the Bank of the United States. These tracts were situated in Catawissa, Mahanoy, and Shenandoah valleys. The sheriff's action was duly acknowledge in open court on the same day that the transfer took place.³⁴ The one deed omitted from the transfer was the Robert Irwin Tract "Bern." The location was in error, for it was situated in Luzerne County.

The directors of the Bank of the United States on March 2, 1811, transferred the 67 tracts to Thomas Willing, John Perot, and James S. Cox, as individuals *not* as officers of the Bank. This transaction was recorded in Philadelphia on April

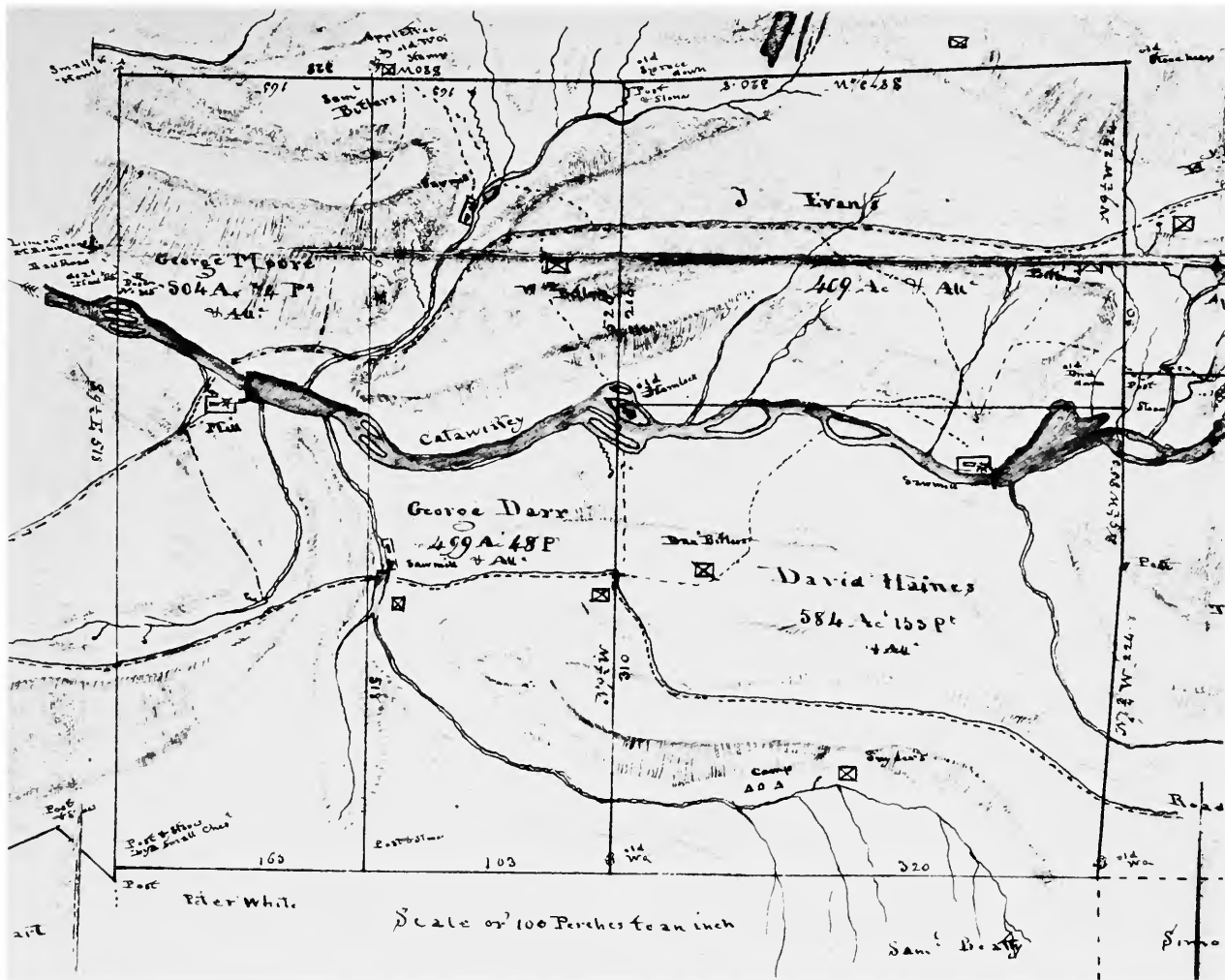


FIGURE 5.—Sketch showing the tracts belonging to David Haines, Joseph Evans, George Derr, and George Moore from the engineers' survey made in 1830.

business of the Bank, but in the early part of 1830, while completing arrangements for the distribution of its assets, a bundle of deeds—part of the First Bank's assets—was delivered to him by one of the trustees of the First Bank.

His investigation as to the reason for the long delay in revealing the existence of these lands as belonging to the First Bank probably showed that coal had been discovered in the Pottsville region, mines had been opened, and that coal had been transported on the Schuylkill Canal since 1825. It would also seem possible that land speculators knowing of the coal discoveries had possibly influenced the trustees—or at least the trustee knowing of the existence of these deeds—to withhold any action on these tracts until the last possible mo-

ment. Undoubtedly, this information convinced Girard that these lands were valuable, and he decided that his business interests would be better served if he acquired them.

The trustees had held the tracts for 19 years, and shortly after the deeds were turned over to the receiver, Girard, an advertisement appeared in the Philadelphia newspaper that these tracts of land deeded to them by the First Bank would be sold at public auction at the Merchant's Coffee House on April 17, 1830.³⁷ The auction was held as scheduled and Stephen Girard, being the highest bidder, purchased the 67 tracts for \$30,000.

As reported in the local paper after the sale, the attendance at the Coffee House for the auction was quite large, but with the exception of Girard, no

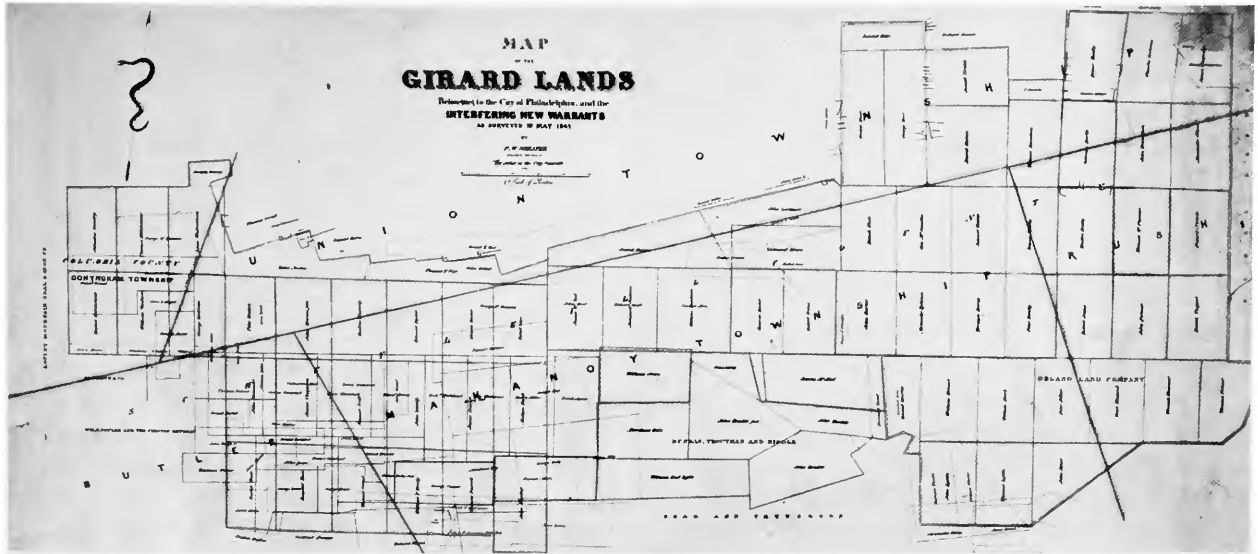


FIGURE 7.—Map of Girard Estate lands by P. W. Sheaffer, 1861.

Oak, Red Oak, Maple and Poplar are found. A small portion towards the north appears to contain coal.

Tract No. 3 (402¼ acres). A rough tract but well timbered with white Oak, Black Oak, Pine, Chesnut, Maple and Gum. Strong indication of coal.

Northern rough and stony, but well timbered with Chesnut, *Tract No. 55 (417 acres).* The Southern part is flat, the Chesnut Oak, White Pine, Maple and Hemlock. Indication of coal.

Tract No. 38 (417 acres). The southern part is good red shell soil and the land nearly level, with but little timber. The Northern part, hilly but well timbered with White Oak, Black Oak and Pine, there are strong indications of coal.

The results of the engineers' efforts and their evaluation of the property were simply and thoroughly stated in the preface to their report.

We refer to the draft herewith presented for a general view of the tract, by means of which its situation in relation to the waters of the Delaware and Susquehanna may be distinctly seen, and to the particular descriptions for an account of the character and quality of the several tracts. But we may observe in general terms, that nearly from the Eastern to the Western extremity of this extensive range abundant indications of coal are observable. Along the valley of the Mahony these indications are too strong to leave in doubt of the existence there of incalculable quantities of this valuable mineral. That valley appears to be so constructed, as to afford very great facilities for the construction of railroads either to the neighborhood of the Schuylkill or Susquehanna by which the product of the mines may be easily transported to the Philadelphia or Baltimore markets. This coal is believed to be not only abundant in quantity but of the best quality. The timber likewise of that valley from its

quantity and kind, must be considered as materially augmenting the value of the land, particularly as the demand for timber in the erection and employment of saw mills cannot fail in a few years, greatly to enhance its price. These lands appear to possess one important advantage over most others in the country, and probably in the State. The soil seems adapted to profitable culture, either in the immediate vicinity of the mines or at no great distance from them. In conclusion, we shall subjoin our conviction that these lands, when fully explored and judiciously improved, will prove not only a source of exhaustless revenue to their proprietor, but of incalculable value to the State in which they are located and to the rivers which shall enjoy their trade.

The general introduction also included the procedures used by the consultants in starting their survey activities, and the following extracts bring out the difficulties they faced in laying the boundaries of several tracts contained in the deed.

The exterior lines were not marked. And it is even questionable whether they had ever been run on the ground.

The lands which had been taken upon warrants of anterior date encroach a little upon those included in our draft.

In many parts of the boundary, the lines have been obscure (even destroyed) and the timber greatly injured by frequent and extensive fires.

The field notes of the engineers explain in detail the procedure used in locating old markings, such as trees or stone piles, established by the original surveyors some 30 to 40 years earlier. As they mentioned in their final report, many errors were found in azimuth readings and distances of the tract boundaries and several lines had to be placed anew.

The daily record of their survey activities is accompanied by a pencil sketch of the area and covers in detail the land features. Examples of their engineering capabilities and thoroughness are shown in the accompanying sketches.

The individual sketches were consolidated at the close of their fieldwork and a draft of the tracts involved was submitted with the final report. The total acreage was calculated to be 28,460½.

From the map of the lands surveyed (Figure 5), several references to the occurrence of coal may be seen. Along the high ridge (Bear Ridge) lying between Mahonoy and Shenandoah creeks is written: "This Mountain has every appearance of abounding in coal." On the eastern section of the same ridge is the notation: "Here the coal crops

forty feet in width." In later years, these statements were proven correct for in this location three large collieries (William Penn, Packer No. 5, and East Bear Ridge) existed.

From the very encouraging recommendation given by this report, Girard undoubtedly was greatly reassured about the prospective value of his holdings, and he immediately began to protect and perfect his titles as well as to purchase other lands in the county.⁴¹ Due to the distance of his holdings from the then terminus of the Schuylkill Canal at Port Carbon, Girard naturally became interested in transportation facilities to enable the coal from his holdings eventually to be transported to markets. Girard's participation particularly in the construction of a railroad is discussed in Appendix 2.

The Girard Will

Stephen Girard's will, dated February 16, 1830, included two codicils, one dated December 25, 1830, and the other dated June 20, 1831. The will was probated on December 31, 1831.⁴²

After giving certain legacies to various persons and for specified purposes, all of them being evidenced by personal regard or goodwill to benevolent institutions in the city of Philadelphia, to the mayor, aldermen, and citizens of the city of Philadelphia, Girard bequeathed the entire residue of his estate including all real and personal properties to the following four trusts.

1. The leading trust was for the erection of a college and necessary buildings for the residence and accommodation of at least 300 orphans, under the description and character set forth in his will. This amounted to two million dollars.

2. The second trust in the amount of \$500,000 was for the city to improve the street fronting along the Delaware River, to demolish all wooden buildings within the city limits, to improve Water Street, and to distribute Schuylkill water throughout the city.

3. The third trust was a grant of \$300,000 to the Commonwealth of Pennsylvania for the purpose of internal improvements by canal navigation.

4. The fourth and last trust was to the city for improvements in city-owned property, to provide for the security of persons and property within the city by adequate police, to improve the general appearance of the city, and to diminish the burden of taxation.

Girard's family consisted of his brother Etienne and his six children, the daughter of his late sister

Sophia, and three children of his late brother John. These relatives and some more distant relatives were not satisfied with his bequests. They felt that he should have shared more of his estate with them instead of the city of Philadelphia. As a result of these dissatisfactions, lawsuits were started by all those who felt that they should have had a larger share of the estate.

Attorneys were engaged and proceedings were started to have the will set aside during 1833. The heirs continued their attempts to break the will many times during the next 25 years, with the final case beginning during 1868 and ending with the decision by the Supreme Court of Pennsylvania on March 11, 1870, against them.⁴³ The legal battles, never really successful in breaking Girard's will, did pick away at his enormous holdings. Also, the titles to many of the lands were found to be defective either as to proper location or previous land sales, and some titles were of necessity settled by compromise with the so-called original purchaser. When the last suit had been settled, the Girard Estate consisted of 17,362 $\frac{1}{4}$ acres (43 tracts) as compared to the 29,494 $\frac{3}{4}$ acres (73 tracts) when the lands were purchased.

The following list accounts for the reduction in the number of tracts involved in the Girard Estate from 73 to 43.

	<i>Balance</i>
73 tracts	
— 5 later found not to be part of original transaction	68
— 1 through error of location	67
— 10 lost to Girard heirs	57
— 13 lost in Loeser case	44
— 1 to Girard Water Company	43

Between the time of Girard's purchase of these lands and his death \$17,246.37 had been spent to develop and improve his holdings in Schuylkill County.⁴⁴

The lands were surveyed many times after Girard's death. When the list of lands and those persons claiming interferences was tabulated, as shown in Appendix 4, the complications of proving ownership becomes quite apparent.

In the first case to be tried before the courts, it was argued that Girard's will had been made prior to his purchase of the coal lands. By a codicil, and registering of the will in December 25, 1830, Girard stated "that all his land purchases which he might make after this date, to be applied in the same manner as the real estate."

This statement in the codicil was quite a legal loophole and the lawyers for the heirs pursued this matter vigorously. On March 29, 1833, the Supreme Court of Pennsylvania handed down its decision which stated "the real estate acquired after the making of a will does not pass under a devise of the residue of the testators real estate, without a subsequent republication of the will, even where the testator in addition to the general devise of the residue, declares in a codicil that it is his wish and intention that all the real estate, which he shall hereafter purchase, shall pass by the said will."⁴⁵ By this decision, ten tracts consisting of 4,069 acres went to Girard's heirs. These are itemized in Table 3 on page 55.

Except for the mining operations conducted by the Pottsville and Danville Railroad as discussed in Appendix 2, the period from 1831 to 1863 was marked by legal battles; tract resurveys and settlement programs all of which kept the Girard trustees in a continuous state of indecision for the future workings of their non-city holdings.

Girard upon receiving the questionable ownership of these lands in 1830 had appointed William Boyd as his agent for the non-city lands in Schuylkill County.⁴⁶ The trustees continued this policy and appointed a series of agents for the estate for the years 1830 to 1911 which are listed in Table 4 on page 56.

Court battles and suits continued and, again, on June 21, 1848, Christopher Loeser instituted court proceedings for 13 tracts of land contained in the Girard holdings.⁴⁷ After much legal debate, the court decided that the lands under dispute should be sold at public auction after all parties had refused to take possession at the valuation fixed by the court. This distribution of money from the auction offered by the court according to the priority of ownership, determined that the mayor, aldermen, and citizens of Philadelphia acting as trustee for the Girard Estate owned six-eighths of the lands, and that Christopher Loeser and Cornelius Stevenson each owned one-eighth.

The sheriff's sale was held on September 3, 1851, at the Court House in Orwigsburg, Pennsylvania.⁴⁸ The successful bidder was Christopher Loeser who offered \$73,000. After settlement costs had been deducted, \$72,132 was turned over to the court for distribution to the three owners. The trustees of the Girard Estate received \$54,099, and Christopher

Loeser and Cornelius Stevenson each received \$9,016.50. The tracts of land lost by the Estate in this sale are listed in Table 5 on page 56. Years later, these same parcels of land became the property of the Delano Land Company and eventually became the property of the Lehigh Valley Coal Company.

The agents for the estate in the early years attempted to get the property opened for settlement and eventual development of the wealth it contained. The trustees were aware not only of the great value of the coal contained in their holdings, but also of the huge stands of natural forest containing many board feet of lumber. To induce settlers to come to the wild county, sawmills and gristmills were established to provide some help in making the area more livable.

J. D. Meredith, the agent from 1847 through 1855, reported to the commissioners on November 8, 1847, the condition he found on the tracts during his first inspection.⁴⁹

The great stands of timber have been ravaged by fire, theft and neglect in former years by the former management and I shall give my most serious attention to the preservation of these stands as they have definite value when these lands are to be worked for coal.

There are in Catawissa Valley, 3 sawmills, one connected with the grist mill, one a short distance above it and one on the farm occupied by Lois, still further up the Valley. These mills have been allowed to remain under the plea of sawing the logs cut from land cleared for the purpose of cultivation. I can prove by competent testimony, that all there have been used barefacedly as instruments of wholesale robbery.

There are in the Mahanoy (Valley) 2 mills, one on the Mahanoy Creek and the other on the Shenandoah Creek, both leased to Mr. Chas. Baber, whose lease expires in the middle of the coming January.

The timber has also suffered severely from another depredation, who infest it in all parts, but most, in the valley of the Mahanoy. They live by making shingles, and the white pine, the most valuable tree of all the different species there, is the sole object of their attack.

He suggested to the commissioners that "he be allowed to employ the services of F. W. Hughes, a Pottsville lawyer, as attorney to assist him in vigorously carrying out his views for the preservation of the timber contained upon the lands."

The commissioners' committee on coal lands was so engaged in timber preservation and land titles that very little importance was given to the granting of coal leases upon the remaining tracts of Girard lands. In early 1855, however, J. J. Conner.

a mine operator, made an application for a lease on some Girard lands. Although his application never came to the commissioners' attention, it was acted upon, it did bring the idleness of their

The commissioners also visited the Estate in Schuylkill County during July 1855 with the officials of the Mine Hill Railroad Company.⁵⁰ The Mine Hill Railroad had been completed to a point that was one-half mile from the southwestern boundary of Girard lands and the company was interested in increasing its coal traffic. The committee report was submitted to the committee of the City Council in September 1855, but only two recommendations were approved, the first being that the land of the estate in Schuylkill County should be thoroughly surveyed with geological and topographical maps constructed; and the second, to advertise for proposals to lease the lands for mining purposes.⁵¹

Under discussion at the same meeting was the stipulation in Girard's will that the estate properties could only be leased for a period of five years. The committee naturally was concerned because of the possible reluctance of any potential lessee to be required to make such large investments in mine operations with such a short lease period; however, no definite recommendations were made at this meeting.

The survey of the lands was completed by H. W. Poole, their agent in Schuylkill County in 1856-1857, and the committee made another inspection tour of the estate during 1857.⁵² The result of the trip was quite convincing and the committee decided that it was time to make the lands productive, and that all timbering operations were to cease pending the start of coal-mining operations.

In December 1857, the committee instructed F. B. Kaercher, who had succeeded Poole as their agent in residence, to negotiate a coal lease. A lease was granted to Bernard Eisenhuth to mine coal on the Israel Cope tract with the coal to be sold to persons residing in Catawissa Valley.⁵³ It appears that some mining was done with the coal being sold locally, but on such a small scale that it never resulted in a large prosperous operation.

Two other lease proposals were received by the agent, one during 1859 and another in 1860, but both were rejected as the proposals did not include mining the coal from the Girard Estate but only

using the estates property as travel ways for coal mined on adjacent properties.

Kaercher continued to pressure the City Council into action on the proposals and estimated 15 collieries could be erected and operated on the Estate. It would appear that the Council members still seemed reluctant to pursue the coal leasing operations, but again they did consent to having their agent again insert advertisements in the press for leasing proposals.⁵⁴ There is no record of how many proposals were received, but none are on record as having been accepted.

The problem of an accurate survey of the Estate again appeared among the council members and in November 1860, P. W. Sheaffer, a prominent mining engineer of Pottsville, Pennsylvania, was engaged to make a new map of the Estate lands. Sheaffer's map was completed during the following year and became the standard map for the land for many years.

The completion of the Sheaffer survey marked the beginning of active coal operations on the Girard Estate and between 1862 and 1875, a total of eleven leases had been made for lands on the Estate.⁵⁵ The operations of these leases are given in the next section of this study, which also includes the engineering aspects of the individual operations.

From the very beginning of coal operations by the first lessee, the committee of council members was constantly being asked to grant longer leases, as many proposals suggested that more efficient operations would result if longer terms were available. After several years of discussion among themselves and reviewing the present conditions of their operations, the Council finally petitioned the Court of Common Pleas in June 1868 for permission to grant leases for a term of 15 years.⁵⁶

The court appointed two referees to take testimony pertaining to the Council's petition and to report to the Court as to the propriety of the Court granting the petition. After all the testimony had been collected and reviewed, the referees recommended to the Court on July 1868 "that in accordance with the facts and laws herein [report] stated, we are of the opinion, that the prayer of the petition should be granted, and that, for the benefit of the charity, the lease of the Girard Coal Lands should be extended from five to at least fifteen years, and that the court, under the circum-

stances, have full power and authority to extend the term.”⁵⁷

The judge of the Court of Common Pleas made the final review of the testimony and despositions, and the Court's decision was in favor of the Council's petition.⁵⁸ Beginning on January 1, 1869, the Council began to execute leases for a maximum term of 15 years. The conditions of the leases were similar to the former lease except for a change in the royalties charged. In this new lease, the royalty was 25 cents per ton for all sizes of coal above chestnut (see Table 10 on page 61) with the rate increasing one cent per ton during each year of the lease (final-year royalty was 39 cents per ton); ten cents per ton on chestnut increasing one-half cent per ton per year (final-year royalty was 17 cents per ton); and for pea coal a fixed royalty of six cents per ton was charged.⁵⁹

The administration of the Girard Estate was in the hands of the City Council for Philadelphia. The cry was often heard that with the constantly

changing City Council membership, the administration of the affairs of the tracts was affected by the personal desires of Council members and the varying political moods of the times. After some seven years, a law was finally passed which established a Board of City Trusts consisting of a more permanent membership which would administer the affairs of all City Trusts including the Girard Trust. The Board of City Trusts officially took over on February 25, 1870,⁶⁰ and its first action was to publicly state “that regardless of the conduct of operations of other city departments, the management of the Girard Estate by the previous members had been well managed.”

In summary, up to this time the affairs of the Girard Estate had been handled by four district administrative organizations. These were: the Board of Directors of Girard Trusts from 1832 to 1847; the Board of Directors from 1847 to 1856; the Board of Directors elected by the Council of the city of Philadelphia from 1856 to 1870; and the Board of Directors of City Trusts after 1870.

Girard Estate Coal Leases, 1862-1884⁶¹

Lease No. 1

The first lease for mining coal on the Girard Estate was signed with Colonel James J. Conner on March 15, 1862. (A listing of lease holders is given in Table 6 on page 57.) The term of the lease was for five years and the royalty payments on prepared coal was 25 cents per ton and on chestnut coal 10 cents per ton. Other considerations found in the lease (see Appendix 3) required the lessee: (1) to build a breaker complete with all the machinery (including at least a 30-horsepower steam engine) necessary to break and prepare for the market not less than 100,000 tons per year; (2) to erect 12 blocks of tenant houses, with each block containing two 2-story houses (the kitchen, attached at the rear, was one and one-half story); (3) to pay for at least 50,000 tons of coal in each and every year of the lease; and (4) to be reimbursed up to a maximum of \$20,000 for the improvements constructed by him under the terms contained in the lease.

The lease covered all the south dipping seams of coal between the northern outcrop of the main Shenandoah Basin on Locust Mountain and the first synclinal axis south of it, on the John Alexander, James Chapman, and Samuel Scott tracts. Mining operations were started by Colonel Conner on the James Chapman tract where Raven Run had exposed the coal measures. The Mammoth and Buck Mountain veins were both exposed and

gangways, above water level, could be easily driven into the coal measures. Conner also opened the Holmes vein and, during his tenure of operations, most of the coal produced was obtained from this seam.

Conner Colliery was completed by April 1863 and the amount of coal prepared during 1863 was 40,788 tons. Conner was anxious to increase his tonnage and within a period of several months an additional breaker was built, thereby giving him two breakers on the property. One breaker located on the eastern side of Raven Run was called the McMichael, and the other located on the western side was called Conner. Shipments from both collieries were combined and reported as Conner colliery shipments during the time of Conner's mining operations.

During the period of Conner's lease, another mining operation was started at Wild Cat Run where, in the ravine, both the Mammoth and Primrose veins were exposed. A small colliery named Locust Run was in operation for several years and the production was included with that reported for Conner Colliery.

The lease was renewed by Conner on May 31, 1869, for 15 years and the Conner Colliery was renamed the Girardville Colliery. The operations were inspected several times during 1869 by the district mine inspector of the Commonwealth of Pennsylvania, and his report contained the following remarks concerning the condition of the property.⁶²

Part of these mines is ventilated with a nine-foot diameter fan powered by a six horse power engine. The air courses are not large enough, and I have instructed their enlargement. Mr. Conner contemplates erecting a large fan soon.

The colliery consists of two breakers, each powered by a 25 horse power steam engine. Additional steam engines total 5, for a combined horse power of 125. There are 108 employees; 16 mules and 70 coal wagons with a shipping capacity of 100 cars per day.

General condition of the colliery is fair with many improvements taking place and no fatalities during the year.

The lease was transferred with the consent of the Board of Directors of City Trusts to Agard, Moodie, and Company and became effective December 1, 1870.⁶³ All physical improvements made upon the lands by the former lessee necessary for the conduct of mining operations, including the machinery in the two breakers, were included in the transfer negotiations.

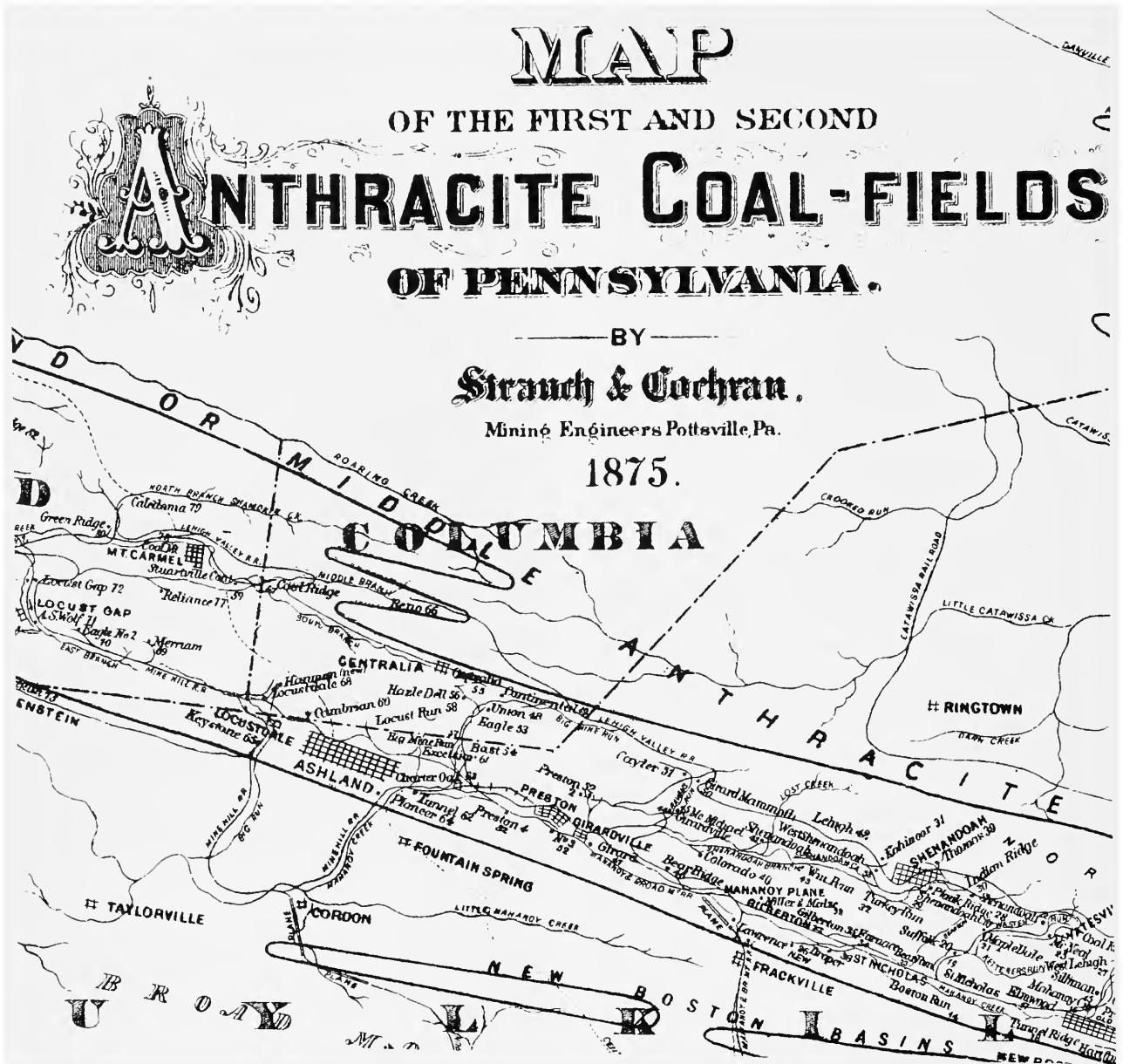


FIGURE 8.—Portion of a map by Strach and Cochran, 1875, locating the collieries on the Girard Estate.

Agard, Moodie, and Company made extensive repairs and improvements to the machinery and buildings, and opened three new drifts into the Buck Mountain vein. Nine drifts, all above water level, were in operation by 1871, and the operators were prepared to make large shipments in succeeding years. The success of the improvements can be

seen as the shipments for 1871 amounted to approximately 118,000 tons, a sizable increase over the production of the previous years.

In 1872, the operations were inspected by the Ashland district mine inspector for the Commonwealth of Pennsylvania, and his report includes the following remarks concerning the property under Agard and Moodie's management.⁶⁴

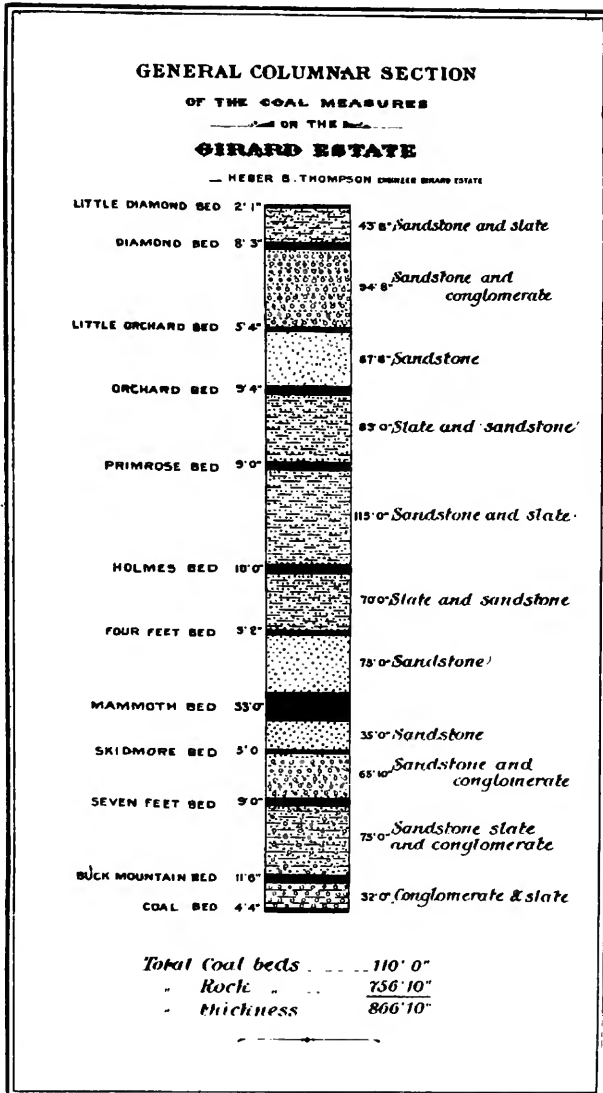


FIGURE 9.—General columnar section of the coal measures on the Girard Estate.

Girardville Colliery.

Ventilation is good and is produced by natural draft in the drift operations of this colliery. No gases of any consequence is met with. There are 207 inside employees; 175 outside hands; 110 wagons; 45 mules and 6,300 yards of track in use. The mining community consists of 102 houses with 120 families on the premises. Monthly shipments are approximately 1,200 tons and the value of improvements for the year totaled \$200,000.

McMichael Colliery.

Ventilation is by natural means and is found to work tolerably well. There are 55 inside employees; 83 outside hands; 5 mules; 26 wagons and 2,500 yards of track in use. Monthly shipments are approximately 750 tons and the value of improvements for the year totaled \$100,000.

The operators soon discovered that the present preparation facilities were inadequate to handle the increased production, and they began the construction of a new and larger colliery during 1873. Production from the newly erected colliery, called the "Hammond," began early in 1874.⁶⁵ The tonnage processed that year amounted to 146,600 tons and was the largest quantity produced from this lease since its beginning twelve years previously.

Agard and Moodie continued the operation of this lease until August 12, 1876, when the Philadelphia and Reading Coal and Iron Company took possession. The first tonnage produced under the new ownership began on September 16, 1876.⁶⁶ During 1877, the P & R C & I Company closed the McMichael Colliery and the Girardville was renamed the Conner Colliery. Anthracite mined from this lease was prepared for markets in two collieries—Hammond and Conner.

The P & R C & I Company began an extensive improvement program for the property and during 1877 installed the following major items: a large pole-type pump; a new ventilating fan; four steam boilers; and the main slope was relaid with new and heavier rails.⁶⁷ The results of this new effort to improve the company's property resulted in doubling the annual production and for that year approximately 223,700 tons of prepared coal was sent to market.

The annual inspection of these two collieries by the district inspector of the Commonwealth of Pennsylvania gave repeated accounts of the improvements made in the physical plant by the company. In the inspection report for the year 1884, "at Hammond Colliery were 197 inside employees (including 8 door boys) and 153 outside employees [including 89 breaker boys]; and at Conner Colliery were 183 inside employees (including 6 door boys) and 131 outside employees [including 81 breaker boys]. A new 15-foot Guibal fan was installed at Hammond Colliery and 4 new steam boilers had been installed at Conner Colliery".⁶⁸

This lease was renewed by the P & R C & I Company for 15 years on June 9, 1883, and it continued operations thereafter until 1938, when the operations ceased. During the life of this property, this lease had yielded more coal than any of the other leases on Girard lands.

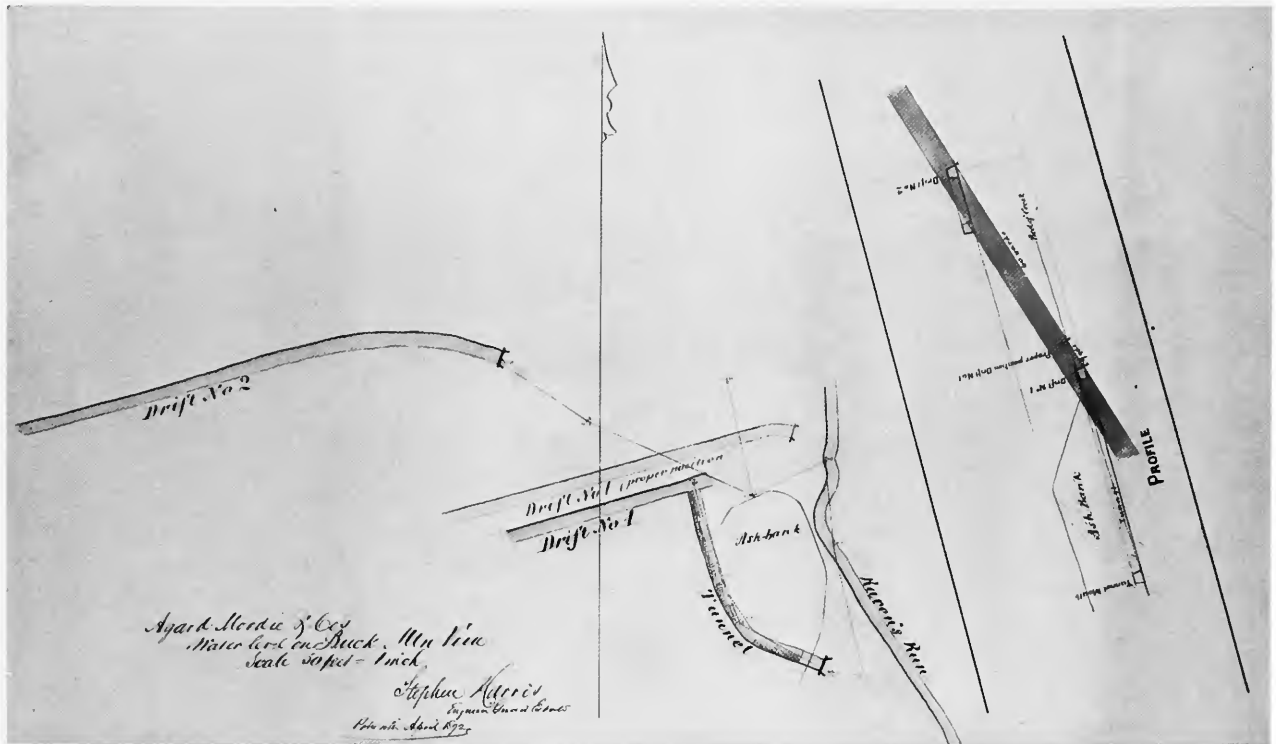


FIGURE 10.—Plan of Buck Mountain water-level drift on Agard, Moodie, and Company lease No. 1 in 1872.

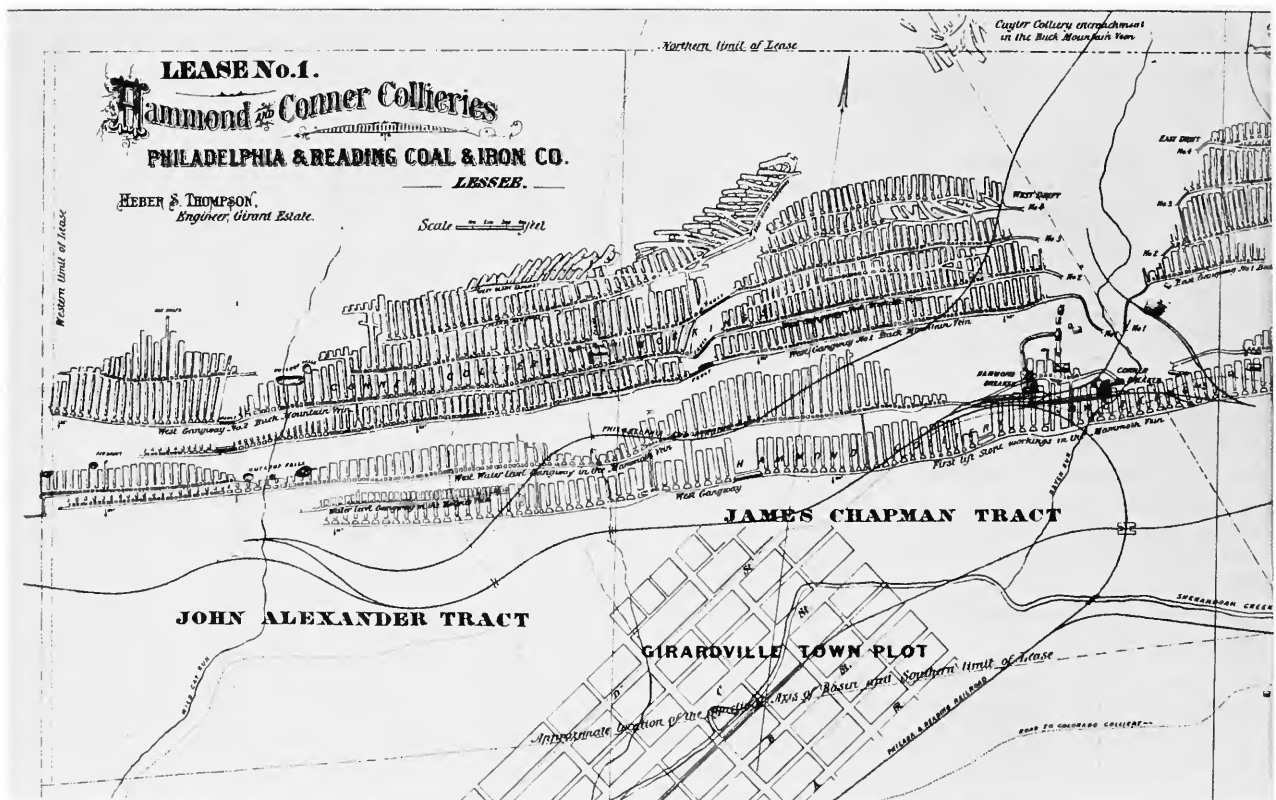


FIGURE 11.—Map of lease No. 1, Hammond and Conner collieries, 1876.

Lease No. 2

The second lease of Girard coal lands was negotiated with Cornelius Garretson on May 1, 1863. The lease covers all the coal veins of the anticlinal axis of Bear Ridge westward to the western boundary of the David Reese tract, upon the David Reese and Samuel Reese tracts. The breaker erected on this property during 1863-1864 was known as the Girard Colliery.

The lease contained the same provisions as outlined previously including the five-year-term provision. Mining operations were started by driving gangways from the outcrops in both an easternly and westernly direction. The lease covered all coal in both dips of the Mahanoy Basin and extended some 1½ miles in length. The coal basin in this site was located entirely on the northern slope of the Mahanoy Mountain and gradually narrows to the westward and ends at Ashland. The Mammoth vein provided all of the coal from this lease during its early years, and mining was successfully accomplished above water level.

In 1866, the lease was transferred to Theodore Garretson who did some additional development work in the Buck Mountain vein which was also found on this lease. Mining conditions in the main gangways were dangerous and occasionally were partially closed due to roof falls. To eliminate this roof condition, a new slope and gangway was driven. The new development connected with the existing workings and provided more space for the installation of new pumps.

The lease was renewed on May 31, 1869, for 15 years, and improvements continued to be made to increase the capacity of this property. Some new gangways were driven into the Seven Foot vein which was above the Mammoth, and additional openings were made into the Buck Mountain vein. The Mammoth vein was worked continuously and provided most of the production at this operation.

The property was inspected by the district mine inspector of the Commonwealth of Pennsylvania during the years 1870 to 1872, and the following remarks point out the size of the colliery.

A 20-horse steam fan produces ventilation, but improvements are needed to adequately ventilate the entire mine. A 60-horse steam engine hoists at the shaft and runs the

breaker and two 60-horse steam engines are used for hoisting at the slope. The firm employs 125 hands.⁶⁹

There are 160 inside employees and 70 outside hands employed. On the premises are 16 houses housing the majority of employees. Equipment in use includes 5 steam engines with a total horsepower of 230 (and additional 20 horse ventilating fan installed during 1871); 10 mules; 75 wagons and 2,236 yards of track. Monthly shipments estimated at 6,000 tons of prepared coal.⁷⁰

During 1875, the operations at this property were considerably reduced due to the six-month strike of all work within the industry. Improvements continued to be made, but very little progress resulted in either 1875 or 1876, with coal being produced in the latter year from only one portion of gangways in the Mammoth vein.

Garretson was delinquent in paying royalties; therefore, the Girard Estate requested that the property be sold at a sheriff's sale on October 31, 1876. The Philadelphia & Reading Coal & Iron Company began to mine and ship coal on November 6, 1876.⁷¹

The first year under the operation of the P & R C & I Company saw a substantial increase in the quantity of coal produced from this property. Development work was extended in the gangways in the Mammoth vein and all of the production came from this one seam. Additional development in the future will be necessary to develop mining sections in the Buck Mountain vein which contain a large reserve of almost untouched coal.

The property inspected by the district mine inspector during 1877 showed that 252 persons were employed at this operation, two slopes were in operation, fan ventilation was improved, and all coal production continued to come from the Mammoth vein.⁷²

Development work on the adjacent beds of coal in this lease were continually underway, and the production from this mine was directly attributable to the engineering ability possessed by the company mine officials. The Philadelphia & Reading Railroad hauled the coal to market.

The lease was renewed for 15 years in June 9, 1883, by the P & R C & I Company, and it continued as lessee until November 25, 1895, when all mining of coal was stopped and the breaker was converted into a jig house for recleaning small-size coals from other collieries.⁷³

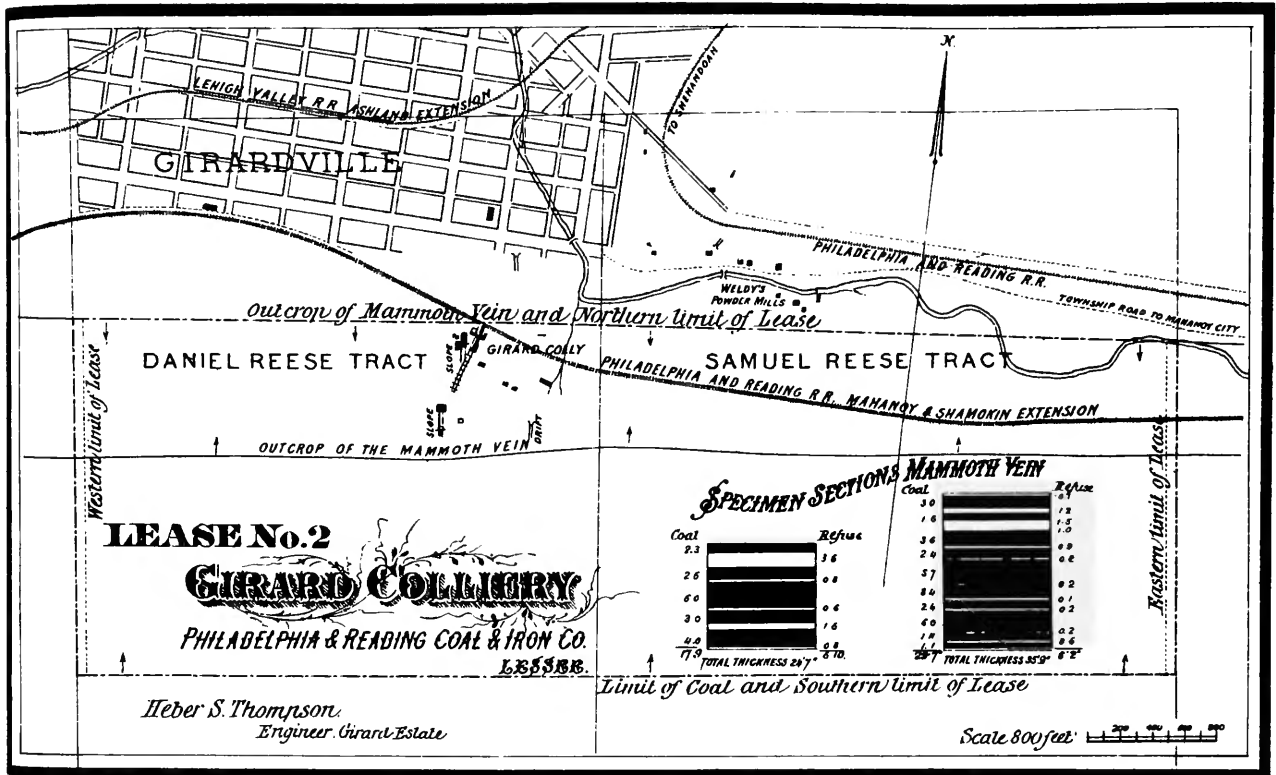


FIGURE 12.—Map of lease No. 2, Girard Colliery, 1876.

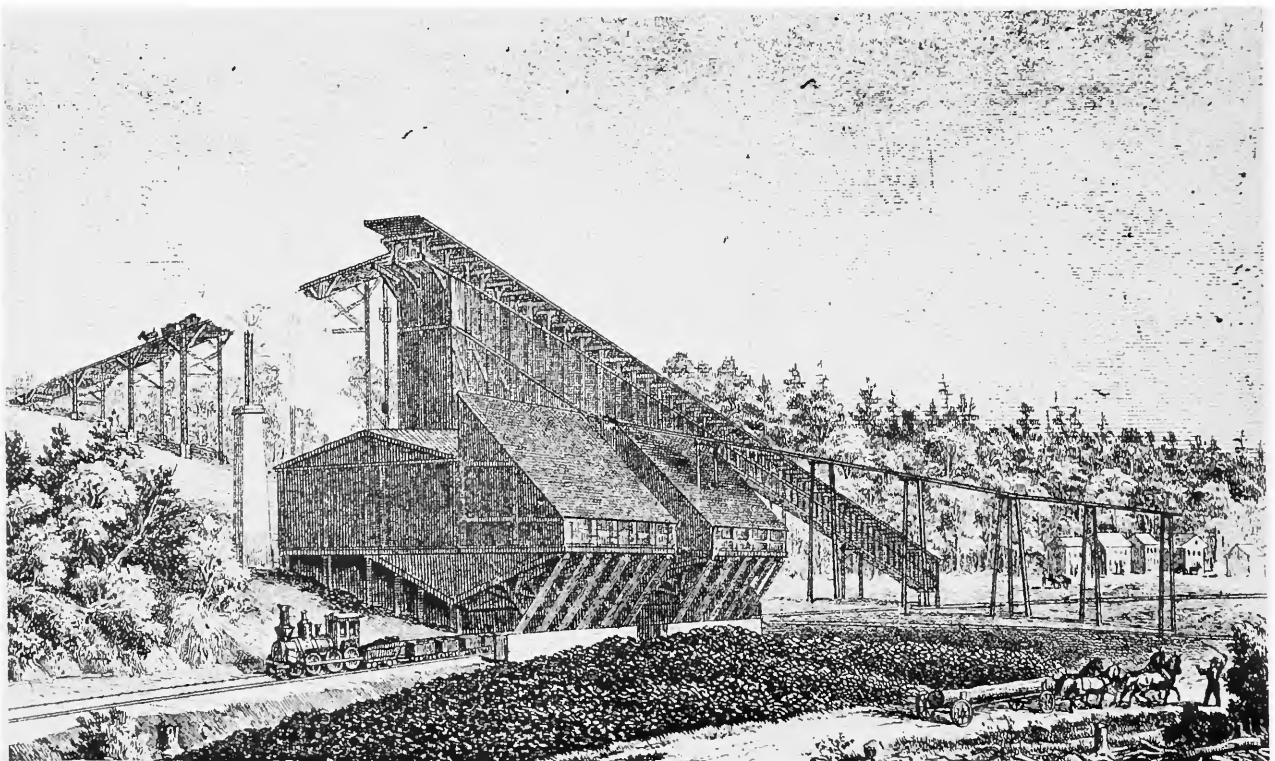


FIGURE 13.—Girard Colliery, 1864.

and developed, mining was increased in all locations and this property became one the most productive on the Girard Estate.

sheriff's sale on August 22, 1876, as royalty pay-

Anderson and Company's lease was sold at ments to the Girard Estate were delinquent in the amount \$13,526.88. The lease was transferred to the Philadelphia & Reading Coal and Iron Company with coal being shipped under its operation on October 11, 1876. At this time, the colliery was renamed the North Ashland colliery.⁷⁶

The district mine inspector in his annual report for the year 1877 stated "that the colliery had a total horsepower of 270. There were 88 inside employees and 148 outside employees, for a grand total of 236. The property appeared to be in satisfactory working condition."⁷⁷

The P & R C & I Company immediately began improvements on the property which included extension of the gangways in the Mammoth vein and development gangways were driven for the future mining of the Buck Mountain vein that was quite extensive on this lease. Two new pumps, manufactured by Robert Allison of Port Carbon were installed; one pump was located at the bottom of the main slope and the other at a reservoir halfway

up the slope from which location the water was lifted to the surface.

The annual report for the year 1879 given by the district mine inspector showed that "134 persons were employed inside and 160 outside, making a grand total of 294."⁷⁸ The increase of inside personnel was required by the addition of new working areas that were opened by the extensive development of the mine's existing gangways.

The royalty rates for 1879 were 35 cents a ton for large coal, 15 cents a ton for chestnut, and 6 cents a ton for pea coal. The P & R & C & I Company continued development gangways into the Mammoth vein and additional tunnels were driven to reach the Buck Mountain vein. Additional improvements continued to be made in preparation for below water-level operation by the erection of new pumps and pumping facilities. North Ashland colliery production reached its highest rate of production during the period 1879 to 1884 with an average annual production of approximately 113,000 tons.

The Philadelphia & Reading Coal & Iron Company continued to mine coal from this property until 1898 when the lease was transferred to the Lehigh Valley Coal Company and, thereafter it was considered as part of the Continental Colliery lease No. 5 which was held by the same company.⁷⁹

Lease No. 4

The fourth lease was made to F. B. Kaercher, the land agent for the Girard Estate in Girardville, 1857-1863. The lease, effective in December 1863, contained the same general provisions as those in the previous three leases, and included the south dipping veins of coal on the John Brady and Joseph Paschall tracts near Lost Creek, on the southern slope of Locust Mountain.

Kaercher erected a breaker, the Shenandoah Colliery. The first slope was sunk into the Mammoth vein that measured 40 feet, on the west side of Lost Creek ravine and which provided adequate tonnage for the life of this lease. The operation of the colliery for the years 1864 and 1865 were under Kaercher's watchful eye, but in 1866, the Girard Mutual Coal Company took over the lease and

operated the property until the end of the five-year lease in 1869.

The Girard Estate negotiated a new 15-year lease on January 4, 1870, with the Philadelphia Coal Company which began operations at once. The property was inspected by the district mine inspector of the Commonwealth of Pennsylvania during 1869 who made the following statements about the conditions of the property at that time.⁸⁰

The mine is ventilated by a 15-horse powered Beadle steam fan, 12 feet in diameter, located on the surface near the slope house. A 60-horse pumping engine in the mines is used for drainage purpose. Two 60-horse hoisting engines are in use on the slope. The breaker engine is 30-horse power which makes the total horse power of this colliery equal to 225.

Employment during the year equaled 225 men and boys. There are 12 mules and 50 coal wagons in use and the shipping capacity is approximately 10,000 tons per month.

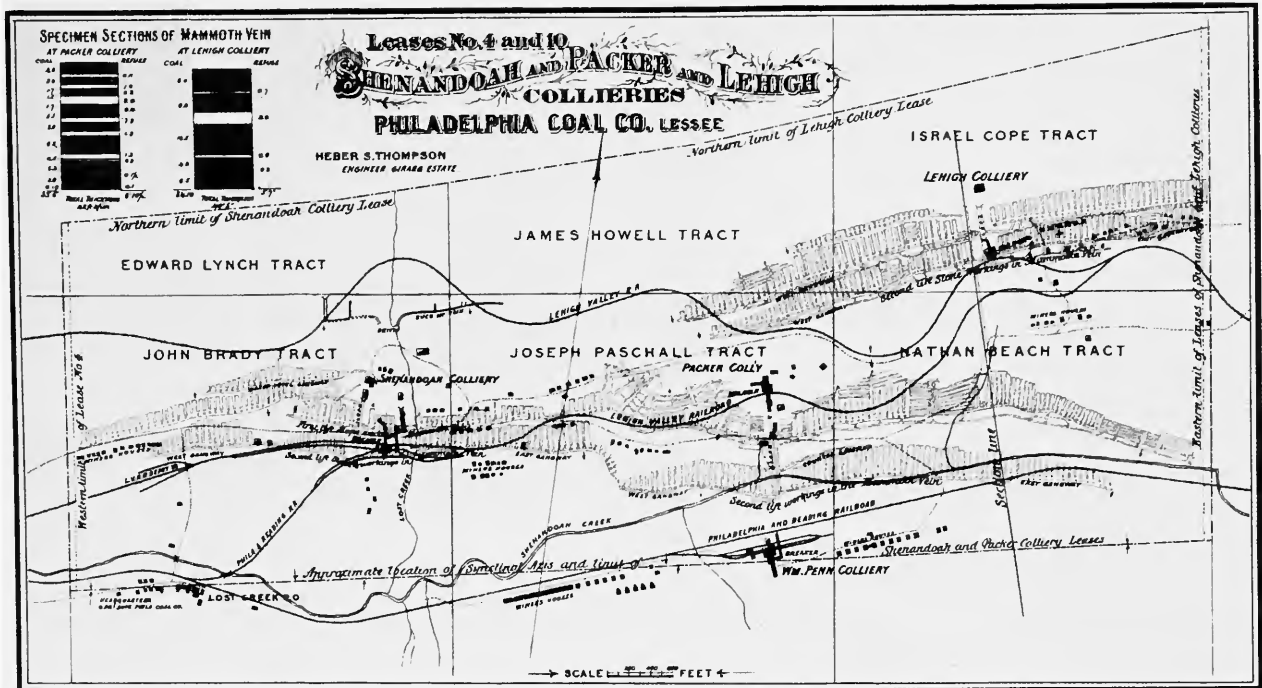


FIGURE 15.—Map of lease No. 4, Shenandoah Colliery, and lease No. 10, Packer and Lehigh collieries, 1876.

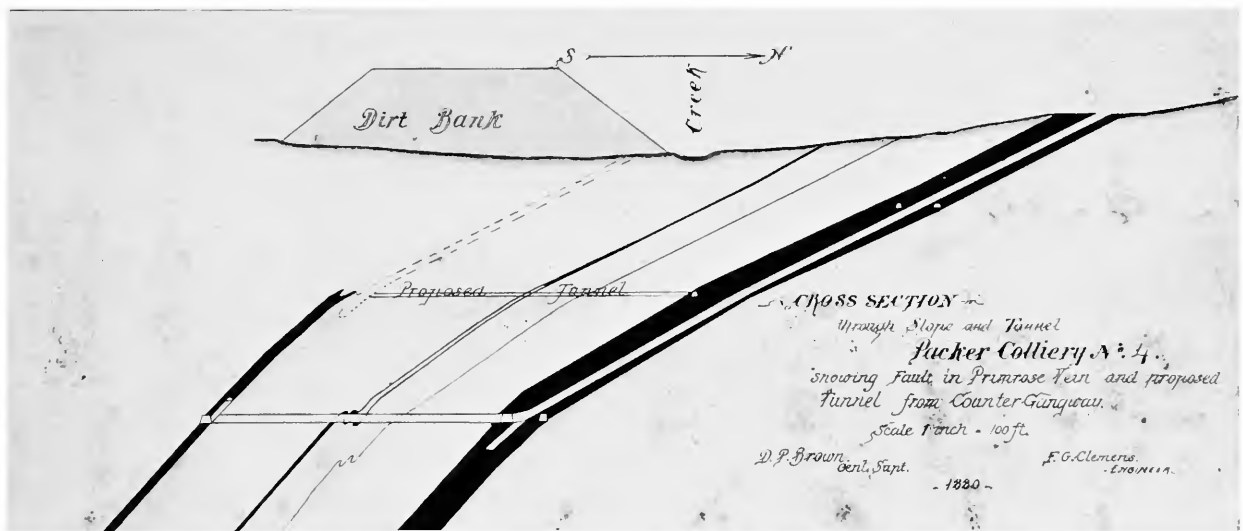


FIGURE 16.—Cross-section through slope and tunnel, Packer No. 4 Colliery, 1880.

The new management made extensive repairs to the property and added new equipment to increase the monthly output. By the end of 1872, eight steam engines were in use with a total 400 horsepower capacity and monthly shipments increased to approximately 12,000 tons.⁸¹ Also in 1872, a new

siding track had been laid to their breaker to connect with the Lehigh Valley Railroad. This gave the company the choice of shipping either by the Lehigh Valley or by the Philadelphia & Reading railroads.

The tonnage shipped to market during 1873 was



FIGURE 17.—Packer No. 4 Colliery, Lehigh Valley Coal Company, 1889.

approximately $2\frac{1}{2}$ times the 1872 production and placed this property as the leading producer of all the Girard Estate holdings.

Even with the increased production being handled through this one colliery, the company felt that it could not adequately meet the demands of the market and decided to erect another colliery on the property. Construction of this new facility began late in 1876 and was completed on March 1, 1877. It was named the Packer Colliery in honor of the president of the Lehigh Valley Railroad Company.⁸²

This new breaker was erected at a point halfway between the Shenandoah Colliery and the eastern limit of the lease, and would process the coal from the flat seams lying in the eastern portion of the

property to the midpoint of the Joseph Paschall tract. The Shenandoah Colliery would process the coal coming from the steeply pitching coal seams on the western half of the property to the midpoint of the Joseph Paschall tract.

The mine inspector's report for 1877 called these new facilities, including the newly opened slope, as "one of the best installations in the country."⁸³ A first for the industry was also reported—a telephone hookup was put in this new slope in order to talk between the bottom of the slope and the surface. The length of wire used was 1,000 feet.

Development work at both collieries continued constantly and production was maintained at a highly efficient rate. The Lehigh Valley Railroad moved the coal produced at the Packer Colliery,

while at the Shenandoah Colliery coal was moved by both the Lehigh Valley and Philadelphia and Reading railroads. The Mammoth, Buck Mountain, and Holmes veins provided the coal that was mined from this property.

The royalty rates for coal produced during 1879 was 35 cents a ton for large coal, 15 cents a ton for chestnut coal and 6 cents a ton for pea coal.

The lease on this property was transferred to the Lehigh Valley Coal Company at the close of the year 1880, and active operation of this lease continued until 1939.

On October 12, 1882, a fire of an undetermined origin destroyed the Shenandoah Colliery and drastically curtailed production during the remainder of the year.⁸⁴ A new and larger breaker was erected with the greatest urgency and, in February 1883, the first shipments were made from

this newly constructed breaker. Even with the temporary loss of production, this property continued to be the major coal producer of the Girard Estate during the period 1882 to 1884.

A new lease for a 15-year period was made with the Lehigh Valley Coal Company on June 9, 1883. From that time, the Shenandoah Colliery became known as Packer No. 2, and the Packer Colliery became known as Packer No. 4.

The annual report of the district inspector for the year 1884 showed the following information on the numbers of employees at this property. Packer No. 2 had 280 inside employees, including 3 door boys, and 159 outside employees for a total employment of 439. Packer No. 4 had 289 inside employees, including 7 door boys, and 175 outside employees for a total employment of 464. The grand total of employees at this property equaled 903.⁸⁵

Lease No. 5

The fifth lease was granted to Carter, Shoener and Company on July 1, 1863. The provisions of the lease were similar to the previous ones and covered all the south dipping veins of coal of the Big Mine Run Basin on the Robert Hiltzheimer, William Shannon, and George Beckham tracts in Columbia County.

Several months after obtaining the lease, the owners of the company transferred the lease to the Continental Coal Company, which built a breaker called the Continental and shipped coal mined from the property late in 1864. The company continued production until its lease expired in 1869, when it went out of business.

A new 15-year lease was negotiated with Charles L. Goodridge and J. T. Audenried. They took over the operation of this property in 1869.

The operation was inspected during 1870 by the district mine inspector. His report included the following statements concerning the conditions which he had found.⁸⁶

The main slope is 175 yards long into the south dip of the Mammoth vein, which is 35 feet thick at a dip of 45

degrees and is in good condition. This slope is used as a downcast for ventilation and a 15-horse engine runs a 12-foot steam fan that circulates the air in the workings.

Total horsepower equals 260 and consists of two 50-horse slope engines; a 50 horse pump on the upper lift and a 70-horse pump on the lower lift; a 25 horse engine powers the breaker; and a 15-horse engine drives the fan.

There are 170 hands employed at the operation with a daily shipment of 80 cars of prepared coal.

In late 1871, Robert Gorrell replaced Goodridge and the operation continued under the management of Gorrell and Audenried. Development work continued by driving gangways into the Mammoth vein and driving tunnels to expose the Buck Mountain and Holmes veins which were also found during this lease.

In 1872, the mine was inspected by the district mine inspector. From his statement, the status of the mine's improvements can be noted.⁸⁷

Ventilation is now produced by a 20-horse fan, the operation of which supplies a sufficient quantity of air. There are 179 hands employed, 77 miners inside and 102 outside [including 50 breaker boys]. Six steam engines with a total horse power of 290 are in use along with 14 mules and 38 coal wagons. Monthly shipments are estimated to be 9,000 tons of prepared coal.

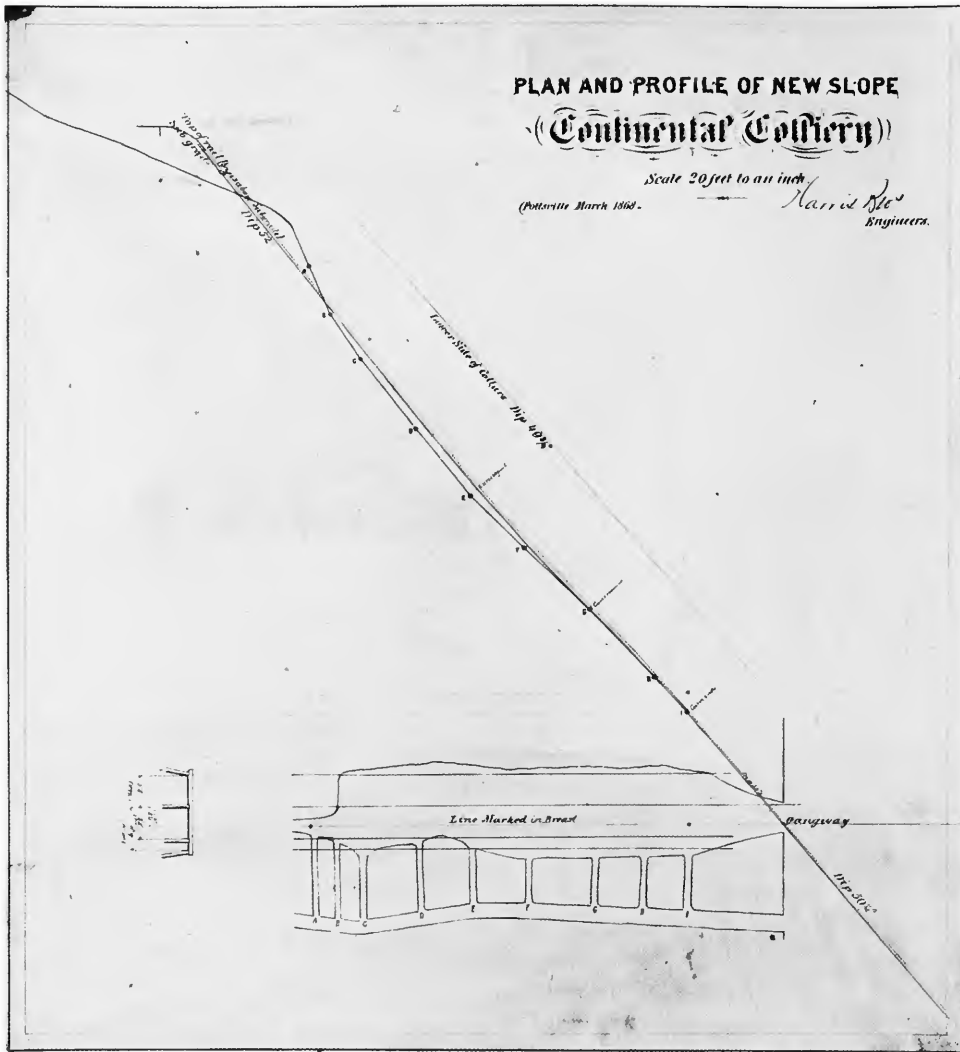


FIGURE 18.—Plan and profile on new slope at Continental Colliery, 1868.

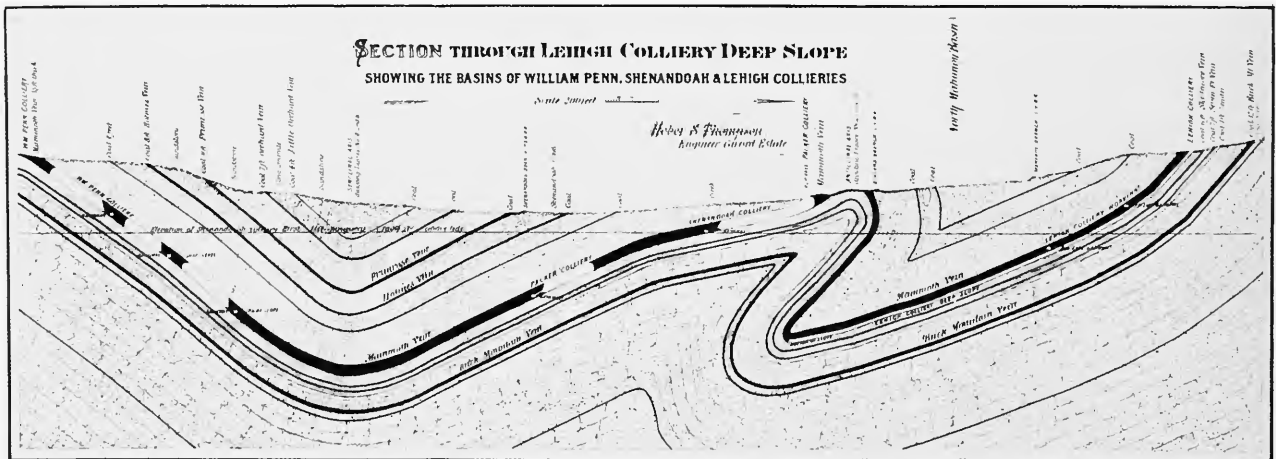


FIGURE 19.—Section through Lehigh Colliery deep slope showing coal basins of William Penn., Shenandoah, and Lehigh collieries, 1876.

Mining operations continued to improve during the next few years. In 1877, the lease was transferred to J. T. Audenried who then operated the property as an individual. Audenried made extensive repairs and improvements during his two-year management; however, in 1879, the lease was transferred to the Lehigh Valley Coal Company.

The Lehigh Valley Coal Company continued to make extensive repairs both in the mine and the breaker. The timbering in the slope was wholly replaced, and a new set of jigs was added to the breaker installation. Even with all the modernization of the operations and only ten months of operation, the colliery was able to double its output for 1879—as compared to 1878. The royalty rates for 1879 were 35 cents a ton on large coal, 15 cents a ton on chestnut, and 6 cents a ton on pea coal.⁸⁸

From the mine inspector's report for the year 1879, this operation had 148 inside employees, including 4 door boys, and 117 outside hands for a total employment of 265.⁸⁹

A new 15-year lease was made with the Lehigh Valley Coal Company on June 9, 1883, and became effective on January 1, 1884. The mine inspector's report for 1884 showed 131 inside employees (including 2 door boys) and 154 outside hands (in-

cluding 85 breaker boys) for a total employment of 285.⁹⁰ He also noted the following improvements made on the property: erection of a new underground engine house; installation of a speaking tube in the slope; erection of a new outside boilerhouse; and purchase of an ambulance to convey the injured to their homes.

The last shipment of coal from this operation was made in January 1885 as the result of the apportionment of the production of the different anthracite mining regions in Pennsylvania. This agreement permitted the closing of certain collieries for the purpose of operating others to better advantage; however, the Lehigh Valley Coal Company continued through the ensuing years to make repairs throughout the mine and the working areas were kept free of water.

Finally, in January 1899, when it again became time for the Lehigh Valley Coal Company to renew its lease with the Girard Estate, the North Ashland Colliery lease was consolidated with this property and both properties were considered one operation.⁹¹ New mine facilities were constructed and the combined properties began sending coal to market during 1900. The Lehigh Valley Coal Company continued leasing the property until 1932.

Lease No. 6

Lease No. 6 was granted to Jeremiah Seitzinger and G. W. Huntzinger on July 1, 1863. The term of the lease was for five years and contained the

same provisions as in the previous leases. This included all the north dipping veins of coal lying between the anticlinal axis of Bear Ridge on the James Chapman, Samuel Scott, and John Brady tracts. The first coal mine on the Girard Estate

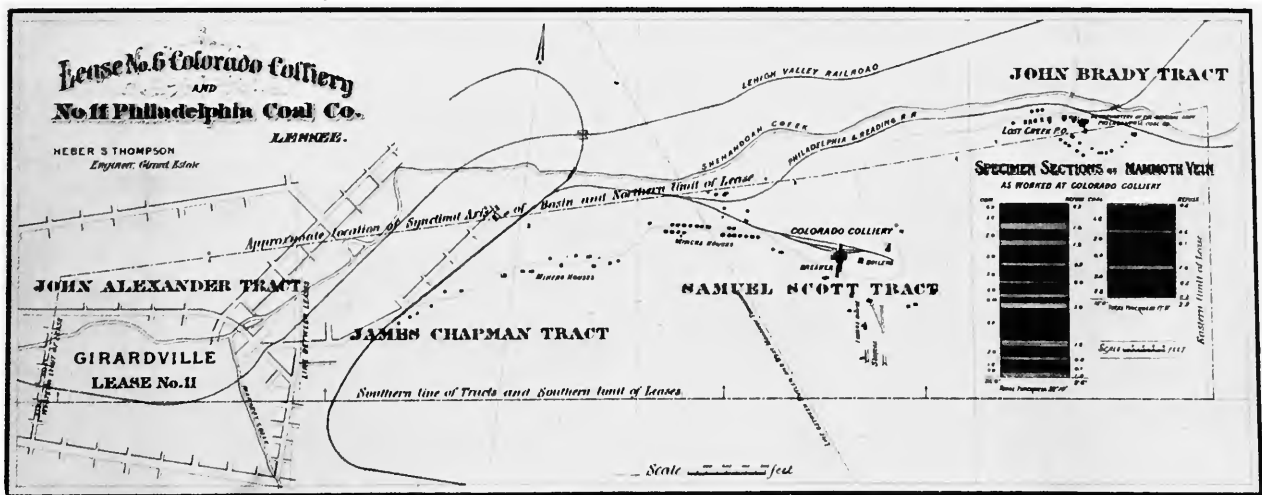


FIGURE 20.—Map of lease No. 6, Colorado Colliery, and lease No. 11, Philadelphia Coal Company, 1876.

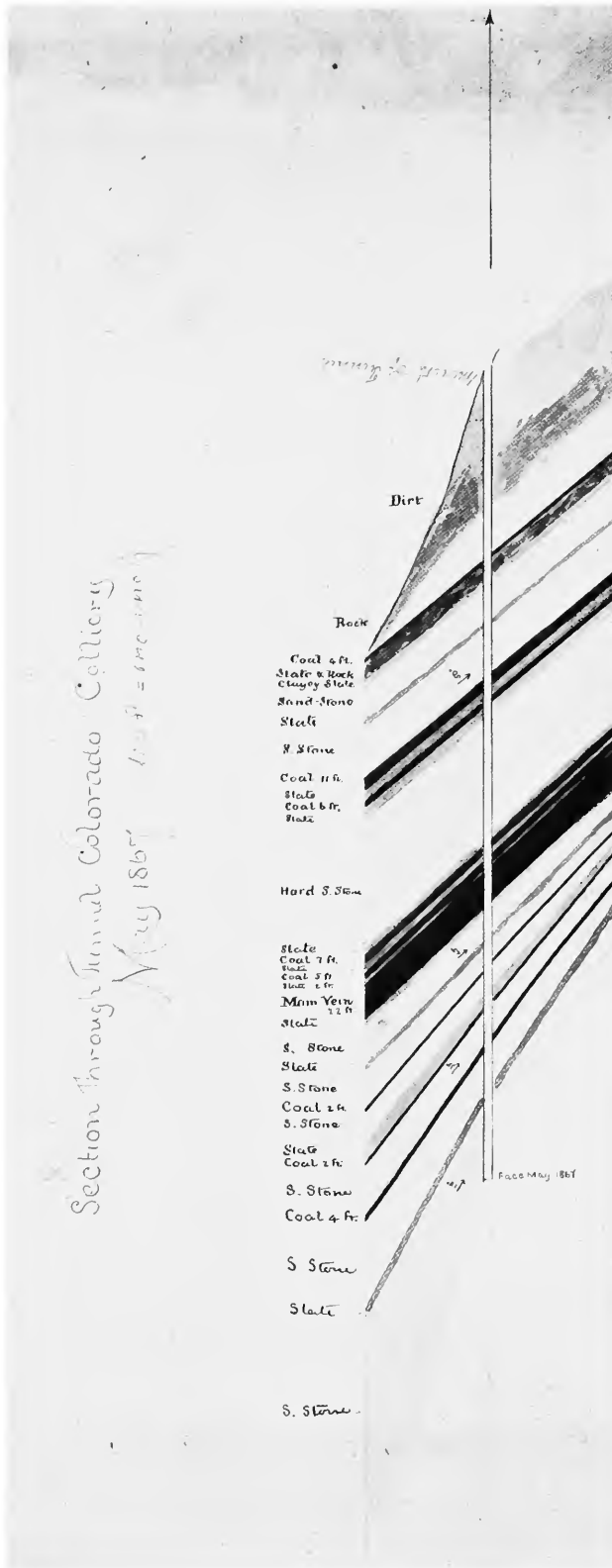


FIGURE 21.—Section through tunnel at Colorado Colliery, 1867.

leased by the Danville and Pottsville Railroad in 1833 was located on part of the ground included in this lease. The lessee began to develop the property and erected a breaker which was called the Colorado Colliery.

Active mining operation continued for four years until, in 1867, the lease was transferred to the Philadelphia Coal Company. Two years later on July 27, 1869, the Philadelphia Coal Company negotiated a new 15-year lease with the Girard Estate.

The Mammoth vein on this property was entered by driving a tunnel into the north side of Bear Ridge with gangways extending east and west to the property limits. The mine workings were quite extensive and all were placed above water level. The Mammoth vein measured 30 feet on this property and was nearly flat.

The operation was inspected during 1869 by the district mine inspector and his report included the following information on the conditions he found.⁹²

The colliery is worked some 60 feet above water level and ventilation is by natural means with air holes from the working area directly to the surface. No gas is present and the drainage is complete.

A 30 horse engine is in use at the breaker with steam power provided by 4 new boilers. The firm intends sinking a slope into the north dip of the Mammoth vein to provide more efficient mining operations on this property.

There are 358 employees (inside and outside hands), 29 mules and 70 coal wagons with an estimated monthly capacity of 10,000 tons.

The Philadelphia Coal Company planned an extensive development program to provide additional working faces in the seams found on their property. The new slope, which had been proposed in 1869, was started in 1871. After it had been driven 100 yards, a 60-horsepower hoisting engine was installed. During this period (1869-1872), the colliery continued to be the major coal producer in the region while, at the same time, working conditions were improved on the property.

The operation was inspected by the district inspector during 1872, and his remarks attest to the efficient management of this colliery.⁹³

There are 3 drifts in operation, all above water level, from which coal is produced. The Mammoth vein is nearly flat and averages 30 feet in thickness. Employment totals 331, with 181 inside miners and 150 outside hands. There are 72 families living in the houses provided by this company.

Monthly shipments average 14,000 tons and the coal is

transported on the property by 26 mules and 180 coal wagons. Total horse power is 135, which is provided by 5 steam engines run by 6 boilers.

The company's gangway development program continued at the same time as the extension of the slope into lower working areas. The advancement of these gangways and slopes brought an increasing amount of water flowing into the workings and larger pumps were continually being installed. By the end of 1877, the following coal veins had been exposed: Buck Mountain, Holmes, Primrose, and Mammoth. With these four seams plus others expected to be opened, it was hoped that the reserves of coal on this property would be quite extensive.

A fire destroyed the slope engine house and seriously damaged the hoisting machinery on October 28, 1880, and limited the production from this colliery for the remainder of the year. Even though the rebuilding operations were completed in one month, the tonnage lost was never regained.

At the close of business on December 31, 1880, the Philadelphia Coal Company transferred the remaining three years of its lease on the property to the Lehigh Valley Coal Company. Moderate repairs were begun and some extension of gangways were made, but the increased pitch of the coal presented new mining problems. In addition, an

extensive settling had occurred on the eastern section gangway and the workings were closed for eight months while repairs were being made. The effects of this settling on the continuous conduct of mining operations can be clearly seen when one compares the decreasing annual tonnage for the period 1881 to 1884.

The lease on this property was renewed on June 9, 1883, effective January 1, 1884, for another 15-year term. The area covered by the new lease included the property presently being worked as well as the property included in Lease No. 11.⁹⁴

Plans made by the new lessee included opening new sources of coal for the present colliery by driving new tunnels to the coal seams lying above and below the Mammoth and erecting a new colliery, Packer No. 5, as close to the midpoint of the lease as was practicable. Packer No. 1 colliery was taken down during 1885, and all coal mined on this lease was henceforth processed through Packer No. 5. During 1886, the mine existing on Packer No. 1 tract was reopened and new development work began on the western end of the property. Coal mined from this operation was processed in the Packer No. 5 breaker. The Lehigh Valley Coal Company continued operations on this lease until 1939.

Lease No. 7

Lease No. 7 was granted to C. H. Dengler and Morris Robinson on October 1, 1863. The term of the lease was for five years and the provisions were similar to the preceding leases. The property included in this lease was all the south dipping coal veins in Bear Ridge, and all other coal veins lying south of the anticlinal axis of Bear Ridge on the Nathan Beach, Joseph Paschall, John Brady, and Samuel Scott tracts. Also included were such parts of the John Blacky, Thomas Paschall, William Brady, and Thomas Grant tracts which were owned by the Estate and not covered by older warrants.

The lessees spent considerable time and money attempting to open up the coal veins on the west end of the property, but eventually gave up their western operations and sank a slope into the Mammoth vein almost in the center of their property. A breaker was erected and named the Mahanoy

Colliery, with the first coal shipments being made in 1865.

The management continued to have problems in getting this property developed and in 1867 transferred the lease to the Boston and Mahanoy Coal Company. When it became time for a renewal of the lease, the Girard Estate granted this company a 15-year lease effective May 25, 1869. From the report of the district mine inspector for the same year, it appears that the company was not succeeding in its attempts to get a successful operation underway. The inspector made the following comments about the ventilation practices at this operation.⁹⁵

The mines are ventilated by a steam fan, 20 horse power with a 14-foot fan; the air courses in some places are crushed and the fan is exposed and in that manner cannot ventilate as it should, though at places the air is good. I have directed driving a monkey gangway to relieve the air. The railroad crosses over the outcrop of the vein and

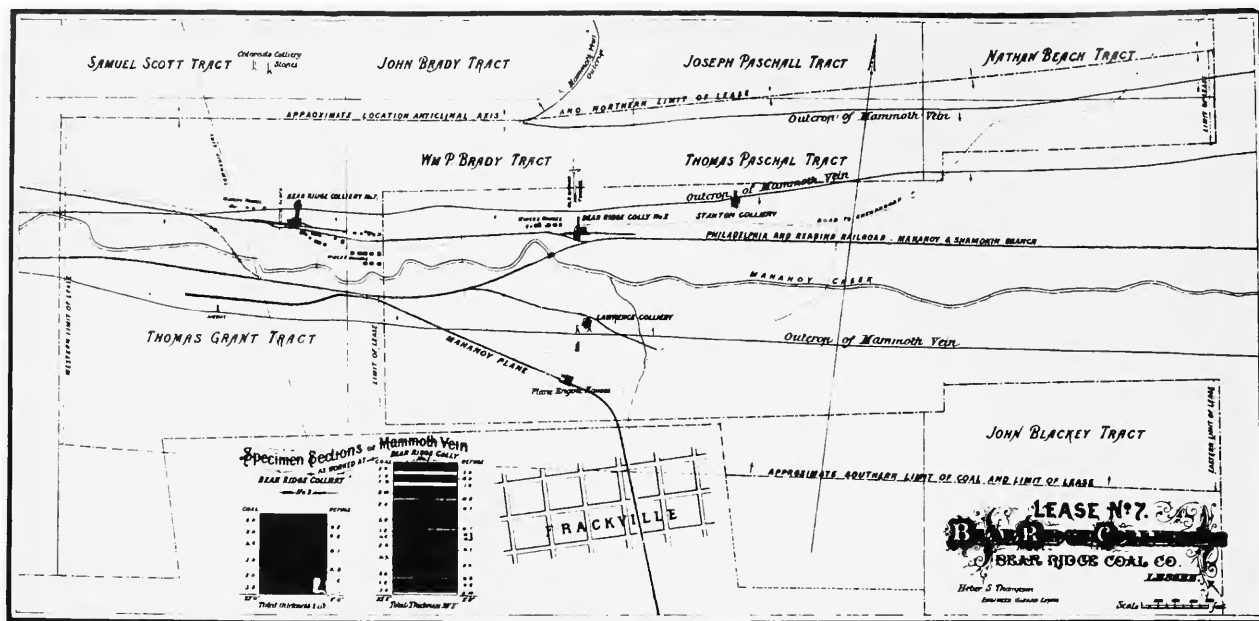


FIGURE 22.—Map of lease No. 7, Bear Ridge collieries, 1876.

threatens disaster at any moment; the railroad company employs a person to avoid a calamity.

There is an immense amount of coal on this property with the entire coal measures totaling 87 feet and consisting of the following veins: Mammoth—40 feet; Buck Mountain—16 feet; Primrose—12 feet; Skidmore—8 feet; the Four Foot vein; and the Seven Foot vein.

Total horse power equals 220 and five steam engines—a 30 horse breaker engine, a 60 horse pump engine, a 20 horse fan engine, a 70 horse slope engine and a 40 horse pumping engine—receive their driving steam from 12 boilers. The machinery and engines are in excellent condition.

Employees total 240 men and boys with a daily shipping capacity of 135 cars. The present daily output is 65 cars using 16 mules and 60 coal wagons.

The district inspector was apparently quite concerned over the ventilating conditions and inspected the property at frequent intervals. His report for 1870 was even more disheartening, and the ventilation problems were more critical than during his previous inspections.⁹⁶

I found no ventilation in these mines; the smoke was in such volume the men could not work in it, and found no air to dilute or remove it. I found no means of ingress or egress except that in the slope. A 15 horse power steam fan is used, but the manner in which the air courses are driven, and their contracted areas, does not afford a sufficient passage of air.

A joint stock company, the Bear Ridge Coal Company, took over this lease in 1870 with the former owners retiring from the business. The

Estate's officials seem to have been well aware of the difficulties at this property under the former operators, for their report for 1871 noted that the affairs of this property were progressing quite well under "new and very energetic management."⁹⁷

The new management made extensive repairs to the property and installed additional machinery to support their increased tonnage program. They began prospecting another basin on the property that contained the Mammoth vein to determine if additional working areas could be developed. As the old Girard Tunnel (1833–1837) was located on this lease, a drill hole was driven from the end of the tunnel towards the Mammoth vein.

The district's inspector stated in his report for 1871 that many improvements had been made, and that he now found the condition of this colliery to be "very satisfactory."⁹⁸

Six steam engines were in use with a total horse power of 525. The engines were: a 50 horse engine on the old slope; two 80 horse engines on the new slope; a 200 horse pumping engine; a 50 horse breaker engine; a 15 horse fan engine; and a 50 horse pole-type pumping engine. The new slope and gangway were well timbered and adequate and safe ingress and egress were provided for the mines.

The company, having been successful in their exploration program, continued to develop new working places from the gangways from the old tunnel which had been driven to meet the Mam-

moth vein. As a result of this new and enlarged area of coal, a new breaker, Bear Ridge No. 2, was built and began preparing coal for shipment in October 1873. The older breaker, Mahanoy, was renamed Bear Ridge No. 1. The company finally felt secure and looked toward prosperous times.⁹⁹

Misfortune struck again, and on August 1, 1875, No. 1 breaker was destroyed by fire. The management, determined to turn this property into a successful venture, rebuilt the breaker, and on April 18, 1876, coal was again shipped from this installation.

Annual production increased gradually from these two breakers and the Philadelphia and Reading Railroad transported the products to market. The coal market was lower during 1879 and the company had difficulty in obtaining buyers for its coal.

This slowdown apparently dampened the spirits of the company, and in January 1880, the lease

was transferred to Myers, McHenry, and Company. The new management extended several gangways and installed a new pumpway in Colliery No. 1. In Colliery No. 2, additional gangways were driven to expose the coal veins lying on the top of Bear Ridge. Coal production increased during 1882 and 1883. In the latter year, the greatest tonnage ever produced from this property was recorded.

Colliery No. 1 was renamed West Bear Ridge, and Colliery No. 2 was renamed East Bear Ridge.¹⁰⁰ During the management of this company, the first surface mining of anthracite was done in this field near the top of Bear Ridge. The coal thus quarried was chuted into the East Bear Ridge breaker and processed with the deep-mined coal.

The lease expired on December 31, 1883, and as the result of negotiations made during November 1883, the new 15-year lease was transferred to the Philadelphia & Reading Coal & Iron Company, which operated the property until the lease expired on January 1, 1899.

Lease No. 8

Lease No. 8 was granted to Richard Lee, William Grant, and Frederick Patterson on October 1, 1864. The lease covered all the north dipping veins of coal on the north side of Bear Ridge on the Nathan Beach, Joseph Paschall, and part of the John Brady tracts, the northern limits being the first synclinal axis north of Bear Ridge. The term was for five years and the provisions were the same as in the other previous leases.

The lessees began to develop the Mammoth vein which was exposed by a drift driven above water level. During the early months of this lease, other claimants began legal proceedings stating that prior claims gave them ownership rather than the Girard Estate. On December 6, 1864, the lease was transferred to the claimants headed by Samuel E. Griscom who agreed to continue the operations until the court could decide the rightful owner. The colliery erected on the property was called the

William Penn, after the founder of Pennsylvania, and the operations were conducted under the name of Samuel E. Griscom and Company.

The new lessees began to open the Holmes vein found on the property and drove gangways in this vein to the boundary limits. In addition, a shaft, 250 feet deep, was sunk during 1869, to open the deeper lying Mammoth vein, as the above-water-level portion of this vein had been mined.

On July 12, 1869, a new 15-year lease was made with Griscom and Company with similar provisions as contained in the newly instituted leasing program.

The district mine inspector visited the property in December 1869 and reported the status of the mining operations.¹⁰¹

The mine is ventilated by a 10 horse steam fan and air-holes from the surface into the 3 drift gangways. Doors are placed on the outcast airshaft with counter and sliding doors used to supply fresh air to the miners passing up and down into the mines.

There are 8 engines in use for a total horse power of

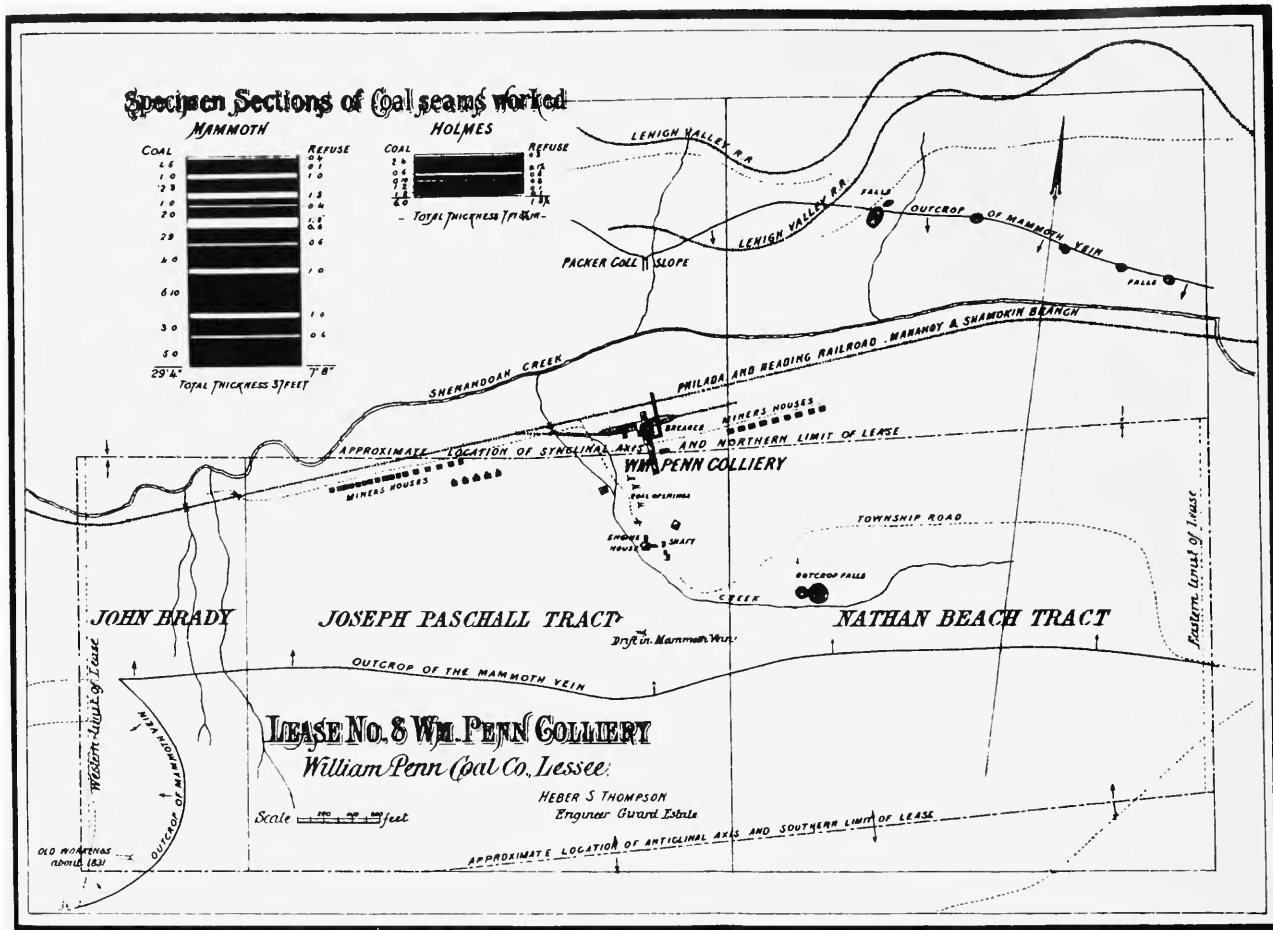


FIGURE 23.—Map of lease No. 8, William Penn Colliery, 1876.

310: 2 breaker engines—one 20 horse and one 40 horse; 2 hoisting engines of 70 horse each; one 40 horse pumping engine; one 30 horse saw mill engine; one 10 horse steam fan; and one 30 horse engine for sinking the shaft.

The Company employs 200 hands together with 13 mules and 74 coal wagons. Present shipping capacity is 60 cars per day with a future capacity of 160 cars per day when the mine is at full operation.

The size of the mine was enlarged by extending the lengths of the gangways, and with this expansion of underground workings a larger steam ventilating fan (20 horsepower was installed during 1870. The district mine inspector in his report for the year 1870 said that “the government of the works warrants a security to the employees.”¹⁰²

The lease was transferred to the William Penn Coal Company at the close of business in December 1872. This company continued to expand the mine workings and by October 1874, the mine was producing 20,000 tons of coal per month. The total

number of employees increased as the mine improvements continued with the number reaching 430 during 1881.¹⁰³

During 1878, the Girard Estate approved the transfer of the lease held by the William Penn Coal Company to Edward and George Brooke, who retained the same name of the company. The property at this time was well developed and had three working lifts in the Mammoth vein and an inside slope driven into the Holmes vein. The only perpendicular shaft on the Estate was located at this colliery.

The annual production for 1878, as in the five preceding years, exceeded that of every other colliery on the Estate. The royalty rates for 1879 were 35 cents a ton for large coal, 15 cents a ton for chestnut coal, and 6 cents a ton for pea coal.

During 1879, new development work and extension of old workings continued and a new vein

of coal, the Skidmore, was opened. A new ventilating fan was installed which allowed for separate air courses in the Mammoth vein and in the Holmes vein. With its production rate still at a high level, the average annual output for the past seven years was 140,000 tons.

Gangway development continued to be made each year with the eventual expansion of workings into the Four-Foot and Primrose veins. Annual production reached 221,900 tons during 1881, and again this colliery's output exceeded all others on the Estate.

During 1882, the Company found that the extension of the workings was causing an overload on the capacities of their steam engines, and, if continued, could more than likely cause failures in maintaining a constantly high production. Two powerful Allison air compressors were installed,

thereby substituting compressed air for steam in their underground machinery, hoisting engines, and pumps.¹⁰⁴ Plans also were started for the installation of a much larger ventilating fan which could provide sufficient air courses throughout the mine and also eliminate all steam engines from the interior of the mine.

Negotiations were completed on June 9, 1883, between the Girard Estate and the William Penn Coal Company for a new 15-year lease that would become effective January 1, 1884. Production for the years 1883 and 1884 continued at a high rate and this colliery continued to be the largest producer of anthracite on the Estate. The William Penn Coal Company continued operations under the Brookes until 1892 when the lease was transferred to Stickney and Conyngham who retained the same company name.

Lease No. 9

Two men named Wadleigh and Vandyke were granted Lease No. 9 on August 1, 1865, for all the dipping seams of coal south of the anticlinal axis of Locust Mountain, on the Jeremiah Jackson, William Steadman, and James McNeal tracts.

Claimants under an adverse title were able to gain control of the lands before the lease was finally approved and began to work those coal seams which were exposed. The claimants, operating as the Thomas Coal Company, were Daniel Fisher, Henry Sailor, John B. Reber, and B. B. Thomas.

The City Council then agreed to lease the tracts

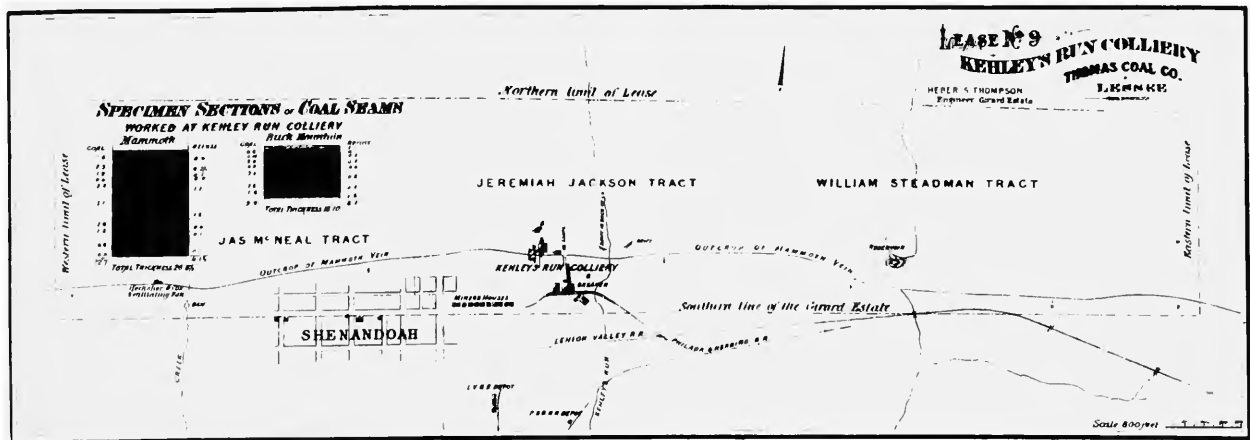


FIGURE 24.—Map of lease No. 9, Kehley's Run Colliery, 1876.

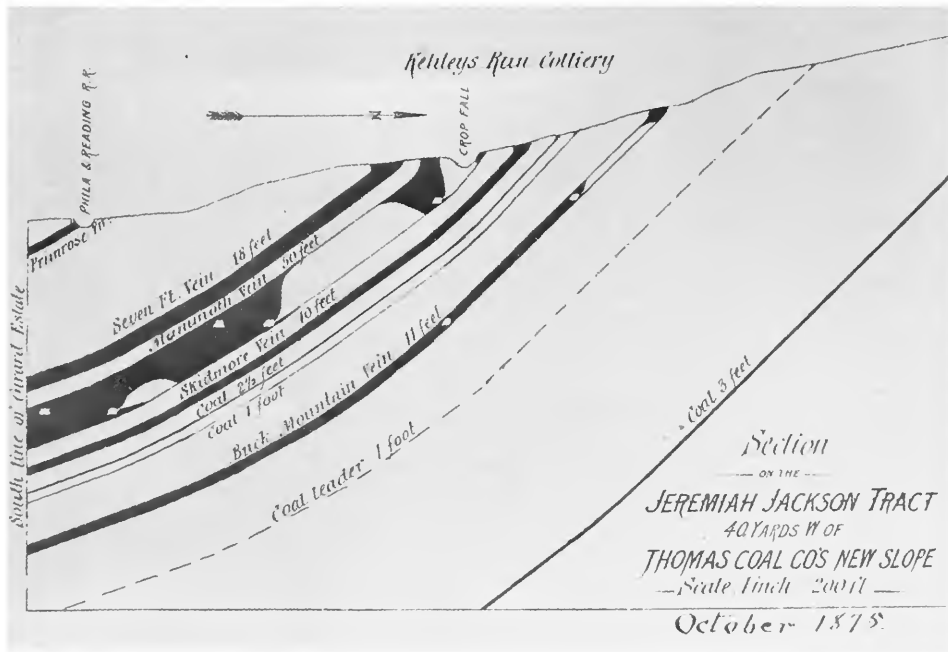


FIGURE 25.—Thomas Coal Company's new slope, 1878.

to the Thomas Coal Company with the provision that all royalties paid were to be placed in a separate trust fund until the courts could decide whether Girard had the proper title. After years of litigation, the court decided on May 11, 1874, that the city was the rightful owner of the land in dispute.

The breaker erected on this lease was called the Thomas Colliery and 2,372 tons of coal were handled during 1865.

The colliery, including slope, breaker, and mine opening, was located immediately north of the Shenandoah lease, and was the easternmost operation on the Girard Estate. The slope was driven into the Mammoth vein, and gangways were driven from it to the eastern and western boundaries of the property.

The following conditions of the property were reported by the district mine inspector in his report for the year 1869.¹⁰⁵

The slope is 130 yards deep, on an angle of 45 degrees and contains 2 tracks of 44-inch gauge with a 4½-foot pump road and planked stairway. Two 60 horse engines work in the slope and provide adequate hoisting power.

The mines are ventilated by a furnace at the bottom of the slope which I have condemned as not being satisfactory to provide sufficient air for the workings. A 20 horse steam fan will be installed as soon as possible to provide adequate ventilation.

A 30 horse power engine operates the breaker and is kept in an excellent condition. The total engine capacity of this operation is 130 horse power.

There are 71 men and boys employed at the property along with 10 mules and 60 coal wagons. Estimated shipping capacity is 70 railroad cars daily.

A new 15-year lease was negotiated with the Thomas Coal Company on May 19, 1869, and the name of the property was changed to Kehley's Run Colliery.

The district mine inspector apparently was quite concerned about the much needed improvements in the ventilating system and visited the colliery again early in 1870.¹⁰⁶ He reported that:

a 20 horse steam fan with a 16-foot diameter fan had been installed and with the use of double doors on the gangways, the air current is constantly in motion.

A new dirt plane had been built and a 20 horse engine installed thereon. Also a new 120 horse pump had been acquired to handle the pumping operations. Total employment was 175 men and boys and the daily output was 80 cars.

Development work continued and during 1870 a new slope was sunk, below water level, into the Mammoth vein. From this new level a tunnel was driven into the Buck Mountain vein and the top splint of the Mammoth. The Mammoth vein at this colliery had a thickness of 50 feet and was separated into two splits by a layer of rock and slate that

averaged 20 feet. With the increased efforts made in the development of additional working areas, this colliery was prepared to begin large annual shipments.

The largest tonnage ever produced from this property was during 1879 when over 151,000 tons were sent to market. The royalty rate on coal for 1879 was 35 cents a ton for large coal, 15 cents a ton for chestnut, and 6 cents a ton for pea coal.

The company seemed well on its way for another productive year in 1880, but in early July a large quantity of gas was found in the air currents in such a large concentration that the district mine inspector was at the point of asking for a court order to stop the working of the colliery.¹⁰⁷ The cause for the accumulation of gas was attributed to two locomotives, fired with anthracite, that were used to haul coal in the old slope workings. These locomotives were removed immediately from that section of the mine upon the instructions received from the district mine inspector. This action improved the quality of air in the mine until the July 14, when another gas accumulation was discovered in the new slope workings.

In an effort to clear up the air circulating in the mine, the owners connected their operations with Kohinoor Colliery, that had been mined into previously from the Kehley's Run gangway. This action appeared to correct the gas problem temporarily, but on July 26, the miners again complained of foul air.

On the night of July 26, 1880, between ten and eleven o'clock, Jonathan Wasley, Frank Willman, and John Reese entered the mine through the old water-level gangways that previously had been abandoned. Why they entered the workings at this location, at that late hour, and for what purposes were never really ascertained, and the disaster that struck them has never been fully determined.¹⁰⁸

The following morning the district mine inspector was preparing to leave his home for the colliery when a messenger from Mrs. Reese arrived to inquire about the whereabouts of her husband. The inspector immediately proceeded to the colliery and talked with the night watchman who attested to the presence of the three men at the colliery the preceding evening and stated that they had not gone down into the mine, but had walked westward toward the stables. At about the same time, a miner reported that on his way to work he had seen

footprints around one of the old cave holes. In company with other miners who had arrived for work on the morning shift, the group proceeded to the cave hole and discovered, without a doubt, that the tracks indicated that the three missing men had entered the mine.

A search party, under the supervision of the mine inspector, entered the cave hole and proceeded for approximately 140 feet, when the inspector, who was leading the party, was overcome with gas. He was quickly removed to the outside by his companions. Immediate action was taken to restore ventilation, so that another rescue party could continue the search for the three missing men. Shortly before one o'clock, a party headed by William Hemingray and Colonel Brown was able to enter the mine and discovered the bodies of the three men.¹⁰⁹

On August 9, workmen coming out of the gangway discovered a fire in one of the chutes of the No. 8 face. A conference was immediately called between the owners and officials associated with or connected with the collieries adjoining Kehley's Run to formulate plans to extinguish the fire.

After several explosions of gas, the fire was still out of control despite attempts to extinguish it. As a result of that, and the commencement of legal proceedings by the owners of the adjacent Kohinoor Colliery, the Schuylkill County Court on December 13, 1880, ordered the city of Philadelphia to take possession of the colliery—the Thomas Coal Company gladly released its control—and make an effort to extinguish the fire under the Court's previously issued order of November 24, 1880.¹¹⁰

Immediately upon receipt of the court order, Heber S. Thompson, engineer in charge of the Girard Estate, started preparations to subdue the fire by flooding the mine. Thompson's plan was to seal off the area containing the fire by constructing masonry dams at appropriate locations and then allow water to fill the walled-in area.

By June 10, the dam work was completed and preparations were begun to allow the water to flow into the mine. Materials used in the construction of the dams were 600,000 bricks and 1,800 barrels of cement (American and imported) at a cost of approximately \$67,000.¹¹¹ A water flume, 2,360 feet in length, connected the colliery with the reservoir of the Shenandoah Water Company and provided the means for the handling of the hugh

quantity of water that would be required. From Thompson's calculations, approximately eight million gallons of water would be required to extinguish the fire. Periodic testing during June and July indicated that the fire was slowly being extinguished, and by August 25 the fire was out.

On August 26, 1880, two hoists equipped with cast-iron tanks were placed in operation to de-water the mine. One tank had a capacity of 1,800 gallons and the other 800 gallons, which allowed the removal of 2,600 gallons of water every three minutes.¹¹² De-watering operations continued and on February 13, 1882, a new 15-year lease was made with the Thomas Coal Company to again take control of the colliery and continue mining operations.

The successful completion of this project was the first time a colliery fire under the conditions that existed at Kehley's Run had been extinguished.

Lease No. 10

The lands included in lease No. 10 were claimed under an adverse title filed by W. L. Williams, who during 1866 erected a small breaker east of Shenandoah Colliery on the Israel Cope tract. Williams mined a small amount of coal during the next four years and on January 4, 1870, sold his right to the newly formed Philadelphia Coal Company which immediately negotiated with the Girard officials for a 15-year lease on the property. The new colliery erected was called the Lehigh Colliery as its production would be transported over the Lehigh Valley Railroad.

The lease on these lands included all the coal on the Edward Lynch, James Howell, Israel Cope, John Brady, Joseph Paschall, and Nathan Beach tracts, between the anticlinal axis of Locust Mountain, and the first anticlinal axis south, which was the line that defined the northern limit in the description of the Shenandoah and Packer leases.

The state mine inspector visited the property on July 12, 1869, and commented on the condition of the property in his published report.¹¹³

The mine is served by two drifts driven above water level to expose the veins of coal found on this property. Five

The Mammoth seam presented difficult mining problems as it was, and the engineering skills of Thompson were greatly demonstrated by his efforts to extinguish the fire. The seam was 50 feet in thickness, dipped at an angle of 45 degrees, and was open to mine workings of an adjacent colliery farther down the dip.

On April 3, 1882, the hoisting of coal was begun and the breaker was again in full operation. Coal production increased gradually each month thereafter, and the tonnage for 1882 amounted to 79,645. Development work continued throughout the mine and by 1884 approximately 110,784 tons were produced, with coal being mined from the Mammoth, Skidmore, Buck Mountain, and Seven Foot veins. Thomas Coal Company continued their leasing agreements with the Girard Estate until 1905 when the lease was transferred to the Thomas Colliery Company.

veins are present and consist of the Mammoth, 35 feet; Skidmore, 6½ feet; Buck Mountain, 18 feet; Seven-Foot, 7 feet; and the bottom part of the Mammoth, 14 feet; making a total thickness of 80½ feet. As the mine is currently developed above water level, no fan or furnace is required to provide ventilation for the working breasts.

One 15-horsepower breaker engine was used in the preparation of the coal with steam being supplied by two old steamboat flue boilers. The inspector apparently did not approve of this type of boilers, as he said "flue boilers are not much used in coal mines."

The company employed 53 men and boys, 5 mules, and 14 coal wagons to haul the coal. There was an estimated daily capacity of 16 railroad cars.

Commenting on the development of the property, the inspector remarked that he felt the colliery should have been opened first on either the railroad or water level with tunnels driven in a northward direction in order to cut through all five coal veins. In this way, the colliery would have become an important producer. As will be seen later, the new owner (Philadelphia Coal Co.), started to sink a new slope in order to develop new areas and open up the vast reserves of coal still on the leased lands.

The same inspector visited the property on January 8, 1870, and noted that the new company had made progress in sinking a new slope and remarked

that when the new slope—approximately 300 feet in length—was completed along with other surface improvements, “this colliery will constitute one of the very best in this region.”¹¹⁴ The construction of new additions to the breaker would increase the shipping capacity to 120 railroad cars per day.

During 1871, the company installed a 90-horsepower engine for hoisting and drainage, a 12-horsepower fan for ventilation, and a 20-horsepower engine in the breaker.¹¹⁵ Production for the year amounted to 17,400 tons, almost a six-fold increase over the previous year’s shipments.

With the continued improvements, it became necessary to increase the working force and transportation equipment. By 1872, the total number of employees—inside and outside—had increased to 94, and 8 mules and 22 coal wagons were in use for transporting the coal. Tonnage for the year amounted to 53,400 tons.¹¹⁶

According to the annual statistics for the district in 1879, the total number of employees had reached 345, with 10 mules and one locomotive transporting the coal to the breaker.¹¹⁷ The larger number of operating personnel did increase the annual production during the year, and this provided another reason for the driving of a trial slope below the second working level in an effort to reach additional reserves of coal. At year’s end, the slope had reached a length of approximately 1,080 feet.

Other improvements to the property included the installation of a new and larger steam-fan

engine, the addition of 6 steam boilers, regrading the coal plane, and the opening of a newly timbered airway.¹¹⁸

The Philadelphia Coal Company surrendered its lease at the end of 1880, and the remaining four years of the lease were transferred to the Lehigh Valley Coal Company which continued the operation of the colliery until 1939. The first year under the new management resulted in doubling the annual production, which reached approximately 170,000 tons. New development work during the year resulted in the driving of eight new gangways which extended the mine workings to the sixth lift below water level.¹¹⁹ As a result, the annual yield in future years was to continue at a high rate.

The first 15-year lease on this property expired on December 31, 1884, and the Lehigh Valley Coal Company renewed the lease for another 15-year period commencing January 1, 1885. The terms and royalty rates were the same as all the other coal leases on the Estate. During 1885, the name of the colliery was changed to Packer No. 3, thus bringing this property in conformance with the names assigned to the other properties operated by the Lehigh Valley Coal Company.

The importance of the coal found on this property, especially the outstanding characteristics of the Mammoth Vein, was highlighted by the selection of a 3,255-pound block of coal for exhibition by the city of Philadelphia at the New Orleans exposition during 1884 and 1885.

Lease No. 11

The Philadelphia Coal Company obtained Lease No. 11 on March 8, 1875. This property covered all the coal from the west line of the James Chapman tract (the western limit of the Colorado colliery) to Vine Alley, Girardville. This fell between the main synclinal axis of the Shenandoah Valley and the anticlinal axis of Bear Ridge. All the coal was found on the John Alexander tract.

The company did no exploration work on this property until September 1878, when diamond drilling operations were begun to verify the coal outcrops and the geological formations in the eastern end of the property in Girardville.¹²⁰ The Lehigh Valley Railroad traversed the ground

covered by the lease and, when a breaker was erected, would transport the coal to market.

Exploration work continued for the next two years to verify the coal measures and to develop the basins and dips. During 1880, a trial slope was sunk to help in locating the various veins of coal on the property.

No mine opening was ever developed as a result of the exploration program; however, during 1883, this lease was consolidated with that of Colorado (Packer No. 1) Colliery and turned over to the Philadelphia Coal Company.

Statistics pertaining to the output of the eleven leases are given in Tables 7 through 10 in Appendix 1.

Breaker Boys

Breaker boys, the common name for slate pickers, normally included all boys employed on the surface around a coal breaker. A coal breaker, as the name implies, was a large wooden structure that contained mechanical equipment for the crushing, screening, and cleaning of anthracite run-of-mine material into sized commercial grades. During this period, the entire treatment process was a dry operation and pickers were forced to work in the "dust bowl" for ten-hour shifts. Sometimes old men and crippled miners with good eyesight were employed as pickers.

The coal from the mine was raised to the top of the breaker, occasionally as high as 100 feet, dumped into a storage bin, and directed through the treatment processes which consisted of crushing and screening apparatus. The coal traveled by gravity through wooden chutes that connected the different stages of processing. After being crushed, screened, and hand cleaned, the coal was directed into storage pockets or bins prior to loading into railroad cars for shipment to markets.

The breaker boys were stationed at wooden chutes running from the screening stage, and they were required to remove all foreign materials from the cleaned and sized coal before it was directed into the loading pockets.

Throughout the anthracite industry, various picking arrangements were used, but the following two methods were the most prevalent.

The first method found the pickers seated on boards that reached across wide, wooden chutes. They were required to sit on the board, place their

feet on the bottom of the chute, and thereby interrupt the flow of coal in the chute long enough to pick out the foreign materials that were found in the flowing clean coal. The foreign materials included slate, pieces of wooden timbers, chunks of iron, and low grade or "boney" coal. The pickers were placed in sets of three, four, or five, depending on the quantity of coal flowing in the chute and the quantity of impurities in the coal.

The second method found the pickers seated along both sides of narrow wooden chutes. The chutes were located either in the direct route to the storage pocket or on smaller side chutes for more efficient handpicking. These pickers were also arranged in a series of three, four, or five depending on the length of the chute and the speed of the coal flowing past them. In this method, the pickers did not interrupt the flow of coal, and had to move quickly to remove the foreign material as it passed by them.

The pickers were controlled by the picker-boss who was so positioned that he could watch the effectiveness of their work. The boss more often than not was equipped with a switch or whip to remind the pickers of their slowness or ineptness in removing all the foreign materials. In some breakers, the boss was equipped with a wooden handle or baton, indicating the speed at which the pickers should work.

The age of breaker boys ranged from eight to sixteen years. The first law in Pennsylvania setting the minimum age of twelve for boys working around the mines was passed in 1885. Previous legislation had set the minimum age of twelve for boys employed in the mines, but had not made any provision for boys working on the outside. The only proof required was a certificate signed by a parent or guardian claiming the boy was of age. The state never enforced this requirement, and many underage boys were employed on the outside. This action by the state was an acceptable practice of the times, because many of the boys so employed were children of fathers that had been killed or injured in the mines. More often than not, they were the only working member of a family and their income, religiously handed over to their mother, provided food for the table. The boys worked the same hours per day as the miner when he worked, and only obtained a shorter workday when the miners obtained the eight-hour day.



FIGURE 26.—Girard Estate Trustees visiting orphan children in Girardville, Pennsylvania, 1891.
(Photograph courtesy of the Girard Estate.)

The boys were the lowest paid employees around the mines and during the period of this study received between 50 and 65 cents per day. Using the standard six-day working week, the boys averaged

between three and four dollars per week for their hand labor. According to labor statistics collected in 1883, there were 15,369 boys employed as pickers in the Pennsylvania anthracite fields.



FIGURE 27.—Girard Estate Trustees visiting orphan children in Girardville, Pennsylvania, 1891.
(Photograph courtesy of the Girard Estate.)



FIGURE 28.—Examples of breaker-boy operations. (Courtesy of the Library of Congress.)



FIGURE 29.—Examples of breaker-boy operations. (Photograph courtesy of the Girard Estate.)

Summary

The foregoing brief discussion of the development of the Girard Estate brings out the varied problems that faced the trustees during the early years. Not only were they confronted with court action challenging the provisions of Stephen Girard's will, but they also had to contend with: how many acres of land were owned; the lack of transportation facilities into the property; the excess production of anthracite in the 1840s and 1850s; and the lack of inhabitants on these lands.

The oversupply problem in the Schuylkill fields was of particular importance, in that the majority of the mining operations were conducted on leased lands, and the profits obtained by the lessees were reinvested in their respective operations. Considering the long life that was possible due to the large reserves of anthracite, these business ventures could be classed as short-term operations.

This problem was realized by P. W. Sheaffer, a prominent mining engineer of the region, who said in a paper presented to the Pottsville Scientific Association in 1858 that:

It is doubtless unfavorable to the profitable working of our coal beds that there is frequently both a want of capital and of the proper concentration of that which exists. Certainly no method of mining coal can be less economical than to fit out a number of separate operations upon comparatively small estates, with all the necessary engines and other improvements, instead of selecting a suitable point from which the coal of several adjacent tracts could be worked by one large operation equipped in the best manner. This policy can only be carried out effectively by the union of the proprietors of adjacent tracts. Indeed the pursuit of the coal below water level, requiring increased capital, has already tended to the concentration of the business of mining in fewer hands; and as the necessity of shafting to the lower coals becomes more apparent, the discussion among those interested, of an enlightened system of harmonious action is more and more frequent.

The operators did not heed Sheaffer's advice and continued to operate on a small scale and with limited financial resources. This is also evidenced when reviewing the lessees for the Girard lands beginning in 1862, even though the size of each lease was approximately 500 acres. The leases were granted to either individuals or groups of individuals, and the larger companies with better management and equipment did not enter the mining business until the mid-1870s. With the entrance of larger companies, it became quite evident that more stable and efficient mining operations resulted.

The improved conditions of the mines also can be seen from the annual reports of the Inspector of Mines of the Commonwealth of Pennsylvania. During the early small-size operations, the inspector reported many deficiencies in ventilation practices, unsafe mining conditions, and the use of inefficient haulage and sizing machinery. With the entrance of the larger size companies, came an improvement in safety conditions and the installation of more efficient equipment.

The question that is usually raised is why did the Girard Estate begin leasing operations during 1862 at a time when the anthracite industry as a whole was not enjoying much prosperity. Two reasons which seem logical are the increased need for manufactured goods during the Civil War, and the entrance of rail service into their property. Their anticipation of better conditions within the industry proved correct for by 1863 shipments had increased almost 20 percent and few stocks of coal remained at the end of the year.

All was not peaceful within the industry, however, as the price of coal began to rise and the shortage of miners—with the resulting importation of foreign labor—led to serious problems that were to plague the industry in later years.

During the period 1869 to 1884, the industry experienced labor stoppages, the "Molly Maguire"¹²¹ activities, the formation of operators' associations to regulate the coal trade, the control of large coal acreage by transportation companies, and the country's economic depression during 1873.

Each of these conditions sorely affected the industry, but the lessees of Girard Estate lands survived the industry's difficult times and gradually seemed to improve their operations. From 1863 to 1884, the lessees shipped to market approximately 18.4 million tons of anthracite and paid royalties to the Estate of over \$5 million.

Notes

1. Thomas F. Gordon, *History of Pennsylvania* (Philadelphia: Carey, Lea & Carey, 1829), p. 55.
2. Thomas Sergeant, *View of the Land Laws of Pennsylvania* (Philadelphia: James Kay, Jr. & Bros., 1838) p. 23. Also Gordon, op. cit. (note 1), p. 58.
3. Samuel Hazard, *Annals of Pennsylvania, 1609-1682* (Philadelphia: Hazard & Mitchell, 1850), pp. 637-643.
4. *Hazard's Register of Pennsylvania* (vol. 10, no. 9, September 1, 1832), p. 130.
 5. Sergeant, op. cit. (note 2), pp. 27-32.
 6. *Ibid.*, pp. 280-292.
 7. Gordon, op. cit. (note 1), p. 83.
 8. Sergeant, op. cit. (note 2), p. 37.
 9. Gordon, op. cit. (note 1), p. 178. Also Sergeant, op. cit. (note 2), p. 47.
 10. Sergeant, op. cit. (note 2), p. 47.
 11. *Ibid.*, p. 55.
 12. *The Pennsylvania Gazette*, June 20, 1765.
 13. Sergeant, op. cit. (note 2), p. 272.
 14. *Ibid.*, p. 64.
 15. *Ibid.*, p. 62.
 16. *Ibid.*, p. 63.
 17. *The Pennsylvania Gazette*, December 8, 1779.
18. John Purdon, *Digest of the Laws of Pennsylvania* (Philadelphia: M'Carty & Davis, 1837), p. 605.
 19. *Ibid.*, p. 627. Secretary of Land Office—David Kennedy; Receiver General—Francis Johnston; Surveyor General—John Lukens. Office of Receiver General abolished by act of March 21, 1809.
 20. *The Pennsylvania Gazette*, May 1, 1782.
 21. Purdon, op. cit. (note 18), p. 608.
 22. Sergeant, op. cit. (note 2), p. 75.
 23. Purdon, op. cit. (note 18), p. 609.
 24. *Ibid.*, p. 610.
 25. *Ibid.*, p. 618. The usual allowance for roads and highways was 6 percent.
 26. *Ibid.*, p. 621-622.
 27. *Ibid.*, p. 622. This section of the act was repealed by acts passed on March 28, 1814, and March 10, 1817.
 28. *Pennsylvania Legislative Acts, 1811* (Harrisburg: C. Gleim, 1811), p. 205. The act was passed on March 18, 1811.
29. Recording of deeds for this county, prior to its formation on March 18, 1811, were in Northumberland County and, at a later date, deeds were recorded in Schuylkill County.
 30. Loeser Manuscript Collection, Historical Society of Schuylkill County, Pottsville, Pennsylvania, vol. 10.
 31. Northumberland County, Deed Book I, April 18, 1797, p. 357. Also Schuylkill County, Deed Book, no. 9, June 3, 1830, p. 316.
 32. Northumberland County, Mortgage Book 1, April 18, 1797, p. 286. Also Schuylkill County, Mortgage Book 3, p. 662.
 33. Northumberland County, Deed Book 1, April 18, 1797, p. 356.
 34. Extract, Northumberland County Court, Sunbury, Pennsylvania, Record no. 43, session 1801. August 28, 1800.
 35. Philadelphia County, Deed Book IC. 13, April 29, 1811, p. 551.
 36. *Ibid.*, p. 553.
 37. *The Philadelphia Gazette*, February 17, 1830.
 38. *Ibid.*, April 24, 1830.
 39. Schuylkill County, Deed Book 10, May 10, 1830, p. 28. Also, Columbia County, Deed Book E, p. 407.
 40. Report made to Stephen Girard by John Thomson, Enoch Lewis, Thomas Baird, and Charles L. Schlatter on March 3, 1830. From original records found in manager's Office, Girard Estate, Girardville, Pennsylvania.
 41. *Hazard's Register of Pennsylvania* (vol. 9, no. 23, June 9, 1832), p. 365. One important tract (700 x 1200 feet) was purchased at Mount Carbon, fronting on the Schuylkill River, for loading canal boats.
 42. Stephen Simpson, *Biography of Stephen Girard* (Philadelphia: Thomas L. Bonsal, 1832) p. 42.
 43. *Annual Report of the Directors of City Trusts for the year 1870* (Philadelphia: King & Baird, 1871), p. 43.
 44. *Hazard's Register of Pennsylvania* (vol. 11, no. 21, May 25, 1833), p. 320.
 45. J. B. Gibson, Pennsylvania Supreme Court, delivered an opinion on March 29, 1833, in case of Girard vs. Mayor Alderman and citizens of Pennsylvania (4 Rawle, p. 322).
 46. *Hazard's Register of Pennsylvania* (vol. 9, no. 15, April 14, 1832), p. 234.
 47. Christian M. Straub, Prothonotary of Schuylkill County, Pennsylvania, issued in partition on June 21, 1848, for return to September 1848 court term.
 48. *Pottsville Miner's Journal*, August 9, 1851. Sheriff sale announced. September 20, 1851, sale to C. Loeser reported as effected.
 49. J. D. Meredith, *Report to Commissioners of the Girard Estate in Philadelphia*. Pottsville, letter dated November 8, 1847.
 50. *Pottsville Miner's Journal*, August 4, 1855.
 51. *Report of the Select Committee of Girard Estate* (Philadelphia: Privately printed, 1856), p. 10.
 52. *Pottsville Miner's Journal*, September 14, 1857.
 53. *Ibid.*, January 5, 1858.
 54. *Ibid.*, August 25, 1860.
 55. Refer to Appendix 3 for a copy of the lease agreement.
 56. Application of city of Philadelphia, trustee under the

will of Stephen Girard, to Court of Common Pleas, June 30, 1868.

57. *Referees Report to Judge of the Court of Common Pleas of Philadelphia County* (Pottsville: Privately printed, July 7, 1868).

58. *Philadelphia Press*, August 17, 1868.

59. *Journal of the Select Council of the City of Philadelphia* (Philadelphia: Privately printed, 1870), pp. 159–166.

60. *Annual Report...City Trusts...1870*, op. cit. (note 43), p. 7.

61. Tracts included in each lease are from original leases on file in the Office of the Engineer of the Girard Estate, Girardville, Pennsylvania.

62. *Report of the Inspector of Mines of Schuylkill County for the year 1869* (Harrisburg: Benj. Singerly, 1870), pp. 35–36.

63. *Annual Report...City Trusts...1870*, op. cit. (note 43), p. 13.

64. *Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania for the year 1872* (Harrisburg: Benj. Singerly, 1873), p. 116.

65. *Annual Report of the Directors of City Trusts for the year 1874* (Philadelphia: James B. Chandler, 1875), p. 38.

66. *Annual Report of the Directors of City Trusts for the year 1876* (Philadelphia: James B. Chandler, 1877), p. 46.

67. *Annual Report of the Directors of City Trusts for the year 1878* (Philadelphia: James B. Chandler, 1878), p. 38.

68. *Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania, for the year 1884* (Harrisburg: Lane S. Hart, 1885), p. 35.

69. *Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania for the year 1870* (Harrisburg: Benj. Singerly 1871), p. 170.

70. *Reports of the Inspectors...Anthracite Coal Regions 1872*, op. cit. (note 64), p. 114.

71. *Annual Report...City Trusts, 1876*, op. cit. (note 66), p. 47.

72. *Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania for the year 1877* (Harrisburg: Lane S. Hart, 1878), p. 29.

73. *Annual Report of the Board of Directors of City Trusts for the year 1895* (Philadelphia: J. B. Lippincott Co. 1896), p. 72.

74. *Reports of the Inspectors of Coal Mines of the Anthracite Coal Regions of Pennsylvania for the year 1871* (Harrisburg: Benj. Singerly, 1872), p. 189.

75. *Annual Reports of the Board of Directors of City Trusts for the year 1875* (Philadelphia: James B. Chandler, 1876), p. 31.

76. *Annual Report of the Board of Directors of City Trusts for the year 1877* (Philadelphia: James B. Chandler, 1878), p. 40.

77. *Reports of the Inspectors...Anthracite Coal Regions...1877*, op. cit. (note 72), p. 35.

78. *Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania for the year 1879* (Harrisburg: Lane S. Hart, 1880), p. 67.

79. *Annual Report of the Board of Directors of City Trusts for the year 1898* (Philadelphia: J. B. Lippincott, 1899), p. 88.

80. *Report of the Inspector...Schuylkill County...1869*, op. cit. (note 62), pp. 34, 35.

81. *Report of the Inspectors...Anthracite Coal Regions...1872*, op. cit. (note 64), p. 122.

82. *Annual Report...City Trusts 1877*, op. cit. (note 76), p. 42.

83. *Report of the Inspectors...Anthracite Coal Regions...1877*, op. cit. (note 72), p. 32.

84. *Annual Report of the Board of Directors of City Trusts for the year 1883* (Philadelphia: Burk & McFetridge, 1884), pp. 44–45.

85. *Report of the Inspectors...Anthracite Coal Regions...1884*, op. cit. (note 68), p. 48.

86. *Reports of the Inspectors...Anthracite Coal Regions...1870*, op. cit. (note 69), p. 171.

87. *Reports of the Inspectors...Anthracite Coal Regions...1872*, op. cit. (note 64), p. 119.

88. *Annual Report of the Board of Directors of City Trusts for the year 1879* (Philadelphia: The Chandlers Printing House, 1880), p. 39.

89. *Reports of the Inspectors...Anthracite Coal Regions...1879*, op. cit. (note 78), p. 87.

90. *Reports of the Inspectors...Anthracite Coal Regions...1884*, op. cit. (note 68), p. 80.

91. *Annual Report of the Board of Directors of City Trusts for the year 1899* (Philadelphia: Allen Lane & Scott, 1900), p. 77.

92. *Report of the Inspector...Schuylkill County...1869*, op. cit. (note 62), p. 33.

93. *Report of the Inspectors...Anthracite Coal Regions...1872*, op. cit. (note 64), p. 120.

94. *Annual Report...City Trusts...1883*, op. cit. (note 84), p. 46.

95. *Report of the Inspector...Schuylkill County...1869*, op. cit. (note 62), p. 137.

96. *Reports of the Inspectors...of Anthracite Coal Regions...1870*, op. cit. (note 69), pp. 153, 154.

97. *Annual Report of the Directors of City Trusts for the year 1871* (Philadelphia: John C. Clark & Sons, 1872), p. 29.

98. *Reports of the Inspectors...Anthracite Coal Regions...1871*, op. cit. (note 74), p. 199.

99. *Annual Report of the Directors of City Trusts for the year 1873* (Philadelphia: James B. Chandler, 1874), p. 61.

100. *Annual Report...City Trusts, 1883*, op. cit. (note 84), p. 47.

101. *Report of the Inspector...Schuylkill County for 1869*, op. cit. (note 62), p. 165.

102. *Reports of the Inspectors...Anthracite Coal Regions, 1870*, op. cit. (note 69), p. 188.

103. *Reports of the Inspectors of Mines of the Anthracite Coal Regions for the year 1881* (Harrisburg: Lane S. Hart, 1882), p. 92.

104. *Annual Report of the Directors of City Trusts for the year 1882* (Philadelphia: Buck & McFetridge, 1883), p. 51.

105. *Report of the Inspector...Schuylkill County 1869*, op. cit. (note 62), p. 48.

106. *Reports of the Inspectors...Anthracite Coal Regions 1870*, op. cit. (note 69), p. 185.

107. *Reports of the Inspectors of Mines of the Anthracite Coal Regions for the year 1880* (Harrisburg: Lane S. Hart, 1881), p. 25.
108. *Ibid.*, p. 23.
109. *Ibid.*, p. 26.
110. *Ibid.*, p. 50.
111. *Annual Report of the Board of Directors of City Trusts for the year 1881* (Philadelphia: A. T. Zeising, 1882), p. 25, and *Report for 1882*, op. cit. (note 104), p. 27.
112. *Reports of the Inspectors...Anthracite Coal Regions, 1881*, op. cit. (note 103), p. 77.
113. *Report of the Inspector...Schuylkill County, 1869*, op. cit. (note 62), p. 59.
114. *Report of the Inspectors...Anthracite Coal Regions, 1870*, op. cit. (note 69), p. 189.
115. *Reports of the Inspectors...Anthracite Coal Regions, 1871*, op. cit. (note 74), p. 173.
116. *Reports of the Inspectors...Anthracite Coal Regions, 1872*, op. cit. (note 64), p. 119.
117. *Reports of the Inspectors...Anthracite Coal Regions, 1879*, op. cit. (note 78), p. 43.
118. *Annual Report...City Trusts, 1879*, op. cit. (note 88), p. 43.
119. *Reports of the Inspectors...Anthracite Coal Regions, 1880*, op. cit. (note 107), p. 22.
120. *Annual Report...City Trusts, 1878*, op. cit. (note 67), p. 58.
121. A secret organization, active in the Pennsylvania anthracite fields between 1863 and 1877, which attempted to alleviate oppressive management conditions.

Appendixes

APPENDIX 1. Tables

TABLE 1.—Tracts of land purchased by Stephen Girard in 1830 and listed by patent date.

<i>Warrantee</i>	<i>Warrant date</i>	<i>Surveyed</i>	<i>Acres</i>	<i>Name</i>	<i>Patented*</i>
Daniel Hurley	13 Jun 1793	28 Sep 1793	403	Derry	1 Jul 1794
Paul Hannahl	"	1 Oct 1793	400	Jamaica	2 Jul 1794
Thomas Davidson	"	14 Oct 1793	400	Morrisville	"
William Dewart	"	30 Sep 1793	400	Worcester	"
Alexander Gibson	"	10 Oct 1793	400	Alexandria	3 Jul 1794
Joseph Evans	"	11 Nov 1793	400	Beau Dessart	"
David Haines	"	14 Oct 1793	415	Smyrna	"
John Alexander	10 Jan 1794	16 Mar 1794	400	Adris	16 Oct 1794
Thomas Hiltzheimer	"	8 Mar 1794	400	Blamont	"
Robert Hiltzheimer	"	7 Mar 1794	400	Colonna	"
Johnston Beasley	"	"	400	Dublin	"
Amos Wickersham	"	8 Mar 1794	400	Essex	"
Nathan Beach	"	3 Mar 1794	394 $\frac{1}{4}$	Fidelity	"
William Steadman	"	1 Mar 1794	400	Japan	"
Jeremiah Jackson	"	"	400	Dango	"
George Beckham	"	7 Mar 1794	400	Lybia	"
Thomas Paschall	"	1 Mar 1794	400	Norristown	"
W. P. Brady	"	4 Mar 1794	400	Nantz	"
James Chapman	"	6 Mar 1794	400	Naples	"
Joseph Howell	"	4 Mar 1794	400	New Castle	"
Israel Cope	"	3 Mar 1794	400	New Mark	"
Isaac Norris	"	8 Mar 1794	423	Missa	"
Joseph Paschall	"	4 Mar 1794	400	Orwell	"
Samuel Reese	"	6 Mar 1794	400	Ottawa	"
Edward Lynch	"	4 Mar 1794	400	Straban	"
Robert Johns	13 Jun 1793	1 Oct 1793	400	Evershot	"
Robert White	"	14 Oct 1793	400	Hampton	17 Oct 1794
Thomas Lytle	"	30 Sep 1793	400	Littleton	"
Peter Johns	"	"	400	Lutter	"
David Taggart	"	3 Oct 1793	400	Lycia	"
Roger Beatty	30 Jun 1793	2 Oct 1793	415	Newark	"
Alexander Rohrson	13 Jun 1793	14 Oct 1793	400	Newtown	"
George Moore	"	11 Oct 1793	408	Oswego Hill	"
Walter Beatty	30 Jun 1793	2 Oct 1793	400	Pleasant	"
Peter Beatty	13 Jun 1793	1 Oct 1793	400	Verlin	"
John Palmer	"	9 Oct 1793	400	Betis	"
John Johns	"	30 Sep 1793	400	Birza	20 Oct 1794
George Derr	"	11 Oct 1793	408	Bucks Den	"
Simon Beatty	"	1 Oct 1793	400	Chatham	"

<i>Warrantee</i>	<i>Warrant date</i>	<i>Surveyed</i>	<i>Acres</i>	<i>Name</i>	<i>Patented*</i>
James Chapman	"	10 Oct 1793	400	Collima	"
Thomas Barnes, Jr.	10 Jan 1794	8 Mar 1794	428	Elburg	"
John Barber	13 Jun 1793	14 Oct 1793	400	Estella	"
Peter Benson	10 Jan 1794	6 Mar 1794	400	Estonia	"
Andrew Kennedy	"	5 Mar 1794	400	Languadoc	"
Thomas P. Cope	"	3 Mar 1794	465½	Larado	"
Josiah Haines	"	1 Mar 1794	359½	Lutzen	"
Herman Beatty	13 Jan 1793	1 Oct 1793	400	Mount Rose	"
John Blackey	10 Jan 1794	1 Mar 1794	478	Natobia	"
Charles Cockran	13 Jun 1793	10 Oct 1793	400	Neyland	"
John Donaldson	"	"	400	Nichomedia	"
John Lockart	10 Jan 1794	1 Mar 1794	434	Norristown	"
James McNeal	"	3 Mar 1794	400	Oudenberg	"
Thomas Grant	"	5 Mar 1794	400	Bermuda	21 Oct 1794
John Brady	"	4 Mar 1794	400	Bilboa	"
John Barron, Jr.	"	5 Mar 1794	400	Blanco	"
Solomon Beatty	30 Jun 1793	2 Oct 1793	400	Fara	"
Nathaniel Brown	10 Jan 1794	1 Mar 1794	400	Hope	"
Francis Nicols	13 Jun 1793	10 Oct 1794	400	Mount Royal	"
Samuel Scott	10 Jan 1794	5 Mar 1794	400	Otoque	"
William Shannon	"	7 Mar 1794	400	Africa	23 Oct 1794
Thomas Hammer	13 Jun 1793	4 Oct 1793	400	Berlin	"
Thomas Palmer	"	3 Oct 1793	400	Cliff	"
Daniel Reese	10 Jan 1794	6 Mar 1794	400	Norfolk	"
Robert Irwin**	24 Jun 1793	10 Oct 1793	450½	Bern	24 Oct 1794
George McCandish	13 Jun 1793	14 Oct 1794	400	Evesham	6 Nov 1794
William Black	"	30 Sep 1793	400	Fayette	"
Samuel Beatty	"	1 Oct 1793	412	Hempstead	"
John Lytle	"	30 Sep 1793	400	Safe Retreat	"

Source: Girard Estate Records, Girardville, Penna.

*Robert Morris was patentee for all tract on date shown.

**Later proven to be incorrect as location was in error.

TABLE 2.—Size and location of lands in the Girard Estate based on original surveys and warrants.

<i>Warrantee</i>	<i>Warrant date</i>	<i>Acres</i>		<i>Official situation*</i>
		<i>Official</i>	<i>Actual</i>	
John Barber	13 Jun 1793	400	487.144**	Mahanoy Township
Alexander Rohrson	"	400	448.152	"
Herman Beatty	"	400	446.144	"
Peter Beatty	"	400	416.24	"
Robert White	"	400	453.09	"
George McCandish	"	400	455.124	"
Samuel Beatty	"	412	457.128	"
Simon Beatty	"	400	431.60	"
Thomas Davidson	"	400	422.124	290.28** Union Township 112.46 Rush Township 20.50 Mahanoy Township
Peter Swartz	"	400	106	Union Township
Joseph Evans	"	400	458.33¼	"

<i>Warrantee</i>	<i>Warrant date</i>	<i>Acres</i>		<i>Official situation*</i>
		<i>Official</i>	<i>Actual</i>	
Charles Cockran	"	400	476.07	"
James Chapman	"	400	445.53	"
John Donaldson	"	400	464.08	179.70 Union Township 284.98 Rush Township
Alexander Gibson	"	400	521.126	109.97 Union Township 412.29 Rush Township
George Moore	"	407.8	554.104 $\frac{1}{4}$	Union Township
George Derr	"	408	545.33	"
David Haines	"	415	628.149 $\frac{1}{2}$	553.22 Union Township 75.127 $\frac{1}{2}$ Mahanoy Township
Roger Beatty	30 Jun 1793	415	507.136	Union Township
Solomon Beatty	"	400	446.136	255 Union Township 211.136 Rush Township
Walter Beatty	"	400	473.14	Rush Township
Francis Nichols	13 Jun 1793	400	515.19	"
Robert Johns	"	400	444.24	"
John Palmer	"	400	453.10	"
David Taggart	"	400	440.90	"
Daniel Hurley	"	403	325	Mahanoy Township
William Dewart	"	400	472.71	"
William Black	"	400	472.71	"
Peter Johns	"	400	475.89	457.67 Mahanoy Township 18.22 Rush Township
Paul Hannah	"	400	457.14	412.98 Mahanoy Township 45.42 Rush Township
Thomas Hammer	"	400	457.14	Rush Township
Thomas Palmer	"	400	438.52	"
John Lytle	"	400	472.71	Mahanoy Township
Thomas Lytle	"	400	472.71	"
John Johns	"	400	466.115 $\frac{1}{4}$	385.75 $\frac{1}{4}$ Mahanoy Township 31.40 Rush Township
Johnston Beasley	10 Jan 1794	400	380.18	Conyngham Township, Columbia County
Thomas Hiltzheimer	"	400	430.17	"
Amos Wickersham	"	400	466.20	328 Conyngham Township, Columbia County 138.20 Union Township
Thomas Barnes, Jr.	"	428		36 Conyngham Township, Columbia County
Robert Hiltzheimer	"	400	366.127	Conyngham Township, Columbia County
William Shannon	"	400	412.83	405.58 Conyngham Township, Columbia County 7.25 Union Township
George Beckham	"	400	426.96	64.100 Conyngham Township, Columbia County 345.52 Union Township 16.104 Butler Township
Isaac Norris	"	423	406.55	Union Township
Thomas P. Cope	"	465.5	362.77	338.45 Union Township 24.32 Mahanoy Township
Peter Benson	"	400	385	310.125 Union Township 74.35 Butler Township
John Barron, Jr.	"	400	431.132	275.145 Union Township 56.159 Butler Township 98.148 Mahanoy Township
Andrew Kennedy	"	400	423.132	198.110 Union Township 225.22 Mahanoy Township
Edward Lynch	"	400	424.104	122.135 Union Township 301.129 Mahanoy Township
James Howell	"	400	392.61	44.151 Union Township 347.70 Mahanoy Township

<i>Warrantee</i>	<i>Warrant date</i>	<i>Acres</i>		<i>Official situation*</i>
		<i>Official</i>	<i>Actual</i>	
Israel Cope	"	400	399.78	1.02 Union Township 398.76 Mahanoy Township
John Alexander	"	400	399.12	Butler Township
James Chapman	"	400	452.56	408.61 Butler Township 43.155 Mahanoy Township
Samuel Scott	"	400	456.60½	32.100 Butler Township 423.120½ Mahanoy Township
John Brady	"	400	466.119	Mahanoy Township
Joseph Paschall	"	400	439.14	"
Nathan Beach	"	394.25	463.14	"
Daniel Reese	"	400	381.75	Butler Township
Samuel Reese	"	400	459.26	"
Thomas Grant	"	400	456.60	403.23 Butler Township 53.37 Mahanoy Township
William P. Brady	"	400	458.85	54.12 Butler Township 404.73 Mahanoy Township
Thomas Paschall	"	400	424.92	Mahanoy Township
John Blackey	"	478	524.65	"
James McNeal	"	400	488.73	484.50 Mahanoy Township 4.23 Union Township
Jeremiah Jackson	"	400	481.117	Mahanoy Township
William Steadman	"	400	486.43	"
Josiah Haines	"	359.5	645.140	215.60 Mahanoy Township 430.80 Union Township
Nathaniel Brown	"	400	467.99	458.122 Mahanoy Township 8.137 Union Township
John Lockhart	"	434	410.10	112.90 Mahanoy Township 397.80 Union Township

*All situations located in Schuylkill County, unless otherwise noted.

**Numerals to the right of the decimal in actual acres and in official situation represent perches. 160 perches = 1 acre.

TABLE 3.—Lands lost to heirs of Stephen Girard after the Pennsylvania Supreme Court decision of 1833.

<i>Warrantees</i>	<i>Name of tract</i>	<i>Acres</i>
Peter Benson	Estonia	400
John Barron, Jr.	Blanco	423
Andrew Kennedy	Languedo	400
Samuel Bitler } George Moore }	Oswego	408
George Derr	Bucks Den	408
Daniel Haines	Smyrna	415
Roger Beatty	Newark	415
Walter Beatty	Pleasant Hill	400
Solomon Beatty	Fara	400
Francis Nichols	Mount Royal	400
TOTAL 10		4,069

TABLE 4.—Agents of the Girard Estate on lands in Schuylkill and Columbia counties, Pennsylvania, 1830–1911, inclusive.

<i>Name</i>	<i>Service</i>	<i>Remarks</i>
William Boyd	1830–1836	
L. Whitney	1837–1838	
Jacob Sheaf	1839–1846	
J. D. Meredith	1847–1855	
E. T. Farquahar } H. W. Poole }	1856–1857	Served only a few months and was succeeded by Poole
F. B. Kaercher	1857–1864	
Stephen Harris	18 Feb 1864–10 Mar 1874	1st Engineer
Heber S. Thompson	Apr 1874–19 Mar 1911	

TABLE 5.—Lands lost to Christopher Loeser through public sale on September 3, 1851.

<i>Warrantees</i>	<i>Name of tract</i>	<i>Acres</i>
Daniel Hurley	Derry	403
William Dewart	Worcester	400
John Lytle	Safe Retreat	400
Thomas Lytle	Littelon	472
William Black	Fayette	400
Peter Johns	Lutter	400
John Johns	Birza	400
Paul Hannah	Jamaica	400
Robert Johns	Evershot	400
John Palmer	Betis	400
Thomas Hammer	Berlin	400
David Taggart	Lycia	400
Thomas Palmer	Cliff	400
TOTAL 13 tracts		5,275
		5,299¼ (re-survey)

TABLE 6.—Lease holders of Girard Estate collieries, 1862–1884.

<i>Lease No.</i>	<i>Colliery name and owner</i>	<i>Years of operation</i>
1	<i>Conner (Girardville, Hammond)</i>	
	Col. James J. Conner	1862–1869
	Agard, Moodie, & Company	1870–1876 (Aug.)
	Philadelphia & Reading Coal & Iron Company	1876–1938
2	<i>Girard</i>	
	Cornelius Garretson	1863–1866
	Theodore Garretson	1867–1876 (Oct.)
	Philadelphia & Reading Coal & Iron Company	1876–1895
3	<i>Union (North Ashland)</i>	
	John Anderson & Company	1863–1876
	Philadelphia & Reading Coal & Iron Company	1877–1898
4	<i>Shenandoah (Packer No. 2 & No. 4)</i>	
	Franklin B. Kaersher	1863–1865
	Girard Mutual Coal Company	1865–1869
	Philadelphia Coal Company	1870–1880
	Lehigh Valley Coal Company	1881–1939
5	<i>Continental</i>	
	Carter, Shoener & Company	1863–1866
	Continental Coal Company	1866–1868
	Goodridge & Audenried	1869–1871
	Gorrell & Audenried	1871–1878
	Lehigh Valley Coal Company	1879–1898
6	<i>Colorado (Packer No. 1 & No. 5)</i>	
	Seitzinger & Huntzinger	1863–1867
	Philadelphia Coal Company	1867–1880
	Lehigh Valley Coal Company	1881–1939
7	<i>Bear Ridge (East & West)</i>	
	Dengler & Robinson	1863–1866
	Boston & Mahanoy Coal Company	1867–1869
	Bear Ridge Coal Company	1870–1879
	Myers, McGeary & Company	1880–1883
	Philadelphia & Reading Coal & Iron Company	1883–1898
8	<i>William Penn</i>	
	Samuel E. Griscom & Company	1864–1872
	William Penn Coal Company	1873–1878
	Edward & George Brooke	1878–1892
9	<i>Kehley's Run</i>	
	Thomas Coal Company	1865–1905
10	<i>Lehigh (Packer No. 3)</i>	
	Herring & Williams	1866–1869
	Philadelphia Coal Company	1870–1880
	Lehigh Valley Coal Company	1881–1939
11	<i>Combined with Packer No. 1</i>	
	Philadelphia Coal Company	1875–1883
	Lehigh Valley Coal Company	1883–1939

Source: *Annual Reports of the Board of Directors of City Trusts, Philadelphia, Pennsylvania, 1870 to 1884.*

TABLE 7.—Annual shipments in thousands of gross tons

<i>Lease</i>	<i>Colliery and lessees</i>	1863	1864	1865	1866	1867	1868	1869	1870	1871
1	<i>Philadelphia & Reading C&I Co.</i> Hammond Colliery } Conner Colliery }	40.8	84.4	66.7	90.7	76.8	62.4	67.5	29.7	118.0
2	<i>Philadelphia & Reading C&I Co.</i> Girard Colliery	—	13.7	32.8	49.1	67.9	54.8	60.5	38.8	40.3
3	<i>Philadelphia & Reading C&I Co.</i> North Ashland Colliery	—	15.4	36.5	41.3	49.4	48.4	45.0	41.1	44.4
4	<i>Lehigh Valley Coal Co.</i> Packer No. 2 Colliery } Packer No. 4 Colliery }	—	1.5	36.4	33.6	30.3	59.5	71.9	81.1	80.9
5	<i>Lehigh Valley Coal Co.</i> Continental Colliery	—	2.8	24.0	38.7	43.3	37.0	31.4	37.7	73.6
6	<i>Lehigh Valley Coal Co.</i> Packer No. 5 Colliery	—	—	22.4	55.4	95.4	117.4	112.7	125.1	121.9
7	<i>Philadelphia & Reading C&I Co.</i> West Bear Ridge Colliery } East Bear Ridge Colliery }	—	—	10.1	44.6	43.8	19.3	4.7	0.5	2.3
8	<i>William Penn Coal Co.</i> William Penn Colliery	—	—	9.1	59.9	65.4	28.3	27.0	35.4	53.6
9	<i>Thomas Coal Co.</i> Kehley's Run Colliery	—	—	2.4	10.1	35.2	18.9	67.9	79.6	68.6
10	<i>Lehigh Valley Coal Co.</i> Packer No. 3 Colliery	—	—	—	1.0	10.4	5.7	4.0	3.0	17.4
TOTAL		40.8	117.8	240.4	424.4	517.9	541.7	492.6	472.0	621.0

Source: *Annual Reports of the Board of Directors of City Trusts, 1870 to 1884.*

from the leases on the Girard Estate, 1863–1884.

1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884
98.2	142.1	146.6	123.9	114.6	121.1 102.6	99.2 78.7	116.6 130.8	70.7 105.3	97.1 134.4	93.8 135.4	117.2 147.8	95.8 135.9
38.0	33.1	48.8	46.0	46.3	95.0	67.6	101.9	80.9	69.2	103.8	81.4	59.3
53.4	89.4	59.3	56.5	36.0	38.7	70.6	127.9	98.7	118.8	120.5	122.0	102.1
60.7	149.9	137.3	63.0	112.1	89.2 101.9	88.5 118.8	144.1 248.3	117.0 167.1	126.8 200.6	98.3 218.1	111.7 225.4	128.4 206.5
82.2	69.7	54.8	48.9	59.6	25.2	53.9	107.2	79.4	62.1	16.8	63.9	62.5
121.2	89.1	45.6	46.0	59.9	86.0	62.2	85.3	64.6	81.6	61.5	48.5	34.2
4.6	33.0	71.8 71.8	40.3 40.3	47.3 47.4	23.5 85.0	44.5 51.1	89.3 30.0	73.4 64.5	63.2 74.7	70.1 77.5	72.8 108.3	45.0 70.7
85.6	140.7	146.4	106.6	118.2	164.5	120.4	178.5	173.2	221.9	227.9	228.1	233.2
102.8	99.3	87.7	65.5	89.4	68.9	100.5	151.3	82.1	—	79.6	115.3	110.8
53.4	65.6	97.4	67.6	75.7	117.2	84.0	111.5	74.7	170.0	158.0	155.5	122.2
700.7	911.9	967.6	704.6	806.5	1,118.7	1,040.0	1,622.7	1,251.6	1,420.0	1,451.3	1,597.9	1,406.5

TABLE 8.—Annual shipments and royalties for Girard Estate leases, 1863–1884.

<i>Year</i>	<i>Gross tons</i>	<i>Royalty</i>
1863	40,788	\$ 4,245.87
1864	117,814	12,115.87
1865	240,466	36,937.71
1866	424,386	68,052.37
1867	516,014	93,273.23
1868	451,787	113,484.24
1869	492,644	110,904.68
1870	471,898	81,278.82
1871	621,016	125,543.69
1872	700,750	135,382.69
1873	910,818	230,450.40
1874	967,602	263,498.61
1875	704,545	158,013.64
1876	791,558	217,679.63
1877	1,118,729	321,792.24
1878	1,039,968	337,332.20
1879	1,622,728	463,644.60
1880	1,250,422	408,328.95
1881	1,419,990	414,443.66
1882	1,451,305	467,809.82
1883	1,597,958	498,961.00
1884	1,406,516	450,949.21
TOTALS	18,359,702	\$5,009,123.12

Source: *Annual Reports of the Board of Directors of City Trusts, Philadelphia, Pennsylvania, 1870 to 1884.*

TABLE 9.—Quantity and percentage of shipments of anthracite from the Girard Estate collieries, by sizes and in tons, 1863–1884.

<i>Year</i>	<i>Larger than chestnut</i>	<i>%</i>	<i>Chestnut</i>	<i>%</i>	<i>Pea</i>	<i>%</i>	<i>Buckwheat</i>	<i>%</i>
1863	36,709	90.0	4,078	10.0				
1864	106,176	90.1	11,647	9.9				
1865	220,756	91.8	19,710	8.2				
1866	384,891	90.7	39,485	9.3				
1867	453,163	87.5	62,943	12.2	1,800	0.3		
1868	396,979	87.9	50,628	11.2	4,179	0.9		
1869	427,153	86.7	55,153	11.2	10,336	2.1		
1870	397,623	84.2	57,544	12.2	16,830	3.6		
1871	519,284	83.6	76,229	12.3	25,503	4.1		
1872	581,940	83.0	83,333	11.9	35,475	5.1		
1873	755,354	82.8	110,860	12.2	45,724	5.0		
1874	791,830	81.8	111,776	11.6	64,000	6.6		
1875	550,758	78.2	93,799	13.3	59,987	8.5		
1876	614,404	76.2	117,063	14.5	74,992	9.3		
1877	862,931	77.1	153,062	13.7	102,765	9.2		
1878	803,182	77.2	130,196	12.5	105,962	10.2	696	0.1
1879	1,211,126	75.3	212,377	13.1	185,661	11.4	3,581	0.1
1880	962,207	76.9	141,890	11.3	135,832	10.9	11,755	0.9
1881	1,070,869	75.4	159,687	11.2	158,712	11.2	30,722	2.2
1882	1,082,303	74.6	136,959	9.4	163,524	11.3	68,518	4.7
1883	1,147,559	71.8	194,392	12.2	190,245	11.9	65,788	4.1
1884	979,702	69.7	167,251	11.9	177,243	12.6	82,318	5.8

Source: *Annual Reports of the Board of Directors of City Trusts, 1870 to 1884.*

TABLE 10.—Screen sizes of anthracite.

<i>Trade name</i>	<i>Size range</i>
Lump	+7
Steamboat	+3½—7
Broken	+2¾—3½
Egg	+2 —2¾
Stove	+1¾—2
Chestnut	+¾ —1¾
Pea	+½ —¾
Buckwheat	+¾—1½

APPENDIX 2. Development of Rail Connections Serving the Girard Estate

The Danville and Pottsville Railroad, 1826-1840

The purpose of the proposed Danville and Pottsville Railroad was to open both the Shenandoah and Mahanoy valleys, connect them by a tunnel, and mine the coal from the lands encompassed. On April 8, 1826, the Pennsylvania legislature passed an act which incorporated the Danville and Pottsville Railroad Company and granted it the right to hold not more than 1,000 acres of coal lands.¹

Originally, when the company had been set up in 1826, it was authorized to acquire \$300,000 in capital stock. A supplementary act passed by the legislature authorized that the capital stock could be increased to \$1,000,000, to reopen their subscription book for stock sales, and to construct a branch line to Sunbury.²

Moncure Robinson, then employed by the Pennsylvania Canal Commissioners, made a survey and determined the route of the railroad. The cost of this survey was absorbed by the Commonwealth.³ Robinson surveyed the route during the summer of

1. *Laws and By-Laws of the Danville and Pottsville Railroad Company* (Philadelphia: L. R. Bailey, 1832), p. 19.

2. *Ibid.*, pp. 20-22.

3. *Pennsylvania Canal Commissioners Annual Report to the Senate of Pennsylvania, December 13, 1828* (Harrisburg: C. Stambaugh, 1829), p. 7.

1829, and in his report stated that "from the confluence of the North and West Branches at Sunbury, the survey line will be 45½ or 49½ miles, according to the course pursued; and the distance from Danville, 42½ or 45½ miles to Pottsville. The total expense will be \$626,611."⁴

A public meeting by the railroad's backers was held in Sunbury, Pennsylvania, on November 22, 1830, in an effort to encourage support from the residents of Columbia and Northumberland counties and to endorse a resolution that immediate steps be taken to begin construction of the railroad.⁵ A similar meeting was called in Pottsville, Pennsylvania, on November 27, 1830, to obtain the same type of support from the residents of Schuylkill County.⁶ Encouraged by the support received from these meetings, the officers of the railroad company began to make preparations for the early construction of the line.

Early in 1831, public subscriptions of stock in the railroad were made available. As the projected route of the railroad would traverse lands held by Girard, he became very much interested in this project and on March 6, 1831, subscribed \$200,000 towards its construction.⁷

Girard, learning of the engineering abilities of Robinson—at this point, the engineer for the Little Schuylkill Railroad—offered him the position as engineer of the Danville and Pottsville system. Robinson undertook the assignment, and according to his calculations based on new surveys and additional engineering considerations, he estimated that the construction costs for the eastern portion of the road would be approximately \$649,534.69. F. W. Rawle, engineer on the western portion of the road gave his estimate of construction costs at \$267,648.40.⁸ The engineer reports, presented to the stockholders at a meeting held on November

4. *Ibid.*, p. 8, and Engineer's Report Series 6, p. 14 (attached). Also *Considerations of Immediately Constructing a Central Railway* (Philadelphia: privately printed, 1830), p. 5.

5. *Hazard's Register of Pennsylvania* (vol. 3, no. 24, December 11, 1830), p. 380.

6. *Ibid.*, p. 381.

7. Stephen Simpson, *Biography of Stephen Girard* (Philadelphia: Thomas L. Bonsal, 1832), p. 199.

8. *Engineer's Report of the Danville and Pottsville Railroad Company* (Philadelphia: Clark & Raser, 1831), pp. 12 and 27.

12, 1831, were accepted and authorization was given to proceed with the construction of the line.⁹

The company received a temporary setback when its chief patron, Girard, passed away on December 26, 1831. At the time of his death Girard had not completed providing the funds under his subscription, and for a while there was some doubt whether the estate would follow his wishes; however, when the financial plight of the company was made known, Girard's executors agreed to provide the amount of money still due.¹⁰

Robinson suggested that the proposed route would permit the subdivision of the construction effort into three parts.¹¹

The first section, five miles in length, extends from the point of intersection with the Mount Carbon Railroad to the top of Broad Mountain.

The second section, eleven miles 218 poles¹² long extends from the top of Broad Mountain, to the ground between the Mahanoy and Shamokin Creeks.

The third section, thirteen miles 275 poles long, from this last named Summit to the terminus of the eastern division of the road.

Construction of the railroad began at Wadesville where the proposed road was to connect with the Mount Carbon Railroad which had handled coal traffic since April 19, 1831. The Mount Carbon Railroad was constructed at a cost of \$97,000 for 6¾ miles of road, with the eastern section extending from Mount Carbon to the main fork of Norwegian Creek, then up the eastern side of the fork to Wadesville, and also up the western fork to Oak Hall.¹³

During the year 1833, while the construction of the railroad was in progress the officials of the company made an application to the Philadelphia City Council—under whose control the operation of the Girard Estate had been placed—for permission to begin mining operations on Bear Ridge by drilling a tunnel through Bear Ridge to reach the coal seams known to exist there.¹⁴ Moncure Robinson's plan for the tunnel (later to be named the

Girard Tunnel) was to drive the tunnel for a distance of 125 yards, when according to engineering surveys of the area the top of the large coal seam lying buried in the mountain would be revealed. The development work on the tunnel proceeded for a distance of approximately 100 feet when solid rock was encountered. To continue the operation would require the purchase of additional drilling equipment for which no funds were available.¹⁵

After several attempts by the management to obtain the required capital, all of which proved to be fruitless, the work on the tunnel was terminated and a broad search was begun for new sources of anthracite.

During the early months of 1834, the company found itself in an unusual situation. The eastern portion of the railroad had been completed, but no coal had been uncovered and mined.

The company also found itself in such a financial situation that it appeared the road would never be completed from the Danville terminus to connect with the section already completed within the time limit specified in the original charter. This stipulated that the road had to be completed within three years.

A supplementary act passed by the Pennsylvania legislature in 1828 extended the completion date for seven years. Again, by another supplementary act approved in 1832, the completion time of the road was further extended to April 14, 1838.¹⁶

The directors of the company applied to the legislature for financial assistance to complete the construction of the road. The legislature came to their aid and on April 8, 1834, approved an act whereby the state agreed to pay the annual interest charges of five percent to any person or persons who would supply the \$300,000 required to complete the railroad.¹⁷ As this guarantee by the state was for a 27-year period, the amount of capital

9. *Hazard's Register of Pennsylvania* (vol. 8, no. 21, November 19, 1831), p. 330. *Annual Report of the President and Managers of the Danville and Pottsville Railroad, 1832* (Philadelphia: I. Ashmead, 1833), p. 5.

10. *Ibid.* (vol. 9, no. 23, June 9, 1832), p. 365.

11. *Engineers Report...*, op. cit., p. 10.

12. Pole is equivalent to rod.

13. *Pottsville Miner's Journal*, April 23, 1831.

14. *Hazard's Register of Pennsylvania* (vol. 11, no. 21, May 25, 1833), p. 321.

15. *Report of the Superintendent of the Danville and Pottsville Railroad* (Philadelphia: privately printed, 1833), p. 7.

16. *Laws & By-Laws of the Danville and Pottsville Railroad Company* (Philadelphia: L. R. Bailey, 1851) p. 24.

17. *Ibid.*, p. 30. Also *Pottsville Miner's Journal*, June 14, 1834.

needed by the company was quickly obtained when the subscription books were opened in Philadelphia.

After several prospecting pits had been dug in the area surrounding the tunnel, the company's efforts proved successful and a coal seam was uncovered on the northern side of Bear Ridge. Work in this location proceeded at a rapid rate, and it now finally appeared that the company was in the coal business. The eastern end of the road was officially opened with a coal train passing over it on September 24, 1834.¹⁸

It is estimated that approximately 1,000 tons of anthracite were mined during 1834 with 290 tons being transported on the railroad to market. The difference between these two tonnages represents the amount of coal used locally by the company for its auxiliary enterprises such as sawmills, steam boilers, and heating.

The construction effort in the eastern section of the road involved the driving of a railroad tunnel—200 feet long, arched with brick and stone masonry—through Mine Hill (part of the Broad Mountain range), the installation of six inclined planes, and the laying of 12½ miles of single track. The total cost of this section of the railroad amounted to approximately \$300,000 which included \$22,000 for the tunnel development.

A contemporary account of the activities at the mine, has been excerpted from an article that appeared in *Hazard's Register*.¹⁹

At present the mines are wrought on the North side, some fifty feet below the summit [Bear Ridge], to which the coal is brought and emptied from the car into a chute, down which it descends about 200 feet, when it enters another chute which passes down an air shaft 100 feet into the tunnel [Girard] near its present termination from which it falls into cars and [is] brought to the railroad. With all these disadvantages and all this extra labor, the Company is now getting out and sending down the railroad to Mount Carbon, about 80 tons per day. The tunnel [Girard] when completed will open a passage to the great Mahanoy coal beds and the eastern part of the Girard lands, and will give value to both, which are comparatively valueless now.

The railroad and colliery operations continued to grow for the next two years as the eastern

18. *Pottsville Miner's Journal*, September 27, 1834.

19. *Hazard's Register of Pennsylvania* (vol. 16 no. 2, July 8, 1835), p. 62.

markets were hungry for anthracite. The expenses connected with both operations were relatively stable and at a low level, and after many troublesome times the future of the company seemed bright.

The mining operations required large quantities of lumber and, to have a supply readily available, four sawmills had been established in the valley. With work readily available, the company established a mining community, Montgomery,²⁰ for their employees to provide them with respectable living conditions. At about the same time, two grist mills were placed in operation. With a total of three industries in the area, increased tonnage became available for the railroad.

According to the annual report for the railroad issued in January 1838, the following tonnages of items had been transported:²¹

	Coal tons	Lumber in feet
1834	290	—
1835	6,200	493,705
1836	12,304	400,000 (1,300 cross ties not included)

According to the same report, Thomas Sharp stated that in 1836 repairs to the road totaled \$755 and for 1837 the amount was \$487. He also tabulated the estimated cost of the transportation and repairs for the inclined planes to equal \$9,012 for the ensuing year.

The estimated cost for each incline plane, including labor and repairs, is listed below.

Mahanoy Plane (No. 5)

Rope expenses	\$1,000
Engineers (2) 34 weeks @ \$20	680
Plane tenders (8) 34 weeks @ \$48	1,632
20 tons of coal for engine:	
\$1/ton—34 weeks	\$680
Expense of machinery—34 weeks	680
	TOTAL \$4,672

20. Named after General Daniel Montgomery, the first president of the Danville & Pottsville Railroad Company and an active supporter of the rail system in this area.

21. *Annual Report of the Danville & Pottsville Railroad Company for the year 1837* (Philadelphia: privately printed, 1838), p. 5.

Planes 1, 2, 3 & 4

2 men—\$7.50/week/plane/34 weeks	\$2,040
Expense of machinery—34 weeks	800
	\$2,840
Superintendent for railroad	1,500
TOTAL	\$9,012

To cover the estimated cost of \$9,012, the Company calculated the capacity of the road to be a minimum of 960 tons per day and for a 34-week annual operation to be 195,804 tons. Using a freight charge of five cents per ton, the annual income received for moving coal amounted to \$9,792, thus leaving a surplus for contingencies of \$780.

During 1837 work proceeded at a rapid rate on the remaining western section of the road, and on August 15, 1837, this section was formally opened.²² The western section extended a distance of 20 miles, beginning at the Susquehanna River at Sunbury and ending at Shamokin. This terminus actually extended 2¼ miles into the Shamokin Coal field. By this time, the company had expended the total amount of \$659,641.01 on the railroad construction and there still remained the middle section of the road, some 12½ miles that needed to be built. It is interesting to point out that the amount expended to date exceeded the original estimate made by Robinson, and the middle section still remained to be built.

Work continued favorably at the mines and during the year the Girard Tunnel was extended to a length of 120 yards in the search of the coal seam which was later named the Mammoth. No coal was found, however, and it was estimated that another 80 yards of tunnel had to be driven at an additional cost of \$6,000.²³ As the money was not available, the work on the tunnel (Girard) again was stopped.

The company, however, was not so fortunate in its projects for future expansion due to the general financial unrest within the country that began in the spring of 1837, and it barely continued to exist

during 1837 and 1838. The coal market suffered greatly during this period and many large coal mining operations closed down. Even after financial conditions improved, the demand for anthracite did not increase according to the company's estimate. In fact, the markets were overstocked with coal as every remaining producer attempted his re-entry into the supply system. The total anthracite production for Pennsylvania in 1837 was 738,697 tons, a decrease of 140,747 tons or 16 per cent below the preceding year's high of 897,444. By the end of 1839, tonnage was up by 79,805 tons over 1838, but still not above the high output of the mine during 1837.

During 1838, the Company applied for financial assistance to the Pennsylvania legislature for continuing the construction and operation of the road. The legislature came to their aid again and in a section of an act passed on April 14, 1838, agreed to continue the internal improvements of the state and authorized the governor to subscribe for stock in the railroad in the amount of \$50,000.²⁴ The act also listed the following conditions for which this money was to be expended: (1) in making the necessary improvements upon the western section of the road; (2) further extension of this road eastwardly from its present point of completion, 20½ miles from Sunbury; and (3) the line of the railroad from Pottsville to Port Clinton should be located through or near the borough of Orwigsburg unless the ground, on examination, be found unfavorable.

The money was used to complete the Sunbury branch which was approximately 14 miles in length and extended between the Susquehanna River basin at Sunbury and Paxinos.

The road was opened for use in August 1838, and the Shamokin field was connected to the river-transportation facilities at Sunbury.²⁵

The coal trade from this region actually got moving in full swing the following year, 1839.

While this effort proved satisfactory for the mines located along the western section of the railroad, the eastern end was idle and no coal moved over

22. *Pottsville Miner's Journal*, August 22, 1837.

23. *Annual Report of the President and Managers of the Danville & Pottsville Railroad, 1838* (Philadelphia: J. & W. Kite, 1839), p. 9.

24. *Laws of Pennsylvania* (Harrisburg: Theo. Fenn, 1838), p. 442. Also *Pottsville Miner's Journal*, April 25, 1838.

25. *Pottsville Miner's Journal*, August 18, 1838. The engine "North Star" and tender cost \$6,500.

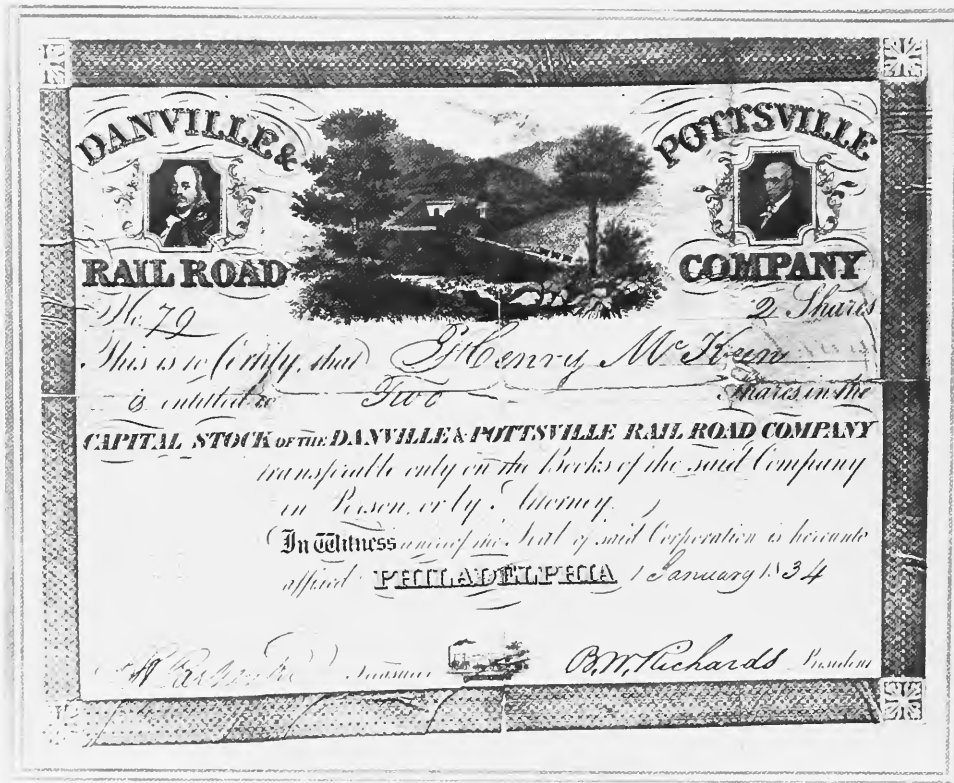


FIGURE 30.—Copy of a stock certificate for two shares in the Danville and Pottsville Railroad Company issued January 1, 1834. (Courtesy of the Historical Society of Schuylkill County.)

the road and planes. The track and planes eventually deteriorated and, thereby, ended the company's effort. The portion constructed to transport the coal from the Girard Estate lands and its extensive coal-bearing areas was to lay idle for some 27 years.

Appendix 2 provides a translation of Michel Chevalier's report on the engineering and construction methods of the Pottsville to Danville Railroad that was included in his published work "Historie et Description Des Voies De Communication Aux Etats-Unis," published in Paris in 1841.

Planes on the Danville and Pottsville Railroad

Number	Elevation in feet	Length in feet	Inclination in degrees
1	105	667	9
2	202	807	14
3	159	550	16
4	147	861	9 $\frac{3}{4}$
5	345	1,625	12
6	166	884	10 $\frac{3}{4}$
Total rise and fall	1,124		
Total length of planes		5,394	

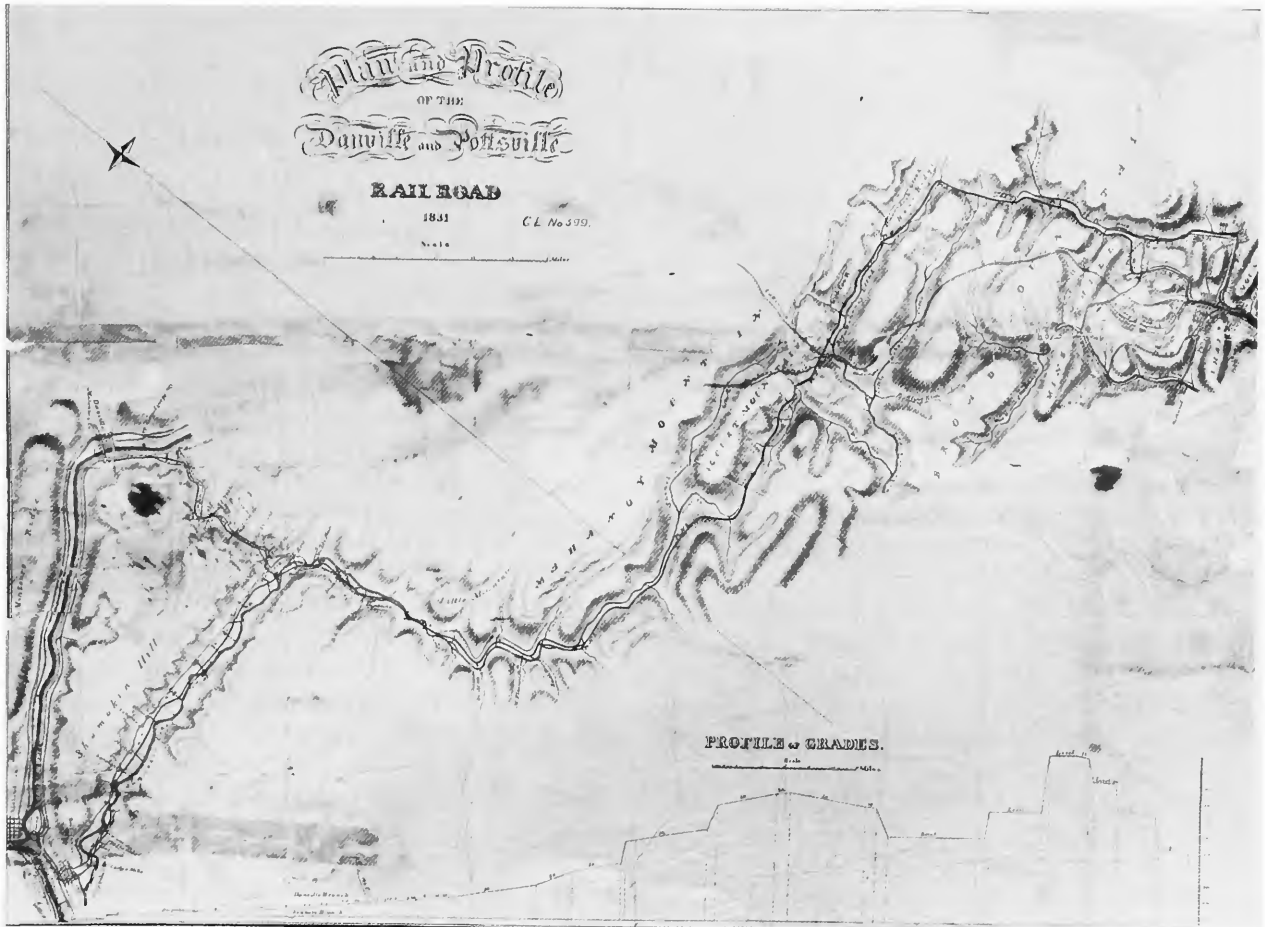


FIGURE 31.—Plan and profile of the Danville and Pottsville Railroad, 1831.

Distance between Planes on the Danville and Pottsville Railroad

	<i>Miles</i>
Foot of Plane No. 1 from Mount Carbon	3.73
Center of Tunnel from Mount Carbon	4.00
Foot of Plane No. 2 from center of Tunnel	1.26
Foot of Plane No. 3 from Foot of Plane No. 2	1.61
Foot of Plane No. 4 from Foot of Plane No. 3	.95
Head of Plane No. 5 to Foot of Plane No. 4	1.77
Head of Plane No. 5 to Girard Tunnel	.65
Head of Plane No. 5 to Head of Plane No. 6	2.41
Railroad completed beyond Head of Plane No. 6 (within 600 feet of Girardville)	.63

Source: Annual report of the company for the year 1838.

The Mahanoy and Broad Mountain Railroad

The Mahanoy and Broad Mountain Railroad Company was granted a charter by the Pennsylvania legislature on March 29, 1859.²⁶ One of the commissioners appointed was F. B. Kaercher, the agent for the Girard Estate. The charter authorized the construction of a railroad from a point in Mahanoy or Butler townships, Schuylkill County, by the most expedient and practicable route to connect with the Philadelphia and Reading Railroad, or any of its lateral roads. The charter also granted the privilege of making lateral roads into the Mine Run, Shenandoah, Mahanoy, and New Boston coal basins.

During 1861, the construction of the railroad began with a connection at the Mill Creek and Mine Hill Navigation and Railroad near St. Clair. The Philadelphia and Reading was greatly interested in this new construction for it opened up new territory and the anthracite mined would eventually be shipped over its line. The Reading offered financial assistance in the construction of a portion of the railroad which, needless to say, was eagerly accepted by the Mahanoy and Broad Mountain officers. The contract between the two companies took effect on July 1, 1862, and the Reading acquired control of a portion of the Mahanoy and Broad Mountain road from a point about one-half mile west of the plane over Mahanoy Mountain into Mahanoy City and St. Clair.²⁷

The road was formally opened on May 30, 1862, when a shipment of anthracite from the Conner and Patterson mines was delivered to St. Clair.²⁸ The most interesting part of the Mahanoy and Broad Mountain was the Mahanoy Plane, which handled both loaded and empty cars at the same time. The Plane was 2,466 feet in length, and overcame a vertical descent of 350 feet with a maximum inclination of 22 feet per 100 feet. The capacity of the Plane was 700 tons per hour. The steel cables were 2½ inches in diameter and 2,900 feet long.

On September 1, 1870, the Mahanoy and Broad Mountain Railroad and several other lateral lines

were merged into the Mahanoy and Shamokin Railroad.²⁹ This new company, on March 25, 1871, became part of the Philadelphia and Reading Railroad system.³⁰

The Lehigh Valley Railroad

The Lehigh Valley Railroad gained control of the Lehigh and Mahanoy Railroad on July 1, 1866.³¹ The acquisition of this railroad provided the Lehigh Valley with a main line extending from Black Creek Junction (connecting with the Beaver Meadow and Hazleton divisions) to Mount Carmel, a distance of 40 miles, including an additional 20 miles of sidings and short laterals. This line was designated as the Mahanoy Division of the Lehigh Valley Railroad and included stations at Mahanoy City, Shenandoah, and Raven Run, each an important producing center of anthracite from lands belonging to the Girard Estate.

The Lehigh Valley Railroad, being unable to own coal lands under its charter, acquired the Lehigh Valley Coal Company to provide sufficient coal tonnage. The Lehigh Valley Coal Company acquired lease No. 5 for the Continental Colliery from the Girard Estate in 1879;³² on January 1, 1880, the company acquired lease No. 4 from the Estate which included the Shenandoah and Packer No. 4 collieries; and on January 1, 1881, it had acquired leases 6 and 10 for the Colorado and Lehigh collieries from the Estate.³³

28. *Pottsville Miner's Journal*, May 31, 1862.

29. *Laws of Pennsylvania, 1870* (Harrisburg: State Printer, 1871), p. 724. Other railroads were the Mahanoy Valley, Enterprise, Shamokin and Treverton, and Zerbe Valley.

30. *Laws of Pennsylvania, 1871* (Harrisburg: State Printer, 1872), p. 91.

31. *Annual Report of the Lehigh Valley Railroad Company, 1866* (Philadelphia: H. G. Leisenring, 1867), p. 11.

32. *Annual Report of the Board of Directors of City Trusts for the year 1879* (Philadelphia: The Chandlers Printing House, 1880), p. 39.

33. *Annual Report of the Board of Directors of City Trust for the year 1881* (Philadelphia: A. T. Zeising, 1882), pp. 39 and 41.

26. *Laws of Pennsylvania, 1859* (Harrisburg: State Printer, 1860), p. 822.

27. *Annual Report of the Philadelphia and Reading Railroad Company, 1862* (Philadelphia: Moss and Company, 1863), p. 22.

*Michel Chevalier's Report on the
Railroad from Pottsville to Sunbury,
1841*

The Pottsville to Sunbury Railroad, an undertaking of Moncure Robinson, was still unfinished when visited by M. Chevalier during 1835 and the following description of the construction of the road includes illustrations. This literal translation from his publication "Mechanical Engineering in America," published in Paris in 1841, was made by John N. Hoffman.

The railroad begins at the eastern terminus (Wadesville) some three miles from Pottsville where it joins the Mount Carbon Railroad. The railroad climbs Broad Mountain by six inclined planes, of which four are on the east side and two are on the west side along Mill Creek Valley. It reaches an altitude of 692 feet at the top of Broad Mountain, 180 feet above the point of departure.

The railroad descends Broad Mountain gradually, keeping as close as possible to the flanks of the mountain, into the Grand Mahanoy Valley. It continues some distance through flat county, near the proposed site of Girardville, then by means of three inclined planes over Locust Mountain it continues into the Shamokin Valley. The line follows the valley of Shamokin into Sunbury for a total distance of approximately 45 miles. The main purpose of the railroad is to facilitate the exploitation of the very rich coal seams, found in the Broad Mountain and at Girardville.

The group of six inclined planes that cross Broad Mountain are now complete. The three inclined planes on Locust Mountain are still to be erected.

The longest plane is No. 5, called the Mahanoy, and it extends 1,625 feet at a twelve-degree inclination.

Of the six planes on Broad Mountain, five have a right profile; one, No. 5, has a curve for a profile. As each of the planes are very steep, the slope has been reduced at the foot of each with a short extension.

The first four numbered Planes (1 through 4) all face in a southernly direction and are operated without the aid of steam engines. Between them the railroad has a descending grade toward the south of approximately 20 feet to the mile, and the coal cars are easily able to negotiate these planes.

The construction and operation of Planes 1 through 4 are all on the same principle and the following description serves them equally. [The engineering details of the system seem crude, when compared to later systems, but it must be kept in mind that at the time of the construction of this railroad capital was difficult to obtain and Moncure Robinson was required to develop a workable system at the lowest possible cost.]

Each of the four planes are equipped with an endless chain lying in the grooves of two wheels [pullies], one placed at the top of the plane and the other placed at the bottom of the plane. The chain runs through a slot of wood that is notched to fit each link and avoid the rubbing action normally found with a cast-iron pulley [wheel]. The wood was oak and even though it doesn't wear away very quickly, it is easily replaced when excessively worn.

Each of the wheels is formed of two flat iron parts joined together by bolts between which the crown, made of pieces of oak, is placed. Each wheel is installed in a masonry cavity and covered by a plank floor on which the railway passes.

The wheel [pulley] at the top of the Plane is equipped with a band brake that rests on the cast-iron edges of the wheel. The operator tightens the brake by means of a lever attached to the squared end of the pulley axle.

All along the inclined plane the chain is supported in the groove of a series of cast-iron pullies. The vertical link of the chain rests in the groove of the pulley thereby reducing friction to a minimum.

The brake described above is sufficient to control the speed of the cars on Planes 1 and 4, but not adequate for the control of cars on Planes 2 and 3.

To each of these two last-mentioned Planes, in conjunction with the band brake, a fan-type regulator is installed. This regulator, used previously with success by M. Jarvis on the Carbondale to Honesdale Railroad, was improved by Moncure Robinson for use here.

At the head of the incline—between the wheel that holds the pulley and the wheel on which the brake band bears—is placed a large toothed wheel meshing with two others; each being fixed to a shaft which has fan paddles at the upper end. This very simple apparatus regulates the speed of the cars almost instantaneously and since at the end of each incline the slope diminishes, the cars arrive at this point with very little speed.

The fan regulator is so constructed that when it becomes necessary to lessen the speed of the cars, the number of arms [blades] can be increased. Each arm is two inches thick, six inches wide, and fifteen feet long. The cost of the entire installation at the top of Plane 2 was approximately \$2,800; the cost of the mechanisms for each plane averaged \$1,000.

To avoid delays in the operations of Planes 1 through 4 ballast cars are provided to help keep the system in balance when loaded coal cars were not available.

The construction of Planes 5 and 6 were somewhat similar, as both dipped toward the north leading into Mahanoy Valley. The operation of these Planes were exactly opposite those of the first Planes discussed, in that the movements of coal was up and both required more suitable control apparatus for the loaded wagons on the Planes.

Moncure Robinson undoubtedly felt that steam engines would better serve the operations; however, being limited in financial resources, he first devised a working system without them. The counterbalance mechanism consists of sheet-iron tanks each mounted on a spring carriage, and filled with water for the downward descent. The water required for the tanks was stored in a reservoir at the top of each Plane, and by an interconnecting wooden pipeline the water for Plane 6 comes from Plane 5. The capacity of each watertank is 1,056 gallons.

The unusual curvature on Plane No. 5 requires some special arrangements as the circumstances do not permit the use of a endless rope or chain. Therefore, it was necessary for the rope to be coiled around a drum mounted on a horizontal axis and placed at the head of the Plane.

To improve the balance system at this Plane, a 90-horsepower steam engine—at a cost of approximately \$7,500—was installed to aid in the control of the speed of the cars. The engine is the largest one in the county with a 33-foot-diameter drum for holding the nine-inch-diameter cable. The combination of these two control systems solved the speed problems, and the eastern section of the road is now in use.

The wagon in use on the railroad for the transport of the coal is very solid, well built, easy to empty, and weighs approximately one ton. Each wagon holds approximately three tons of coal, and four wagons hooked together travel the Plane. At

the top and bottom of each inclined Plane, there are three railroad tracks—one of them serving as siding. These tracks, independent at the ordinary crossovers, connect with each other through the use of three turning platforms.

Between Planes 1 and 2, a tunnel was driven through the mountain with one track. The tunnel, lined with brick, was 800 feet in length and cost approximately \$22,000. The total amount of money expended in the construction of the eastern section of the railroad was \$360,000. The cost is fairly high when compared to other railroads constructed in the region, but one must consider that the district where the work is being undertaken is far removed from easy supply sources.

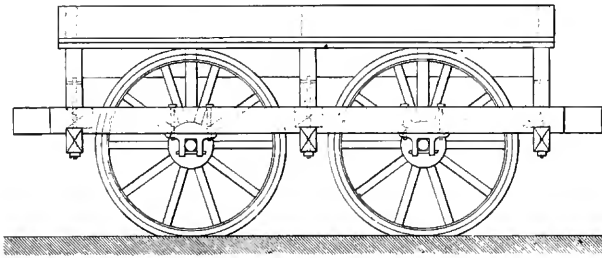
The details of laying the railroad, as followed by Moncure Robinson, consisted of laying cross-sills of white oak upon a well-packed, crushed-stone base. In certain locations, two-foot-square cubes of stone were used. The sills were eight inches in diameter by seven and one-half feet long, hewn out in the center, and placed on six-foot centers. On top of the sills are placed wooden rails, three-by-seven-inch in random lengths, secured to the sills by wooden wedges (keys). The iron plates [bands], one-half by two inch in various lengths are fastened to the wooden rail by four-inch iron spikes placed fifteen inches apart. Broken stone, filled in between the rails, serves as a horse path. The capacity of such a railroad system is calculated to handle locomotives weighing six tons.

At the end of 1837, the Pottsville to Sunbury Railroad was sufficiently complete to begin to send forth the products of the rich mineral region, one part toward the waters of the Susquehanna, and the other toward those of the Schuylkill. The rails were laid from the point of intersection of the Mount Carbon Railroad on the eastern end to Girardville some fourteen and one-half miles. On the west side, the railroad was extended some twenty and one-half miles from Sunbury. Five branches connect many various anthracite mines. The western section could be served by locomotives over a development of some thirty miles. Thus, only some fourteen miles remains to be opened between the two sections of the east and the west.

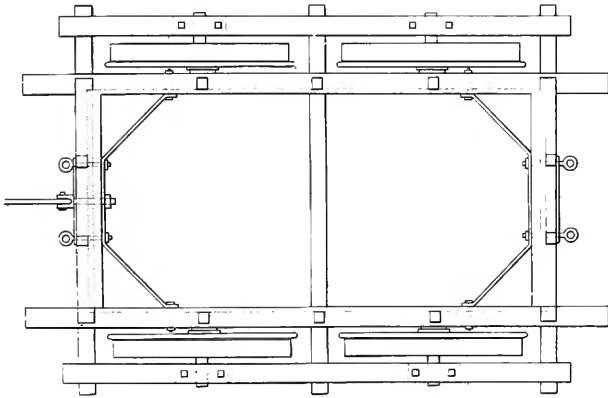
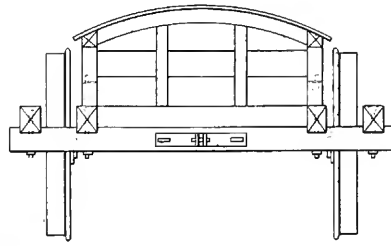
The following illustrations are reproduced from Michel Chevalier Report on the railroad from Pottsville to Sunbury.

FIGURE A.—Ballast car.

SIDE ELEVATION



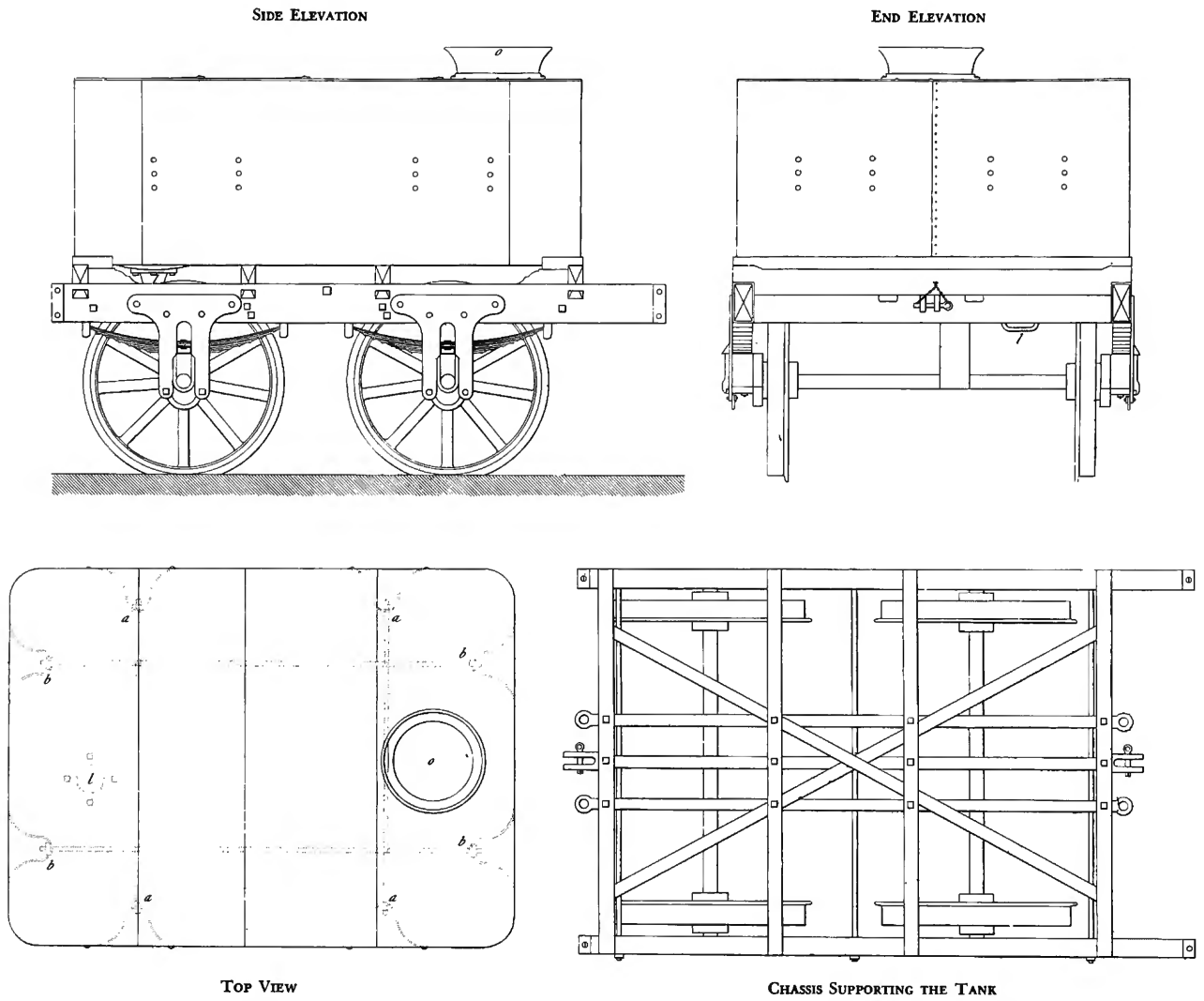
END ELEVATION



LAYOUT OF WHEELS

SCALE 1" = 2'

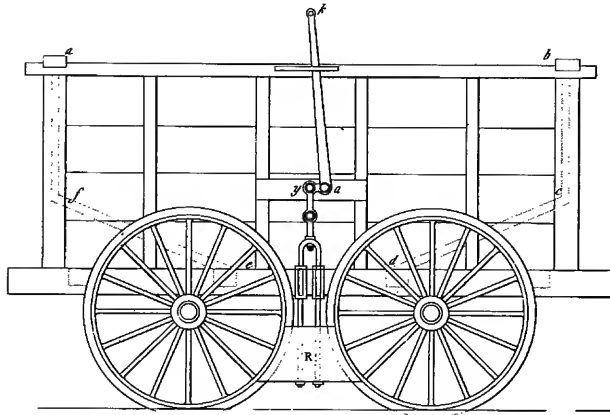
FIGURE B.—Water tank car.



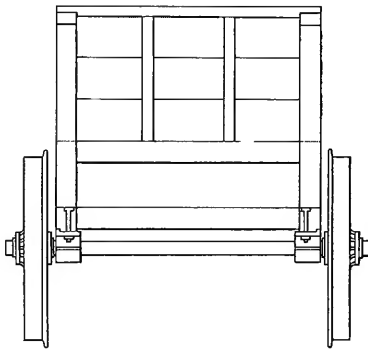
SCALE 1" = 2'

FIGURE C.—Coal wagon.

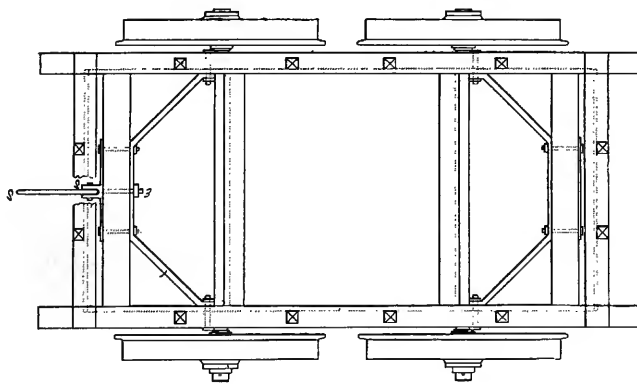
SIDE ELEVATION



END ELEVATION

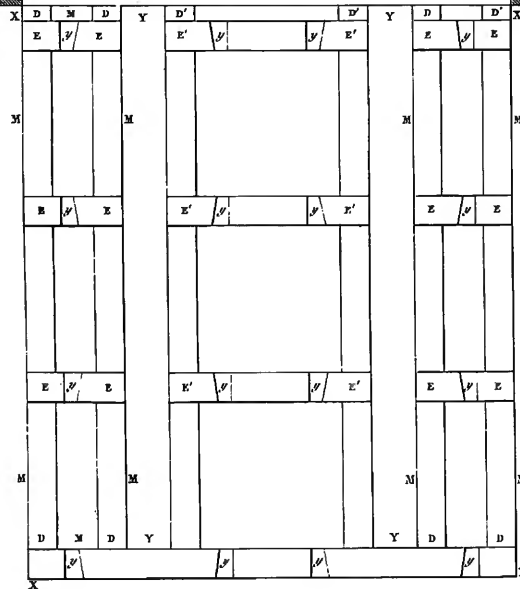
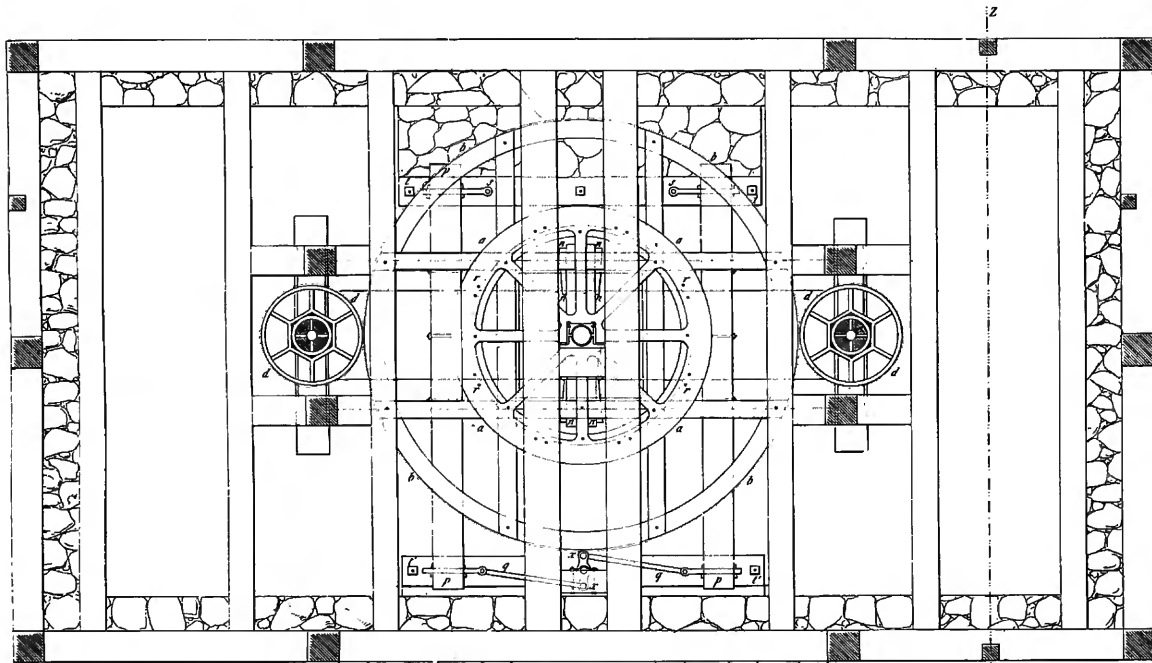


LAYOUT OF WHEELS

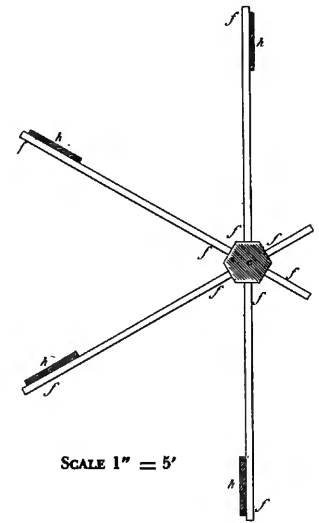


SCALE 1" = 2'

FIGURE E.—Plan view of mechanism of the fan regulator at top of inclined Plane No. 2.



SCALE 1" = 5'



SCALE 1" = 5'

FIGURE F.—Horizontal plan of fan blades.

FIGURE G.—Details of brake and shed enclosure on Mahanoy Plane No. 5.

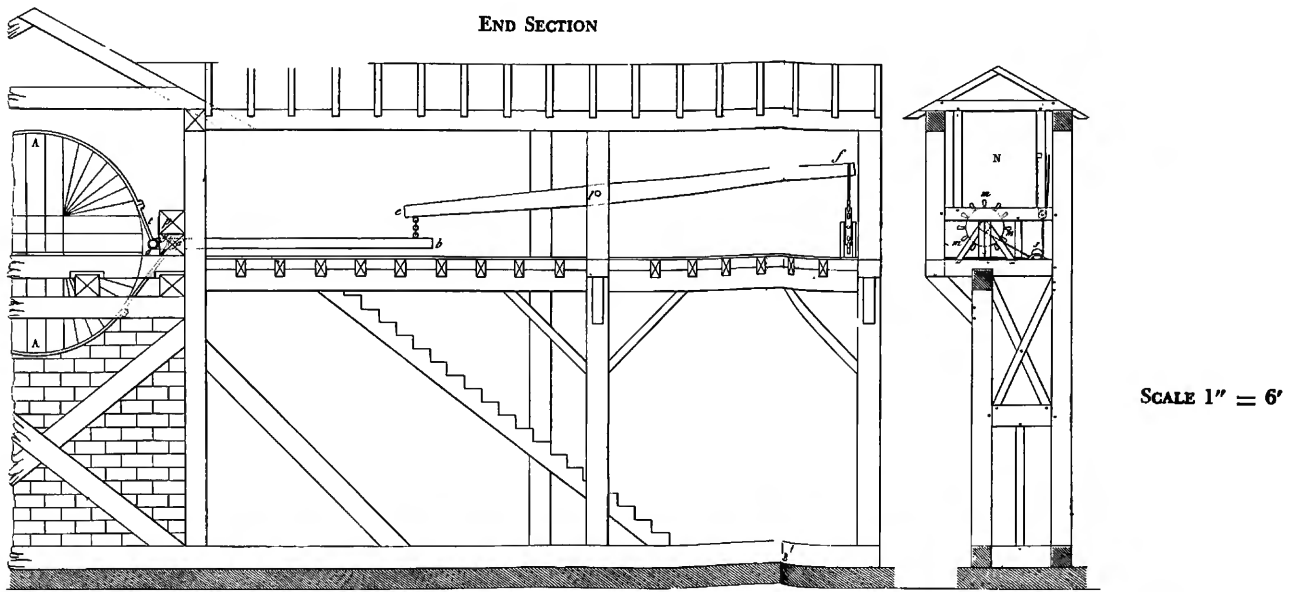
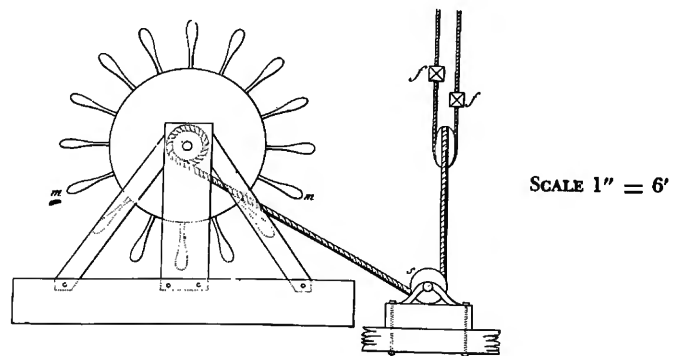


FIGURE H.—Detail of brake control and pulley on Mahanoy Plane No. 5.



APPENDIX 3. Form of First Lease Negotiated by the Girard Estate, 1862

Form of Lease for Coal Lands Belonging to the City of Philadelphia, in Schuylkill County, Pa.

MEMORANDUM of a lease made the ____ day of ____ A.D. 1861 between the City of Philadelphia, Trustee under the will of Stephen Girard, deceased, of the first part, and ____ of the other part, as follows:

FIRST. The said City of Philadelphia, Trustee as aforesaid, hereby leases to the party of the second part, the right to mine, dig, and carry away, as the property of the said party of the second part, the coal above water level on, in and from a certain tract of land known as in the warrantee name of _____ in _____ township, Schuylkill County, Pennsylvania, bounded as follows, and as more fully set forth and described in the plan hereto annexed, for the term of five years from the date hereof.

SECOND. The said lessee, in consideration thereof, covenants and agrees to take from and ship in each and every year of said lease, not less than fifty thousand tons of coal, and to pay for at least fifty thousand tons of coal in each and every year of said lease, in monthly payments on the tenth day of each and every month of said lease, to the said City Trustee as aforesaid, a rent or royalty of 25 cents per ton for each ton of prepared coal,

and 10 cents per ton for each Chestnut coal taken from the said mines. It being understood that the Chestnut coal shall not exceed in any one year more than ten per cent of the whole amount mined in each and every year, or if said Chestnut coal shall exceed such ten per cent, the excess shall be paid for at the rate hereinbefore provided for prepared coal: And provided further, That all coal passing over a one-inch mesh screen shall be deemed and taken and paid for as prepared coal.

The weight of said coal to be determined by the certificates of weight from the scales of the railroad on which said coal may be shipped, which certificates are to be furnished by the lessee to said party of the first part, or their agent, together with a detailed statement of the kind and amount of coal mined, one in each and every month, at the time said rent is paid.

THIRD. The said lessee shall work said mines in the most approved way of modern mining, with due regard to developing the several veins worked, driving proper gangways, laying proper railway tracks therein and therefrom, to convey the coal mined from the breaker, as also the dirt and slate from the breaker to the place of deposit, and in propping up, draining and ventilating said mines; all said mining and work, draining and ventilating to be done in the most approved and workmanlike manner; the location of all improvements, and opening of veins, to be under the direction of the party of the first part; their agent and engineer. All the veins on the said tract to be worked by said lessee simultaneously and continuously, and the dirt to be deposited on such parts of the surface as shall be designated by the party of the first part, their agent, or engineer: and provided, That no deposit of dirt shall be made by said lessee in or so near any stream of water that the same shall be liable to be washed therein.

Said lease shall not be assigned in part or in whole during said term, nor shall any person or persons be associated in interest with said lessee in said mining operations, without the consent in writing, of the said party of the first part, or its successors, being first had and obtained; and said mines, gangways and mining operations, and the machinery connected therewith, together with the buildings and houses to be erected as hereinafter provided, shall at all reasonable times be open to the inspection of the said lessors, or any person or

persons appointed by them; and in case said lease, or any right therein, shall be attached, levied upon, or taken in execution by virtue of any proceedings, judgement, or decree, whether at law or in equity, as the property of said lessees, or any parties holding with, under, or from the, and sold during said term, said lease shall thereupon cease, determine, and become void, and all machinery, improvements, and buildings, erected by said party of the second part, in accordance herewith, shall in such case become absolutely the property of the said lessors, as though originally erected by them.

FOURTH. The said lessee hereby agrees to put up and erect on the property of said lessors, trustees as aforesaid, a substantial and properly arranged breaker, with proper screens, with a steam engine of at least thirty horse power, and all the necessary fixtures, tracks, and railways, and machinery capable of breaking and preparing for the market not less than one hundred thousand tons of coal per annum, and for the successful working of the said mines. Also a blacksmith shop and a carpenter shop, a substantial stone-house for storing powder and twelve blocks of frame tenant houses, each block containing two houses; said houses to have a kitchen attached to each house, and said houses to be two stories each in height for the front house, and the kitchens each one and a half story in height; said blocks to be thirty-two feet in front, by twenty-eight feet in depth, including the kitchen; the houses and kitchens to be built on a stone foundation, with a cellar under each kitchen, and said houses and kitchens to be erected under the direction of the party of the first part, their agent, or engineer; and said lessee agrees to keep said houses and kitchens in good repair, when completed, and to pay a rent of 50 cents per week during said term for each house when completed, payable at the time the rent for said coal is payable, and said rent to commence on the ____ day of ____ and thence until the close of the said lease.

And said lessee further agrees to lay and put down the railroad leading from the drift to the breaker, as also, the railroad from the breaker to the branch road, together with all necessary lateral railroads under the breaker, and leading to the main railroad, under the direction of the party of the first part, their agent or engineer.

Said breaker and all improvements, to be com-

pletely finished, and to be made and erected of good materials, and in a workmanlike manner, within six months from the date thereof, and the shipments of coal to commence on the ____ day of ____ the year for the delivery of the said fifty thousand tons to commence from the last mentioned date, and all said breakers, machinery, engine, railway, or other tracks, inside or outside the mine, as also, all such railroads, fixtures, houses, and improvements whatever, mentioned, in this item, at the expiration of said lease to be the property of said lessor, who thereupon shall have the right, without any other process, to take possession thereof.

FIFTH. The said City Trustee, as aforesaid, hereby agrees that the said lessee shall be allowed a sum not exceeding twenty thousand dollars for the breaker, railways, roads, trucks, machinery, and all houses, improvements, and items whatever stipulated to be erected by him, as set forth in the foregoing fourth section. The said lessee to retain towards said sum the whole rent and royalty of the coal mined by him during the first six months said rent shall be payable as herein provided, and thereafter one-half of the rent or royalty of the coal so mined, as also to retain the whole of the rents of the miners' houses during the said first ____ months the same shall be payable, and one-half thereof, thereafter, until the whole of said sum of not exceeding twenty thousand dollars, is fully repaid by such retention to said lessee. It being understood and agreed, that said lessee shall not be absolutely allowed the sum of twenty thousand dollars for said breaker, railways, tracks, roads, machinery, houses, improvements, and items aforesaid, but only such sum, whatever, the same may be, not exceeding twenty thousand dollars, that he may have actually laid out and expended for such breaker, railways, tracks, machinery, houses, improvements, and items whatever stipulated to be erected by him as aforesaid; said sum to be ascertained by receipts or vouchers furnished by said lessee to the said party of the first part, or their agent.

And provided further, That said lessee shall only be allowed to retain said rent during the first six months, on satisfactory evidence being furnished by him to said party of the first part, or their agent, of the payment by said lessee, from time to time, to the parties employed by him to finish, build, and

construct, such breaker, tracks, railways, houses, machinery, and improvements whatever, of the amounts severally due them, or a proportionate part thereof.

And provided further, That said lessee shall only be allowed to retain such part of said rent after the expiration of six months from the completion of all such breaker, tracks, railways, machinery, and improvements, as said lessors or their agent may deem proper, in order to indemnify and protect the said lessors against any loss by reasons of liens, or other incumbrances being filed or held against said premises, breaker, machinery, houses, and improvements, by workmen or others. And the said lessee to keep said breaker, engine, machinery, improvements, and miners's houses, well and sufficiently insured from loss by fire, at his own expense, in such amounts, and in such office as said lessors shall designate during the continuance of this lease; the policy or policies to be assigned to said lessors, or taken out in the name of said lessors, as said lessors may, at their option, determine.

SIXTH. It is understood and agreed by and between said parties, that said lessee shall have the right to procure timber from the lands so leased, for the erection of said breaker and miners' houses, and prop timber for the working of said mines, as also to use the lumber at the Shenandoah and Mahanoy saw mills for the erection of said houses, the value of the lumber and timber so used to be credited to the party of the first part as against said lessee, as a payment on account of the said sum of _____ thousand dollars, except for prop timber, for which no charge shall be made, said timber, however, only to be cut under the direction of said party of the first part, or their agent, out of the space designated for that purpose in the draft thereto annexed.

SEVENTH. It is further understood and agreed, that at the expiration of the said lease, in case the said lessor shall not relet to said lessee for a further period of five years, said lessor shall pay said lessee for any coal mined, remaining undisposed of at the expiration of said lease, and the actual cost for gangways driven in the vein where the coal remains unmined, at such rate and price as shall be agreed upon by three disinterested persons, one to be chosen by said lessor, one by said lessee, and the third by the two so selected, whose decision, or that of a majority of them, shall be final and con-

clusive between said parties. In case said lessor shall not relet to said lease, the said lessee, at the expiration of said term, shall re-deliver possession of said premises, and all breakers, engines, machinery, railways, inside and outside, improvements and miners' houses to be put up, constructed, and erected on said premises, and in said mines during said term, in good order and condition, reasonable wear and tear only excepted.

EIGHTH. The said lessor, trustees, as aforesaid, reserve the right to take, or grant to others the right to take wood, timber and stone from any part of said demised premises, as also of leasing any portion or portions of the surface of the tract hereby leased, which is not in the use or occupation of said lessee, or of farming or improving the same: Provided, the same shall not interfere with the actual working of the tenant, under said lease; and said lessee hereby agrees to prevent any squatters from locating on said premises.

NINTH. It is understood and agreed, that this lease, and all the terms, provisions and conditions thereof, are binding upon the said lessor, and its successors, trustees as aforesaid, and said lessee, _____ executors, administrators and assigns, provided license shall be given to assign as herein provided, and that in case said lessee, _____ executors, administrators or assigns, shall refuse or neglect to pay said royalty or rent within thirty days after the same shall fall due, or shall without the written consent of said lessor, assign said lease in whole or in part, or join any other person in its management or the working of said mines, or shall discontinue working said mines, or preparing to work the same, or refuse or neglect to erect, or stop, after commencing the erection of the breaker, machinery and buildings, stipulated to be made and erected in the third article of this lease, for thirty days, or shall abandon said premises or said mines for said length of time, or in case of a fire shall refuse to use the moneys insured under the direction of the lessors in re-building or repairing the whole or any part of the breaker, machinery or buildings that may be destroyed, or to suffer the same to be rebuilt or repaired by said lessor, in case said lessor should prefer so to do; or in case said lessee shall refuse permission to said lessor, its servants and agents, to examine said mines, or if said lessee shall work the same unskillfully, or shall put up insufficient machinery or of bad work-

man ship, or neglect or refuse to keep the same in good repair; or in case at the expiration of said lease he shall refuse to deliver up said premises, with all the engines, machinery, breaker, and miners' houses in good order and condition, reasonable wear and tear excepted, or shall in any other manner break or violate, or refuse compliance with the provisions of this lease, or any of them, then, and in every such case said lessors may at once re-enter and take possession of said premises, machinery, mines, breakers, railroads and miners' houses, and appurtenances whatever connected therewith, and determine said lease; and in each and every such case said lessee for _____ executors, administrators, and assigns, if this lease shall be assigned in accordance with the provisions hereof, hereby authorizes any attorney of any Court of Record of this Commonwealth to appear for _____ and confess a judgement in ejectment against _____ in favor of said City Trustee as aforesaid, at the mere request of said lessor, with a full release of all claims and damages against said attorney by reason of his so doing; and thereupon a writ of habere-facias may at once issue to put the said City Trustee, as aforesaid, in possession of said premises without stay of execution, certiorari or writ of error; Provided, however, said judgement shall not prevent said lessor from proceeding to recover any rent due by distress or otherwise, which right of distress it is hereby understood may be exercised by said lessor for non-payment of said rent or royalty as in ordinary cases of landlord and tenant, and like manner, nor shall such judgement debar said lessor from an action of damages for any loss sustained by any breach of said lease, but said lessor may have and use any or all of such remedies as may be deemed proper; and in case of any such writ of possession being issued before the said full sum of _____ thousand dollars is allowed to said lessee, or before the machinery, breaker, improvements and miners' houses, in the fourth article mentioned, are completed, no allowance shall be made to said lessee therefore, but the same thereby shall be deemed forfeited, and the title and possession thereof accrue to said lessor, trustee as aforesaid.

TENTH. It is further understood and agreed, that in case said lessee shall be dispossessed at any time during the continuance of said term by virtue of any adverse legal or equitable proceedings what-

ever, commenced to recover possession of said premises, and shall thereby be prevented from mining and taking away said coal, said lessor shall pay said lessee the value of any machinery, breaker, apparatus, or miners' houses whatever, built, placed, or erected by _____ on said premises, or balance due thereon at the time said lessee was so dispossessed or prevented from mining and carrying away said coal, to the extent of the actual value thereof, not exceeding twenty thousand dollars as hereinbefore set forth, or the balance due on said actual amount, if any payments have been made thereon, and upon such payment said lessee shall make no further claim for damages by reason thereof.

APPENDIX 4. Old Warrants and Interferences with New Warrants of Girard Estate Lands

<i>Warrantee</i>	<i>Warrant date</i>	<i>Survey date</i>	<i>Acres</i>	<i>Interference</i>
George McMannus	12 Mar 1830	23 Apr 1830	312.29½	Thomas Hiltzheimer Amos Wickersham
George McMannus	20 Feb 1830	"	390.90½	Israel Cope
Daniel Probst	25 Jan 1830	22 Apr 1830	262.155	Robert Hiltzheimer Thomas Hiltzheimer
Daniel K. Weston	"	"	277.118	Thomas Hiltzheimer Amos Wickersham
John B. Moyer	"	21 Apr 1830	192.94¾	William Shannon George Beckham
John B. Moyer	"	"	106.87	George Beckham
William Miller	6 Jan 1830	14 Jan 1830	296.88	George Beckham
Levy Reber	"	"	297.13	John Alexander Peter Benson
Levy Reber	"	13 Jan 1830	146.89	Peter Benson
Nathan Reber	"	"	149.19	James Chapman
Catherine Blue	NA	6 Aug 1829	300	James Chapman
Lewis Audenried	15 Jan 1830	29 Jan 1830	300	Samuel Scott
John Probst	20 Jan 1830	30 Jan 1830	116.62½	John Brady
Daniel Probst	"	29 Jan 1830	138.14½	John Alexander
Peter Kelhley	"	"	149.54¼	John Alexander James Chapman
Daniel Goddard	8 Feb 1830	18 Feb 1830	149.122½	Thomas Grant
Daniel Goddard	20 Feb 1830	19 Feb 1830	187.148	Daniel Reese Samuel Reese
John Hard	20 Jan 1830	30 Jan 1830	103.57¾	Samuel Scott
John Fertig, Jr.	2 Feb 1830	20 Apr 1830	220.164¼	David Reese et al
Benjamin Turner	20 Feb 1830	19 Apr 1830	199.98	David Reese et al
John Spohn	22 Feb 1830	9 Jun 1830	301.79	David Reese et al
Jacob Krebs	15 Feb 1830	8 Jun 1830	164.14	David Reese et al
George Heiser	9 Feb 1830	"	206.15	David Reese Samuel Reese

<i>Warrantee</i>	<i>Warrant date</i>	<i>Survey date</i>	<i>Acres</i>	<i>Interference</i>
George Heiser	"	"	219.85	Thomas Grant et al
Daniel K. West	11 Dec 1829	21 Dec 1829	322.4	Thomas P. Cope
John Brobst	"	22 Dec 1829	390.5½	Thomas P. Cope
Samuel Heffner	7 Mar 1854	20 Nov 1854	312.05	James Howell Israel Cope
Henry Hoy	24 May 1815	9 Jun 1815	412.91	Thomas Paschall et al
Joseph Hoy	"	"	412.91	Nathan Beach
George Body, Jr.	"	8 Jun 1815	399.56	Thomas Grant William P. Brady
Abraham Hoy	"	"	407.38	Thomas Paschall
George Body	"	7 Jun 1815	400.57	Joseph Paschall John Blackey Nathan Beach
Philip Hoy	"	"	400.40	Nathan Beach
George Flower	21 Jul 1784	5 May 1787	400	William P. Brady Thomas Paschall
Conrad Mertz	4 Sep 1784	4 May 1787	400	John Blackey
Jack W. Seitzinger	13 Feb 1829	6 May 1829	202.15¼	Thomas Paschall
Pusey W. Jackson	14 Feb 1829	"	201.28½	John Blackey Thomas Paschall
Jesse Reber	3 Mar 1829	7 May 1829	398.135	John Blackey
Peter Yoh	19 Nov 1793	6 Oct 1829	400	John Blackey Thomas Paschall
Richard Stevens	1 Sep 1787	5 Nov 1805	450	Thomas Grant William P. Brady
Henry B. Smith	8 Dec 1855	21 Dec 1855	439	John Lockhart
Isaac S. Stauffer	3 Jun 1830	6 May 1857	51.137	John Barber
William Wheeler	18 Feb 1794	15 May 1794	404	John Lytle Thomas Lytle
Barbara Wheeler	"	15 Nov 1794	407.18	Thomas Lytle
Christopher Dimm	19 Nov 1784	1 Nov 1788	400	Thomas Lytle
Aaron Bowen	19 Nov 1792	10 May 1794	400	Thomas Lytle
Catherine Blue	3 Mar 1829	3 May 1829	429.147	Thomas Lytle
Sarah Moore	11 Feb 1794	7 Jun 1794	402.67	Thomas Lytle
Henry Miller	"	"	402.67	Nathan Beach Israel Cope
Robert Whitehead	"	8 Jun 1794	403.37	Thomas Paschall James Paschall
Richard Whitehead	"	"	401.47	John Brady Joseph Paschall
David Evans	"	9 Jun 1794	400	Samuel Scott John Brady
Mary Stembuck	"	10 Jun 1794	400	James Chapman Samuel Scott
George Stonemetz	"	11 Jun 1794	400	John Alexander James Chapman
Thomas Palmer	"	13 Jun 1794	400	John Alexander Peter Benson
James Tremble	"	9 Jun 1794	401.57	Thomas Grant William P. Brady
John Reese	"	10 Jun 1794	401.120	Thomas Grant Samuel Scott
James Houston	"	13 Jun 1794	401.49	David Reese
John Ward	12 Jun 1829	7 Jul 1829	394.44	James McNeal
Richard Heath	6 Jun 1829	"	400	Jeremiah Jackson
Samuel May	"	"	400	William Steadman
Godfried Lehman	8 Feb 1793	16 May 1794	430	Samuel Reese

<i>Warrantee</i>	<i>Warrant date</i>	<i>Survey date</i>	<i>Acres</i>	<i>Interference</i>
Elizabeth Reber	3 Mar 1829	13 Jul 1829	291.62	Daniel Hurley
Andrew Love	20 Sep 1792	NA	404.40	Nathaniel Brown
James Grimes	6 Feb 1793	NA	121.80	Nathaniel Brown
				John Lockhart
Henry Stochter	29 May 1829	4 Nov 1829	160.114	George Beckham
Samuel Hoffman	29 May 1829	3 Nov 1829	150.32	William Shannon
				George Beckham
John Dreher	29 May 1829	3 Nov 1829	150.32	William Shannon
John Dreher	29 May 1829	3 Nov 1829	161.107	Robert Hiltzheimer
Andrew Gilbert	19 Dec 1837	7 Aug 1838	170.130	Solomon Beatty
				Rodger Beatty
Henry Johnston*	NA	NA	398.44	James Chapman

NA = Not available.

*Deed dated February 19, 1820.

Index

- Agard, Moodie and Company, 20
Agents, Girard Estate, 56
Allison, Robert, 26
Allison air compressor, 37
Ambulance purchased, 31
Anderson, John and Company, 25
Annual shipments by companies, 1863-1884, 58, 59
Anthracite, preparation, 42; screen sizes of, 61; shipped, 1863-1884, by sizes and tonnage, 61
Application system, 6
Audenried, J. T., 29, 31
- Baird, Thomas, 12
Bear Ridge Coal Company, 34
Bear Ridge No. 1 Colliery, 35. See also Mahanoy Colliery
Bear Ridge No. 2 Colliery, 35
Bedford, Cunning, 9
Berks County, 9
Boston and Mahanoy Coal Company, 33
Boyd, William, 56
Breaker boys, 42
Breaker machinery, 19
Broad Mountain, 69
Brooke, Edward, 36; George, 36
Brown, Colonel, 39
Brunswick Township, 9
- Carter, Shoener and Company, 29
Catawissa Valley, 9, 17
Chester County, 9
Chevalier, Michel, 69
City Trusts, directors of, 18
Claypoole, James, 5
Coal breaker, 42
Coal lands, 11, 12
Coal Lease No. 1, 19; No. 2, 23; No. 3, 25; No. 4, 26; No. 5, 29; No. 6, 31; No. 7, 33; No. 8, 35; No. 9, 37; No. 10, 40; No. 11, 41
Colorado Colliery, 32, 41; fire, 33
Columbia County, 12
Commissioners, Land Office, 5
Conner, James J., 16, 19
Conner Colliery, 19, 21
Continental Coal Company, 29
Continental Colliery, 29
Cox, James S., 9
- Dam construction costs, 39
Danville and Pottsville Railroad, 16, 32, 62; Planes, 64-67, 69, 70
Delano Land Company, 16
Dengler, C. H., 33
Divesting Act of 1779, 7
- East Bear Ridge Colliery, 35. See Bear Ridge No. 2
- Eisenhuth, Bernard, 17
- First Bank of the United States, 9
"First purchasers," 4
Fisher, Daniel, 37
Fort McIntosh, 7
Fort Stanwix, 7
- Garretson, Cornelius, 23; Theodore, 23
Girard, Etienne, 15
Girard, John, 15
Girard, Mary Lum, 3
Girard, Captain Pierre, 3
Girard, Sophia, 15
Girard, Stephen, 3, 10, 11; Bank of, 10; land purchases, 1830, 12, 52, 53; will of, 15
Girard Colliery, 23
Girard Estate, agents for, 56; first coal mine, 31, 64; first lease, 1862, 77; lands lost to heirs of Girard, 55; lease royalties, 1863-1884, 60; legal cases, 15, 16; tracts in, 15; tracts, sizes and locations of, 53-55
Girard Mutual Coal Company, 26
Girard Tunnel, 34, 63
Girardville Colliery, 19, 31. See also Conner Colliery
Goodridge, Charles L., 29
Gorrell, Robert, 29
Grant, William, 35
Griscom, Samuel E., and Company, 35
- Hammond Colliery, 21
Harris, Stephen, 56
Hemingray, William, 39
Holmes, Thomas, 5
Hughes, F. W., 16
Huntzinger, G. W., 31
- Indian land purchases, 4, 6, 7
Irwin, Robert, 9
- Jervis, M., 69
Julie, 3
- Kaercher, F. B., 17, 26, 56, 68
Kehley's Run Colliery, 38; explosion and fire, 39; fire extinguished, 40
King Charles II, 4
Kohinoor Colliery, 39
- L'aimable Louise*, 3
Lafargue, Ann Odette, 3
Lancaster County, 9
Land Office, tribunal of 1782, 7
Lands lost in court decision, 1833, 55
Lease, extended, 17, 18
Lease holders, 1862-1884, 57
Lee, Richard, 35
- Lehigh and Mahanoy Railroad, 68
Lehigh Colliery, 40
Lehigh Valley Coal Company, 16, 26, 29, 31, 33, 41, 68
Lehigh Valley Railroad Company, 27, 28, 40, 41, 68
Lewis, Enoch, 12
Lloyd, Thomas, 5
Locust Run Colliery, 19
Loeser, Christopher, 16; land sale, 1851, 16, 56; manuscript collection, 9
Lottery of 1732, 6; 1769, 6; 1785, 7
Lower Mahantongo Township, 9
Lum, Mary, 3
- Mahanoy and Broad Mountain Railroad Company, 68
Mahanoy and Shamokin Railroad, 68
Mahanoy Colliery, 33
Mahanoy Plane, 64, 68, 69, 70
Mahanoy Township, 9
Mahanoy Valley, 9
Mahantongo Township. See Upper and Lower
Manheim Township, 9
Markham, William, 5
McMichael Colliery, 19
Merchant's Coffee House, 11
Meredith, J. D., 16, 56
Mill Creek and Mine Hill Navigation and Railroad Company, 68
Mill Creek Valley, 69
Mine Hill Railroad Company, 17
"Molly Maguire," 47
Montgomery, Daniel, 64
Morris, Mary, 9; Robert, 9
Morris and Nicholson lands, 10
Mount Carbon Railroad, 63, 69
Myers, McHenry and Company, 35
- New Orleans exposition, 41
Nicholson, John, 9
North Ashland Colliery, 26, 31
Northampton County, 9
Northumberland County, 9
Norwegian Township, 9
- Packer, Asa, 28
Packer No. 1 Colliery, 33 (see also Colorado Colliery); No. 2 Colliery, 29 (see also Shenandoah Colliery); No. 3 Colliery, 41 (see also Lehigh Colliery); No. 4 Colliery, 29; No. 5 Colliery, 33
Patents, land, 6
Patterson, Frederick, 35
Pelerin, 3
Penn, Hannah, 5
Penn, John, 5

- Penn, Richard, 5
 Penn, Thomas, 5, 6
 Penn, William, 4, 5
 Pennsylvania land policy, 4
 Perot, John, 9
 Philadelphia and Reading Coal and Iron Company, 21, 23, 26, 35
 Philadelphia and Reading Railroad Company, 23, 29, 35, 68
 Philadelphia City Council, 17
 Philadelphia Coal Company, 26, 32, 33, 40, 41
 Picker boss, 42
 Pine Grove Township, 9
 Poole, H. W., 17, 56
 Port Carbon, 14
 Pottsville to Sunbury Railroad, 69
 Proprietors of Pennsylvania, 5, 6
 Pumps, Allison, 26

 Randall, Thomas, 3
 Raven Run, 19
 Rawle, F. W., 62
 Reber, John B., 37
 Reese, John, 39
 Regulator, fan-type, 69
 Robinson, Moncure, 62, 69
 Robinson, Morris, 33

 Royalties, lease, 1863-1884. 60 See Girard Estate
 Royalty rates on coal, 1869, 18
 Rush Township, 9

 Sailor, Henry, 37
 Schlatter, Charles Lyon, 12
 Schuylkill County, 9; Township, 9
 Screen sizes of anthracite, 61
 Seitzinger, Jeremiah, 31
 Sharp, Thomas, 64
 Sheaffer, P. W., 17, 47
 Shenandoah Colliery, 26, 29 (see Packer No. 2); fire, 29
 Shenandoah Valley, 9
 Shenandoah Water Company, 39
 Sheriff sale, Girard Colliery, 23; Loeser lands, 16; Union Colliery, 26
 Slate pickers, 42
 Smith, Robert, 10
 Speaking tube, 31
 Stevenson, Cornelius, 16
 Stickney, and Conyngham, 37
 Stringer, the Reverend, 3
 Surveyors, deputy, 6

 Tenant houses, 19
 Thomas, B. B., 37

 Thomas Coal Company, 37
 Thomas Colliery, 38
 Thompson, Heber S., 39, 56
 Thompson, John, 12
 Turner, Robert, 5

 Underground telephone installed, 28
 Union Colliery, 25
 Upper Mahantongo Township, 9

 Vanderslice, Henry, 9

 Wadesville, 63, 69
 Wadleigh and Vandyke, 37
 Warrant, Commonwealth of Pennsylvania land, 5
 Warrants, interferences with, 81-83
 Wasley, Jonathan, 39
 Watertank, railroad, 70
 West Bear Ridge Colliery, 35. See Bear Ridge No. 1
 West Penn Township, 9
 Wild Cat Run, 19
 Will, Stephen Girard, 15
 William Penn Coal Company, 36
 William Penn Colliery, 35
 Williams, W. L., 40
 Willing, Thomas, 9
 Willman, Frank, 39

