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HUNTINGDON COUNTY, PENNSYLVANIA:


AN INVENTORY OF HISTORIC ENGINEERING AND INDUSTRIAL SITES



U.S. Department
of the Interior
National Park Service
Cultural Resources



America's Industrial
Heritage Project



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HUNTINGDON COUNTY, PENNSYLVANIA

An Inventory of Historic Engineering
and Industrial Sites

by Nancy S. Shedd

Sarah H. Heald, Editor

with contributions by
Gray Fitzsimons, Deane Mellander,
and the Friends of East Broad Top

Historic American Buildings Survey/Historic American Engineering Record

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THE HAER INVENTORY PROGRAM

The objectives of the HAER Inventory are threefold: (1) it is the initial step in the HAER documentation process; historic engineering and industrial sites in a given geographic area are located and identified; (2) it assists states in evaluating these historic resources for planning purposes and for potential nominations to the National Register of Historic Places; and (3) it establishes a context for evaluation by the National Park Service of the historic engineering and industrial sites nominated by the states to the National Register, or for determinations of eligibility to the National Register of Historic Places.

All of the HAER inventory material is deposited in the Prints and Photographs Division of the Library of Congress in Washington, D.C. This includes the many 35 mm black-and-white photographs taken in the field, along with copies of the inventory forms containing the brief histories and descriptions of each site.

HAER recognizes the importance of publishing the inventories; however, project sponsors are generally required to cover the cost of printing. The published inventory, available to the general public, is used by educational institutions, to study technological, industrial, and engineering history, historic preservation, the history of urban planning, and cultural geography. Published inventories are also distributed to state, county, and local planning offices, libraries, and preservation agencies. The HAER inventories thus expand the awareness of engineering and industrial history, demonstrate consistent methods of identification and evaluation, and stimulate public interest in a significant part of our American heritage.

AMERICA'S INDUSTRIAL HERITAGE PROJECT

Begun in 1987, America's Industrial Heritage Project (AIHP) is a National Park Service effort that involves a nine-county region in southwestern Pennsylvania--Bedford, Blair, Cambria, Fayette, Fulton, Huntingdon, Indiana, Somerset, and Westmoreland counties--the primary focus of which is to develop and enhance the interpretation of three of the region's major historic industries: iron and steelmaking, coal, and transportation. In conjunction with identifying the significant contribution this region made to these industries, AIHP is concentrating on how to preserve, manage, and interpret the various historic sites and resources. Through a public and private partnership effort, AIHP will use the region's many historic sites and preservation initiatives to help revitalize the area's economy, promoting regional and national tourism. A key component of AIHP, the Southwestern Pennsylvania Heritage Preservation Commission, was achieved in November 1988 when President Reagan signed a bill (H.R. 3313) creating the commission. The commission, which works with AIHP to further the goals of the project has its offices in Hollidaysburg, Pennsylvania.

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Preface

Part of a long-term documentation effort in western Pennsylvania, the Historic American Engineering Record's (HAER) inventory of Huntingdon County commenced in June 1988 with a contract between HAER and local historian Nancy S. Shedd. This contract (PX-0001-8-0768) called for the identification of the county's pre-1940 engineering and industrial structures, using the HAER inventory procedure developed in concert with the National Register of Historic Places. Ms. Shedd, a long-time resident of Huntingdon County and president of the Huntingdon County Historical Society, conducted the research and visited numerous industrial sites. Each site was photographed by Ms. Shedd who produced descriptive and historical information for nearly eighty industrial works and engineering structures. In addition, Ms. Shedd completed an introductory essay on the county's industrial development. The results of this work form the bulk of this publication.

In addition to publishing the HAER inventory of Huntingdon County, one of the goals of this work was the nomination to the National Register of Historic Places (NRHP) a number of properties that the Pennsylvania Historical and Museum Commission (PHMC) deemed eligible for listing in the Register. Under the direction of Brenda Barrett, Deputy State Historic Preservation Officer and Director of the PHMC Bureau of Historic Preservation, and Dan G. Diebler, Chief of the PHMC Division of Preservation Services, historian Deborah Suciú transferred information from the HAER Inventory into a form suitable for evaluating the potential for a property's listing in the National Register. A computer data-base program developed by the National Park Service (NPS) and PHMC was used by Ms. Shedd for the initial compilation of inventory information. This data base was then forwarded to Ms. Suciú who refined the data as needed for National Register nominations. This work was greatly assisted by Carol D. Shull, Chief of Registration, NRHP, Amy Federman, historian with NRHP, and Diane Miller, Chief of the NPS Interagency Resources Division's Information Management Unit.

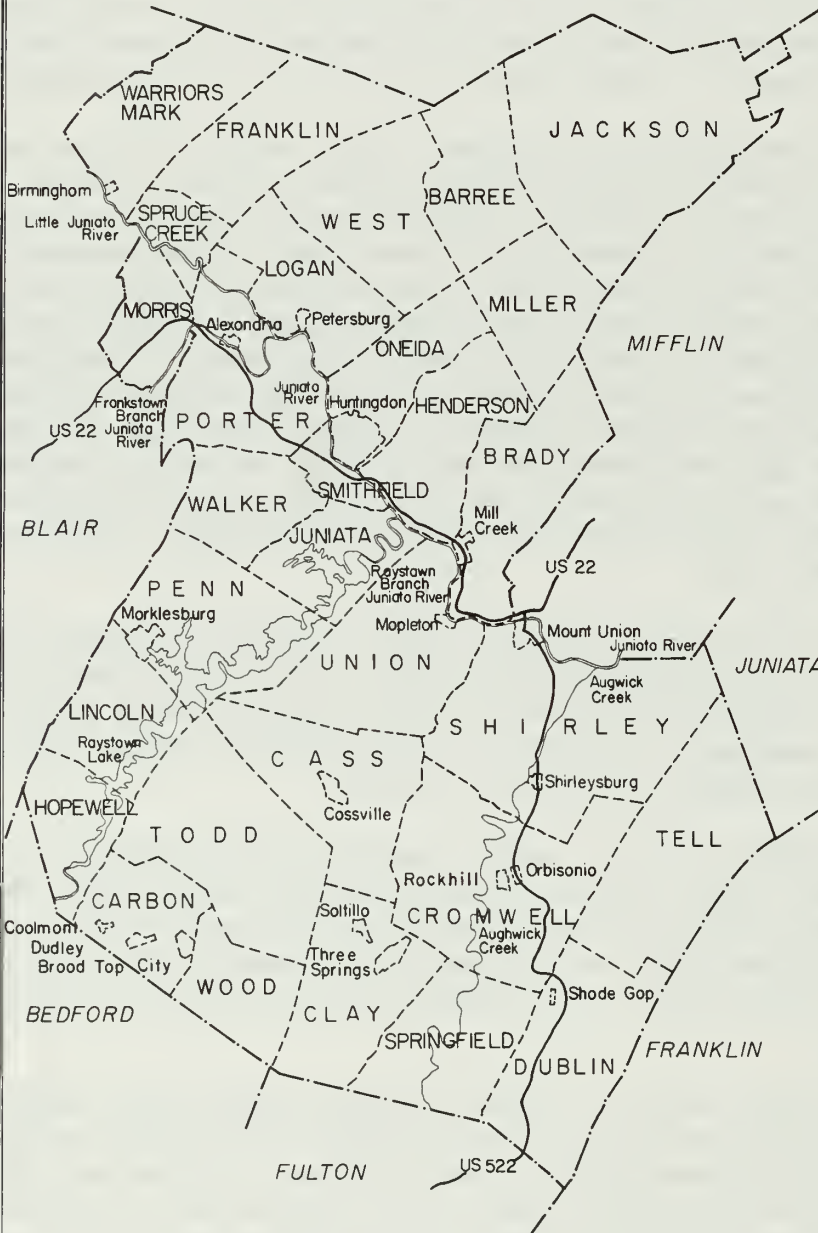
In addition to the work produced by Ms. Shedd, a special inventory of structures associated with the East Broad Top Railroad, a narrow-gauge carrier whose shops in Rock Hill Furnace are a National Historic Landmark, was carried out. The Friends of East Broad Top, led by Phillip J. Padgett and Deane Mellander, conducted this inventory of structures along the railroad right-of-way. The results of this work form a separate chapter in this volume.

The difficult tasks of pulling together all of the inventory material for this publication were accomplished by Sarah H. Heald, a HAER historian who served as editor for this volume. She received assistance from a number of persons who read various drafts of the manuscript. For their helpful comments HAER thanks Francie Robb, Ken Rose, and George Drobnock. Also thanks to Robert Wagner who aided the HAER inventory work concerning the refractory industry in Mount Union.

And finally thanks to Randall Cooley, Director of America's Industrial Heritage Project (AIHP), who helped fund the inventory effort, and Robert J. Kapsch, Chief of the Historic American Buildings Survey / Historic American Engineering Record, who helped steer the project across the occasionally difficult bureaucratic terrain. HAER historian Gray Fitzsimons served as project manager for HAER work carried out in conjunction with AIHP and also assisted in writing and reviewing the manuscript. HAER, of course, is responsible for any errors in this volume.

HUNTINGDON COUNTY PENNSYLVANIA

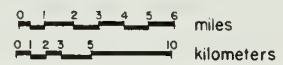
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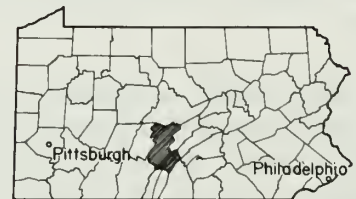
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City or Borough: Mount Union
Township:..... SHIRLEY

Scale:



STATE OF PENNSYLVANIA



HUNTINGDON COUNTY

Historical Overview

Introduction

Carved out of Bedford County in 1787, and reduced in size in the mid nineteenth century with the creation of Blair County, Huntingdon County today comprises 895 square miles of densely forested mountains that parallel a series of long level valleys. The mountain ranges in this south-central Pennsylvania region rise more than 2,000' above sea level, and the valleys, many of which have been cultivated, are about 1,000' in elevation. The southern part of the county includes a portion of the Broad Top coal field, a wide, gently undulating plateau with coal beds of the Allegheny group and Pottsville series of western Pennsylvania.¹ The principal waterway in Huntingdon County, the Juniata River, is formed within the county's boundaries from its three branches, the Frankstown, the Little Juniata, and the Raystown. The Juniata then flows eastward toward its confluence with the Susquehanna River at Clarks Ferry, ten miles above Harrisburg. Among the many tributaries of the Juniata in Huntingdon County, Aughwick Creek forms the largest watershed in the county's southern half. To the northwest Spruce Creek, Shaver's Creek, and Stone Creek flow swiftly to the south.

It was along these waterways that the county's earliest white settlers established themselves. By the late eighteenth century a number of settlers and entrepreneurs were using water power from the streams and rivers to operate grist mills, saw mills, and an iron furnace. In addition to the abundance of iron ore in Huntingdon's Juniata Valley, the county contained large stands of hardwood trees, rich deposits of sandstone, coal, limestone, and clay, and thousands of acres of fertile soil. By 1800 grain and iron had been established as the twin engines that would drive the county's economy for the next half-century. Huntingdon County's early entrepreneurs and farmers used wagons or pack animals to ship their goods to such cities as Baltimore and Pittsburgh. Some used the Juniata River during periods of high water (chiefly in the spring), constructing shallow-draft arks that were typically loaded with flour, whiskey, animal hides, and iron, and then floated downstream to the Susquehanna. A number of these arks were sent as far south as Baltimore.

The building of turnpikes in the early 1800s and the construction of the Pennsylvania Canal in the 1830s improved the county's lanes of commerce to the east, south, and west. The canal lowered the cost of shipping, particularly agricultural products; and, nationally, the cheaper form of transportation provided by canals stimulated considerable industrial and economic growth. However, as with other counties along its main line, it was the completion of the Pennsylvania Railroad in the 1850s that tremendously quickened the pace of industrial and agricultural development in Huntingdon County. Among the heavy industries that emerged with the arrival of branch rail lines, coal mining in the Broad Top region became one of the county's most important. Broad Top coal was used extensively in the iron and steel industries beginning in the 1870s. The early twentieth century witnessed the rise of one other industry, the refractory brick industry, which also depended heavily on the region's iron and steel works. The town of Mount Union achieved national recognition as one of North America's largest producers of refractory brick.

At present, general manufacturing, extractive industries, and agriculture are the most prominent industries in Huntingdon County, but much survives of the structures associated with older

¹ Pennsylvania's Mineral Heritage (Harrisburg: Department of Internal Affairs, 1944), 159-60.

Historical Overview

industries that once thrived in the region. While Huntingdon County has supported a relatively diverse industrial and agricultural economy over the past 200 years, a few of its industries--charcoal iron, coal and coke, and refractory brick--stand out as especially significant to the county's economy. Changing methods of transportation have served to facilitate these industries. Examination of these industries not only provides a look at the livelihood of county residents, but, when viewed beyond the boundaries of county lines, places Huntingdon and its industries in the broader context of Pennsylvania's and the nation's industrial history.

The Iron Industry

Beginning with the establishment of Bedford Furnace in the 1780s, Huntingdon County's iron industry ranked among the most important industries in the county throughout much of the nineteenth century. Such locally prominent early iron makers as John Lyon, Anthony Shorb, Henry S. Spang, Edward and Martin Bell, Greenberry Dorsey, Samuel Hatfield, John A. Wright, and the Shoenberger family operated iron furnaces and forges in the Juniata Valley. Furnace operations extracted the region's rich hematite ores for the production of charcoal pig iron and supplied forges with raw materials. By the late 1840s Huntingdon County, the center of the Juniata charcoal iron region, had as many as fifteen blast furnaces in operation. Although a number of the region's iron makers were able to withstand the boom-and-bust nature of the iron industry during the first half of the nineteenth century, the decades after 1860 saw a continual decline in the production of Juniata charcoal iron. Several factors contributed to the industry's decline: the most significant were the growing scarcity of high-quality iron ore, the failure of iron makers to innovate in both the processing of charcoal and the operation of their blast furnaces, and the increasingly fierce competition from other North American charcoal-iron producers.

Rich deposits of iron ore in the Juniata Valley were recorded as early as 1767 when the Juniata Iron Company surveyed for iron and timber in south-central Pennsylvania. Both brown hematite and fossil ores were found in Huntingdon County. Most furnaces used one type of ore or the other, though a handful of iron makers used a combination of the two. Typically, the blast furnace owners also held title to the lands from which ore was mined and timber was felled for the production of charcoal.² By 1810 nearly two dozen iron furnaces and forges had been established in the Juniata Valley, and the iron produced there quickly gained a reputation for its high quality. Praise for Juniata charcoal iron came from as far away as New England, where inventor and entrepreneur Eli Whitney hailed it as "some of the best in the world."³

The earliest furnaces and forges in Huntingdon County were established in the northwestern townships along the Frankstown Branch of the Juniata River, the Little Juniata River, and Spruce Creek. By 1816 the furnaces in this region included Huntingdon, Etna, Pennsylvania, Springfield,

² Well into the 1880s iron makers believed that the ore's composition made mining by pick and shovel the best means of extraction. Standard practice included taking ore from both open pits and drifts, and washing it to remove impurities before use. See I. C. White, The Geology of Huntingdon County (Harrisburg: Second Geological Survey, 1885) 450.

³ Letter from Eli Whitney, 12 June 1819, quoted in Albert M. Rung, Rung's Chronicles of Pennsylvania History (Huntingdon: Huntingdon County Historical Society, 1977), 275. "Early Ironmasters of Pennsylvania," reprinted for Pennsylvania Historical and Museum Commission from Pennsylvania History 18 (April 1951), 8.

and Union; in addition, at least seven forges -- Tyrone, Etna, Cove, Antes, Juniata, Barree, and Colerain -- were operating at this time.⁴ All of these iron enterprises employed water wheels for powering the bellows that forced air into the blast furnaces, or powered the drop hammers at forges where pig iron was worked into blooms and merchant bars. Although some of these early iron works produced finished goods such as stoves, the region's iron makers shipped most of their products (blooms and merchant bars) to rolling mills in larger towns and cities.

Of the many Juniata iron enterprises in the early nineteenth century, several came under the control of the Shoenberger family, whose best-known member was Dr. Peter Shoenberger. His father, George Shoenberger, was an ironmaster who first established the family in the Juniata iron business. Around 1804 the elder Shoenberger and Samuel Fahnstock built Juniata Forge on Shaver's Creek in Petersburg.⁵ Soon after, George Shoenberger became sole owner of Juniata Forge as well as a partner in the nearby Huntingdon Furnace enterprise. Upon his father's death in 1815, Dr. Peter Shoenberger assumed control of the family's iron business. Over the two next decades the young and aggressive Shoenberger greatly expanded his iron interests. In addition to acquiring timberlands and opening iron mines in Bedford County, he either purchased an interest in or constructed several more Juniata blast furnaces and forges.⁶

Undoubtedly, one factor contributing to the success of Dr. Peter Shoenberger's iron enterprises was a long-standing arrangement he had with the U.S. armory at Harper's Ferry to supply bar iron for

⁴ J. Simpson Africa, History of Huntingdon and Blair Counties, Pennsylvania (Philadelphia: Louis H. Everts, 1883), 55. The remains of a number of these early iron enterprises including Springfield Furnace, Etna Furnace and Forge, Tyrone Forge, Cove Forge, and Antes Forge are located in Blair County, which was drawn from Huntingdon County in 1846. For information on these sites see Gray Fitzsimons (ed.), Blair County and Cambria County Pennsylvania: An Inventory of Historic Engineering and Industrial Sites (Washington, D.C.: NPS, HABS/HAER Division, 1990), 58-63, 71-78. Other early forges in the Spruce Creek region of Huntingdon County include Massey's Forge, Marshall's Forge, and Upper and Lower Sligo forges. See Huntingdon County Tax Assessments for Franklin, Morris, and Warriors Mark townships, 1790-1815. One of the region's earliest steel producing furnaces was located along Spruce Creek, operated by William McDermott, a Scottish immigrant who had established a small steel producing works near Bedford Springs in the late eighteenth century. McDermott likely employed a blister steel process that he had learned as a young man in Scotland. Unsuccessful in his venture near Bedford Springs, McDermott and his family moved in the early 1800s to Spruce Creek where he reportedly established another small steel works. This second attempt at producing steel was also apparently a financial failure. See James M. Swank, Introduction to a History of Ironmaking and Coal Mining in Pennsylvania (Philadelphia: James M. Swank, 1878), 42-43.

⁵ Petersburg was named after George Shoenberger's brother, Peter, who had laid out the town on Shaver's Creek in 1795. In 1800, George acquired the property from Peter on which he built the Juniata Forge. See Swank, Introduction to a History of Ironmaking and Coal Mining in Pennsylvania, 39.

⁶ Unfortunately there is a dearth of information on Dr. Peter Shoenberger. A short uncritical biography does exist, however. See Calvin W. Hetrick, The Iron King: The Story of Dr. Peter Shoenberger, Early Ironmaster of Central Pennsylvania--His Industrial Empire, His Family, His Times (Martinsburg: Morrisons Cove Herald, 1961).

Historical Overview



Photo 1. Huntingdon Furnace business office. Photo by Jet Lowe.

the manufacture of gun barrels.⁷ Though Shoenberger's lucrative contracts with the armory, beginning in the 1810s and lasting over fifteen years, ended in controversy, a quick look at the means by which he secured the armory's business sheds light on the competitive nature of the iron industry in the Juniata Valley.

Shortly after the federal armory at Harper's Ferry was completed in 1794, workers under the direction of superintendent James Stubblefield began the manufacture of rifles. Stubblefield and his paymaster, Samuel Annin, exerted considerable control over the awarding of contracts for materials, including pig and bar iron, used at the armory. Dr. Shoenberger aggressively courted the superintendent and his paymaster, and by about 1815 the Huntingdon ironmaster had become the sole supplier of iron to the armory.⁸ Unfortunately for Shoenberger, however, after several years

⁷ Much of the following discussion on Shoenberger and his relationship with the armory is drawn from Merritt Roe Smith, Harper's Ferry Armory and the New Technology (Ithaca, NY and London: Cornell University Press, 1977), 166-168, 170, 179. The authors wish to thank Frances Robb, Ph.D., for bringing this discussion to their attention.

⁸ When Shoenberger visited the armory he often brought gifts for the superintendent and the paymaster. Not playing any favorites, the cagey ironmaster was also known to reward the workers who used his charcoal iron for the production of rifles. One mechanic dismayed at Shoenberger's "business" practices observed that Dr. Shoenberger handed out large amounts of cash to the barrel welders. Responding to these charges of bribery, Shoenberger proclaimed, "I have been in the habit of giving workmen a treat occasionally when I would visit the Armory for 12-15 years back in Mr. Annin's time." Shoenberger quoted in Roe Smith, Harper's Ferry Armory and the New Technology, 170.

of this arrangement complaints arose as to the quality of the iron he sold to the armory. In 1825 armory mechanic Thomas Copeland wrote to the chief of ordnance, pointing out that since 1819 the shops at Harper's Ferry had amassed over \$100,000 of unacceptable pig iron from Huntingdon County's iron king. Shoenberger, Copeland observed, was a "cunning Deep Designing Crafty man," and that future orders for iron should be made with other, more reputable, Juniata iron makers.⁹ Despite these charges, in the short run, Shoenberger prevailed, and he remained the major supplier of pig iron to the armory through the end of the 1820s.¹⁰

Dr. Shoenberger's iron interests grew throughout the 1820s; one of his most notable achievements was the establishment of a large rolling mill on the Allegheny River near Pittsburgh. Completed in 1826, the Juniata Rolling Mill, as it was called, contained thirty-two puddling furnaces, seven trains of rolls, and forty-nine nail machines. The steam-powered mill presumably handled pig and bar iron from Shoenberger's furnaces and forges in the Juniata Valley. More important, Shoenberger established a vital link between the pig iron made in the Juniata Valley and the growing market for this iron in Pittsburgh.¹¹ Using raw materials, pig iron and blooms, Pittsburgh rolling mills, including Shoenberger's Juniata Rolling Mill, produced bars, nails, and other metal products. Although Shoenberger and other Huntingdon County ironmasters constructed small rolling mills in the county, their operations were shortlived. By about 1860 all had been abandoned.¹²

From the 1820s through the 1850s the economic success of Juniata Valley furnaces, including Shoenberger's enterprises, depended on a number of factors.¹³ Among the most important was the

⁹ Thomas Copeland quoted in Roe Smith, Harper's Ferry Armory and the New Technology, 166.

¹⁰ Although an inquiry led by the inspector general in 1829 found that Dr. Shoenberger had given large sums of money to barrel welders as late as 1825 and 1826, no charges were ever brought against the iron king. Instead, the armory terminated further dealings with Shoenberger and his associates, and purchased iron from other Pennsylvania iron makers. See Roe Smith, Harper's Ferry Armory and the New Technology, 179.

¹¹ In the 1820s John Lyon and the other owners of Huntingdon County's Pennsylvania Furnace also established a rolling mill, the Sligo Works, in Pittsburgh.

¹² For information on these rolling mills see J. P. Lesley, The Iron Manufacturers Guide to the Furnaces, Forges and Rolling Mills of the United States (New York: John Wiley, 1859), 240. Dr. Peter Shoenberger remained in the iron business through the early 1850s when he reluctantly agreed to become a partner in and president of the Cambria Iron Company in Johnstown, Pennsylvania. Although the Cambria Iron Works became the nation's leading rail producer in the 1870s, Shoenberger failed to reap any of its profits. The initial attempt by Shoenberger and his partners to operate Cambria was a financial bust and the company went into the hands of a receiver. See Sharon A. Brown, Historic Resource Study: Cambria Iron Company (Denver: National Park Service, Denver Service Center, 1989), 32-41.

¹³ Most ironmasters were convinced that the economic well-being of their enterprises depended chiefly on the limitation of foreign competition -- chiefly from Great Britain -- through tariff restrictions. However, as historian Peter Temin has pointed out, there is only a rough correlation between changes in the tariff and the condition of the nation's iron industry. Temin observes that the view held by most nineteenth-century American iron makers, namely that a high tariff meant greater prosperity for their business (and conversely, a low tariff resulted in a depressed condition), was largely specious. Missing from this view, Temin notes, is an understanding of the cyclical nature of America's burgeoning capitalistic economy, and the role that the price structure of iron played within the cycles of prosperity and depression. For example, when a high tariff existed the price of iron would increase much to the consternation of domestic iron users.

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ability of a company or partners to attract and maintain sufficient capital to construct and improve a furnace operation, as well as to improve the extraction of iron ore and limestone, and the production of charcoal. Secondly, the successful Juniata Valley furnaces, such as those of Shoenberger, were tied to western markets through Pittsburgh. At an ironmasters' convention in 1849 Juniata iron maker John Wright noted this relationship, proclaiming, "much [of] the largest portion of Iron made in Huntingdon county goes west to Pittsburgh, many of the establishments being connected with mills in that city."¹⁴ (The following charts provide a complete list of Huntingdon County's blast furnaces at mid century and the geographic markets they served.) For example, the Spang partners who ran Etna Furnace followed Shoenberger's example and established a large rolling mill on Pine Creek near Pittsburgh. Etna Furnace was one of the largest charcoal-iron producers throughout the first half of the nineteenth century and remained in operation until 1873.¹⁵

By the late 1850s, only a handful of Juniata iron makers could claim to have achieved the success of such furnaces as Etna, Huntingdon, and Greenwood. With the country in the throes of a financial panic, several furnaces in Huntingdon County -- Winchester, Chester, Malinda, Paradise, Rough and Ready, and Matilda -- were out of blast, most of them permanently; by 1860, Rockhill and Edward were also abandoned. To the north, Pennsylvania, Huntingdon, and Greenwood all remained at work during this period of economic distress, as did the forges and iron works on Spruce Creek and at Barree, Juniata, Petersburg, and Tyrone forges.¹⁶

Because iron furnaces were usually isolated ventures, small communities developed around the works. Grist mills, saw mills, houses, and stores were built, often by the furnace owner, to support the furnace operations. Not surprisingly, the communities that were associated with furnaces that failed in the 1840s and 1850s decayed with few traces. Many of these communities were in remote parts of the county and were wholly dependent on the furnace operations. They offered no foothold to the independent trades and businesses that other more accessible towns could attract, so that when the iron works closed, the community died, and its residents had no choice but to

As a result, the nation's iron buyers would campaign to have the tariff lowered and, when successful, brought about a reduction in iron prices. This would invariably lead to the calling of conventions by the iron makers who, claiming to have been greatly injured by foreign competition, campaigned to raise the tariff. See Peter Temin, Iron and Steel in the Nineteenth Century: An Economic Inquiry (Cambridge, Ma.: MIT Press, 1964), 19-25.

¹⁴ Convention of Iron Masters, Documents Relating to the Manufacture of Iron, Published on Behalf of the Convention of Iron Masters which Met in Philadelphia on the 20th of December, 1849 (Philadelphia: 1850), 47.

¹⁵ Christine Davis, "Mount Etna Iron Works, Blair County, Pennsylvania," unpublished manuscript produced for the Historic American Engineering Record, National Park Service, Washington, D.C., 1988.

¹⁶ Lesley, 56-62; U.S. Census, Products of Industry, 1860. The northern section had its short-lived operations too: Monroe, Mitchell or Jackson, and Rebecca; but there were significantly fewer than in the southern region.

Huntingdon County Furnaces, 1850
(Source: Hunt's Merchants' Magazine, 1851)

Charcoal Iron (Cold Blast)

<u>Name</u>	<u>Construction Date</u>	<u>Location</u>	<u>Owner</u>	<u>Tons of iron produced, 1849</u>	<u>No. employed</u>	<u>Market</u>
Rebecca*	1846	McAlevy's Fort	A.G. Curtin	700	40	E+W**
Pennsylvania	1813	Baileyville	Lyon, Shorb & Co.	1,792	120	W
Greenwood	1833	14 mi. from Lewistown	John A. Wright & Co.	729	100	E
Malinda*	1846	Orbisonia	Blair & Madden	-	30	E
Paradise	1829	Paradise Furnace	H.Trexler & Co.	560	35	E
Jackson*	1838	McAlevy's Fort	Mitchell, Vance & Alexander	-	30	E

Charcoal Iron (Hot Blast)

<u>Name</u>	<u>Construction Date</u>	<u>Location</u>	<u>Owner</u>	<u>Tons of iron produced, 1849</u>	<u>No. employed</u>	<u>Market</u>
Monroe	1844	Pine Grove (Centre Co.)	James Irvin	900	60	-
Mill Creek	1838	Mill Creek	Irvin, Green & Co.	1,367	70	E+W
Union	1816	Spruce Creek	Wallace's heirs	800	60	E+W
Huntingdon*	1796	Warriors Mark	George K. Shoenberger	1,100	130	W
Edward	1839	Vineyard Mills	Samuel H. Bell	575	50	W
Winchester*	1832	Orbisonia	T.T. Cromwell	500	40	W
Rockhill	1830	Orbisonia	Isett, Wigton & Co.	850	40	E
Chester*	1837	Orbisonia	Pennock's heirs	-	80	E
Rough and Ready	1849	Coffee Run	James Entrickin	357	48	E

* Out of blast in 1850

**E - east, W - west; specific cities not noted

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seek work elsewhere. The houses in which the workers had lived were either removed, demolished, or abandoned and left to decay.¹⁷

Generally, the county's iron furnaces that survived into the late nineteenth century in Huntingdon County employed coke as a fuel instead of charcoal.¹⁸ This change in fuel was not a result of a change in the demand for charcoal iron -- indeed, the market for charcoal iron in North America remained strong through the first three decades of the twentieth century.¹⁹ Instead, the shift to coke began in the 1870s because of the inexpensive coal and coke available after the opening of the Broad Top coal fields. The largest blast furnaces ever constructed in Huntingdon County were the two completed in 1875. Operated by the Rockhill Iron and Coal Company, and connected to the Broad Top field by the East Broad Top Railroad, each furnace was constructed of iron, measured 65 feet in height, and had a 17-foot wide bosh. The furnaces produced gray forge pig iron and had a capacity of 30,000 net tons per year. Although some of the iron ore used at the

¹⁷ Thomas H. Knepp and George G. Griffith, Greenwood Furnace, Yesterday and Today. (1929), 7. At Greenwood Furnace, one of the county's largest and longest-lived iron communities, workers' houses were sold for removal when the commonwealth purchased the site for reforestation in 1904. Similar disposition was apparently made of workers' houses at Monroe and Paradise furnaces, when both towns were acquired for state forest lands. One log building at Paradise, now Trough Creek State Park, may be a furnace worker's house, while two one-and-one-half-story log houses located a short distance from Monroe Furnace may have been moved from the furnace community. At both Greenwood and Monroe, crumbling foundations lining the existing roads or along "streets" branching off from them, show where the rows of workers' houses stood.

Limited evidence of other types of houses constructed for iron workers survives at four additional locations. At Huntingdon Furnace, one two-story dovetailed log house remains. In a county which retains a large number of log houses, this is the only known example of dovetailed corners remaining, and represents a method of construction familiar to workers brought from another area to work at the furnace. Two other log houses in the vicinity of the Colerain Forges date to the period of the forge's activity and bear the Shorb, Stewart & Co. name on an 1873 map. At Pennsylvania Furnace, four or five frame or plank company houses survive along roads near the furnace site, and two frame workers' houses face the road leading to the ironmaster's mansion at the Juniata Iron Works. Despite a fair number of these early company houses, they are too few in number to indicate patterns regarding either construction type or placement within the iron furnace communities.

There is also a paucity of extant structures which served the social needs of the iron community. Buildings used as company stores survive only at Huntingdon Furnace, Barree Forge, and the Juniata Iron Works. Documentary references confirm the existence of schools and churches at many of the iron works, but almost none survive, save a school at Huntingdon Furnace and a Civil War-era stone church at Greenwood.

Knepp and Griffith, 13; Huntingdon County Historical Society, Historic Sites Survey, 1977-80.

¹⁸ The one furnace that continued to produce charcoal iron was Greenwood Furnace which, by the 1880s, was owned by the Logan Iron and Steel Company. The site contained two stacks, one of which had been built in 1864. It measured 32 feet in height with a 9-foot bosh, and used red fossiliferous ore, obtained near the furnace. The pig iron produced at Greenwood was used for car wheels and chilled rolls. See American Iron and Steel Association, Directory of the Iron and Steel Works of the United States (Philadelphia: Allen, Lane & Scott, 1888), 29-30.

¹⁹ Richard H. Shallenberg, "Evolution, Adaptation and Survival: The Very Slow Death of the American Iron Industry," Annals of Science 32 (1975), 341-58.

Rockhill furnaces was locally mined, the company also obtained ore from Bellefonte, Pennsylvania, and from company mines in Virginia.²⁰

By the early twentieth century, the decline in easily obtained high-quality ore led to the demise of Huntingdon County's iron industry.²¹ Although it was the availability of iron ore that had first attracted the industry, by the 1870s the easily mined quality ores were becoming scarce, and the Rockhill Iron and Coal Company was forced to import ore from Virginia and elsewhere in Pennsylvania. Still, because of the local supply of coke and inexpensive transportation costs, the company was able to maintain a profit on its pig-iron production. Eventually, however, the superior iron ores from Michigan and Minnesota pushed the Rockhill company out of business. A similar fate had befallen the last of the Juniata Valley's charcoal-iron producers by the late nineteenth century.²²

Transportation

Despite its rugged terrain, south-central Pennsylvania and Huntingdon County came to serve as a corridor between Pennsylvania's two major urban centers, Philadelphia and Pittsburgh. The Juniata River, flowing eastwardly through the mountain ridges, formed a natural pathway that became the principal route of the commonwealth's early east-west transportation systems.

The earliest transportation routes through Huntingdon County were trails established by native Americans prior to white settlement. These trails followed the long parallel valleys from south to north, and cut through the natural gaps in the ridges from east to west.²³ The first traders and settlers to enter the region used these same trails. Some 200 years later, the majority of modern state and federal highways through the county follow the course of these early pathways. The Pennsylvania General Assembly authorized a state highway in 1787 to join the Juniata with the Conemaugh River, "from or near points at which these streams become navigable." The highway, completed in 1790, functioned as the main link between the valley of the Juniata and the waters of the Ohio until the early nineteenth-century construction of the Harrisburg and Pittsburgh

²⁰ American Iron and Steel Association, Directory of the Iron and Steel Works of the United States, 28.

²¹ Joseph Thropp's Saxton Furnace, just over the Huntingdon-Bedford County line, operated into the 1920s using Huntingdon County coal in its coking operations and employed workers from the Huntingdon County portion of the Broad Top region. Auction Catalog, Joseph E. Thropp Iron Manufacturing Business, 1925, (photocopy at Huntingdon County Historical Society).

²² Unfortunately, little remains from the Rockhill furnaces, the largest coke-fueled furnaces in Huntingdon County. A number of furnace stacks that used charcoal as a fuel do remain and attest to the importance of the region's charcoal iron industry.

²³ Compare maps of Indian paths in Paul A. W. Wallace, Indian Paths of Pennsylvania (Harrisburg, 1965) with Reading Howell's 1792 map of Pennsylvania (Pennsylvania Archives, Third Series, Appendix) and a modern highway map.

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Turnpike Road.²⁴ Authorized in 1806, this later turnpike was originally projected to pass through Bedford, south of Huntingdon County, but when it failed to meet the stipulated conditions authorization was transferred to the Harrisburg, Lewistown, Huntingdon and Pittsburgh Turnpike. By 1808 the turnpike was sufficiently developed to allow a weekly mail stage to run between Harrisburg and Alexandria. In 1814, stock was issued in the Huntingdon, Cambria, and Indiana Turnpike, and this company completed the seventy-seven miles of road between Huntingdon and Blairsville by 1821.²⁵

Turnpike roads had barely been completed between Harrisburg and Pittsburgh when the Huntingdon Gazette printed an editorial expressing support for a more ambitious transportation project. The Gazette noted that "turnpike roads had their day, and now we are all agog in this and many other parts of the country on the subject of canaling."²⁶ The impending completion of the Erie Canal and the effect it would have on travel and trade between east and west was the subject of much discussion among Pennsylvanians in 1825. Philadelphia was already experiencing considerable competition from Baltimore for western trade, and Philadelphia feared New York's entry into the same markets. A Pennsylvania canal was proposed, and it was to take the same route that had been chosen for the state road across the Alleghenies in 1787. The Juniata River and the Conemaugh River would supply water to the system and a railroad and incline plane were designed to connect the east and west divisions of the canal across the Eastern Continental Divide.

The engineering problems encountered on the route were enormous. To overcome a rise in elevation of 582' the Juniata Division required eighty-eight lift and guard locks in 127 miles of waterway. Within Huntingdon County (which then included the present Blair County), the rise was 250' between Mount Union and Williamsburg, and an additional 106' to Hollidaysburg. Fourteen river dams provided pools for sixteen miles of slackwater navigation between Huntingdon and Hollidaysburg. Three feeder dams, plus a reservoir at Hollidaysburg, provided water to maintain the level in the canal. Aqueducts carried the canal across the Juniata River, twice near Mount Union and again between Petersburg and Alexandria. Smaller crossings over streams were also by aqueduct. Construction was authorized in 1827, and the canal was completed to Huntingdon by 1831. Completion of the Juniata Division to Hollidaysburg was celebrated November 27, 1832.²⁷

²⁴ Africa, 30.

²⁵ Africa, 31, 33; Jean P. Harshbarger, Nancy R. Taylor, and Sara H. Zabriskie, Hartslog Heritage (State College: Alexandria Bicentennial Association, 1975), 22. The Hartslog Museum in Alexandria preserves an original turnpike marker inscribed "7 M. to Hunt./ 70 M. to B.ville." A century later, in the 1930s, the Pennsylvania Turnpike revived the idea of an improved toll road. The route of the Pennsylvania Turnpike followed the right-of-way established by the never-completed South Penn Railroad through the southern border counties of the state, and was a precursor of the great network of interstate highways that now covers the country. Two miles of the turnpike route cross the southern tip of Huntingdon County, including half of a tunnel through Tuscarora Mountain.

²⁶ Huntingdon Gazette 27 January 1825, as quoted in Africa, 33.

²⁷ Africa, 33-37; Robert McCullough and Walter Leuba, The Pennsylvania Main Line Canal (York, Pa.: The American Canal and Transportation Center, 1973), 41-47.

In the first six-month season in 1833 the canal saw considerable use with \$4,700 in tolls collected at Huntingdon and more than 6 million pounds of cargo cleared for passage. This was almost equally divided between eastbound and westbound traffic. Of county products shipped, flour accounted for more than twice the amount of iron.²⁸ By 1841 the amount of coal shipped from the Juniata mining district (an area that included Huntingdon County) on the Pennsylvania Canal placed the region fifth among the eight mining districts listed.²⁹ In this same year, eight seasons after the canal opened, tolls collected in Huntingdon had risen, yet they did not amount to even a 50 percent increase over that collected in 1833. The decade of the 1840s saw a nationwide economic depression, and Pennsylvania Canal traffic reflected the downturn. Use of the canal waned, as iron shipments from Huntingdon demonstrate. Between 1843 and 1844 the fall was dramatic, with about 7.1 million pounds of iron departing by canal from Huntingdon in 1843 but only about 4.8 million sent the following year.³⁰

By the 1840s the canal's high construction cost, seasonal operation, and vulnerability to damage by floods made it a financial liability. In 1844 the state legislature decided to cut its losses, and offered the main line of the public works for sale for \$20 million. The terms of sale required the new owner to continue to operate the route for public transit. With no offers, the price was cut in half, but still no buyer came forward until 1857, when the Pennsylvania Railroad's offer of \$7.5 million was accepted. Despite the terms of sale, the canal's highly unprofitable Portage Railroad was abandoned in just three months, severing the link between the Juniata and Western divisions. Both continued to be used for local transport, but the Western Division was abandoned during the Civil War and sections of the Juniata Division west of Huntingdon were taken out of service between 1872 and 1877. By 1903 the entire portion of the canal in central Pennsylvania was out of operation.³¹

The route chosen for the Pennsylvania Railroad in 1847, like the highways and canal which preceded it, followed the course of the Juniata River through central Pennsylvania. Unlike the

²⁸ In 1833 the following quantities of goods were shipped by canal from Huntingdon: flour, 1.8 million pounds; iron, 734,459 pounds; coal, 60,000 pounds; grain, 601,000 pounds; seed, 33,800 pounds; butter and lard, 34,000 pounds; and whiskey, 3,900 gallons. Africa, 36.

²⁹ About 17,300 tons of coal were sent from the Juniata region, while the Lehigh mining district ranked highest with over 142,000 tons. "Resources of Pennsylvania," Hunt's Merchants' Magazine 12 (1845) 252.

³⁰ *Ibid.*, 247; Hunt's 8 (1843) 292.

³¹ McCullough and Leuba, 152-64; William H. Shank, P.E., The Amazing Pennsylvania Canal (York, Pa.: American Canal & Transportation Center, 1973) 76. Relocation of the railroad in the 1890s onto large sections of the canal right-of-way through Huntingdon County resulted in the destruction of many canal structures that had survived both years of neglect and the disastrous 1889 flood. In many locations, traces of the waterway are visible to the knowledgeable observer, including rubble of the piers which supported the Jackstown aqueduct in Jack's Narrows. The only standing remains recorded in the survey include a substantially altered lock house in Alexandria and a fairly well-preserved guard lock, its feeder, and remnants of the Raystown feeder dam below Huntingdon. A canal warehouse in Huntingdon, built by the Pennsylvania Railroad to facilitate the transshipment of goods between canal and railroad, owes its survival to the fact that it was removed to a nearby location when the railroad right-of-way was altered in 1890. Africa, 480; Sanborn Map Company, Huntingdon, Pennsylvania (New York: Sanborn Insurance Company, 1884, 1891); Daily Local News (Huntingdon, Pa.), 1 and 3 May 1890.

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canal, which followed the Frankstown Branch, the railroad's builders elected to follow the Little Juniata, from the forks just west of Petersburg. This avoided the difficult terrain west of Alexandria but did require construction of a tunnel and twelve bridges within a distance of seven miles between Barree and Tyrone forges.³²

The railroad's detour around the canal towns and the subsequent abandonment of the canal isolated once-thriving communities such as Alexandria and Williamsburg (in Blair County after its formation in 1846). Towns on the rail line grew in importance as railroad-related business expanded. Such towns as Petersburg that had languished in relative obscurity when bypassed by the canal became important commercial centers on the railroad route. In 1850 Petersburg had been less than half the size of Alexandria, but, as Petersburg became an important rail-shipping point for the surrounding agricultural area; boasting the county's only operating stockyard, it grew larger than Alexandria and by 1900 was almost twice the size of the old canal town. Similarly, the populations of Mount Union and Huntingdon doubled between 1870 and 1900, due largely to the effect of the railroad on their economies. These towns benefitted from railroad-related expansion since they were at junctions of the PRR with local rail lines serving the Broad Top coal field. (The history and significance of the Huntingdon & Broad Top Mountain Railroad and the East Broad Top Railroad will be discussed in the Coal and Coke section that follows.)³³

³² Conrail, List of Undergrade and Overhead Structures (Philadelphia: Office of the Chief Engineer - Maintenance of Way, 1 January 1988), 20-21.

³³ Lee Rainey and Frank Kyper, East Broad Top (San Marino, CA: Golden West Books, 1982), 144-145. As will be discussed later, the Huntingdon & Broad Top Mountain Railroad (H&BT), completed in 1856, connected west Broad Top mines in Huntingdon and Bedford counties with the main line at Huntingdon, and the narrow-gauge East Broad Top Railroad (EBT), built in 1873 by the Rockhill Iron & Coal Company to serve its mines on the east side of Broad Top Mountain, joined the PRR in Mount Union. The accessibility of the PRR main line, and the availability of coal from the short lines, combined to make the area attractive to industry. Both the EBT and the H&BT transported coal until the mid-1950s. As fewer local industries depended on the PRR for transportation of materials or products, railroad passenger service was gradually discontinued at every depot but Huntingdon. Structures associated with suspended operations, such as freight and passenger service, or associated with the defunct lines, were extremely vulnerable to neglect and destruction. Few H&BT structures are extant in Huntingdon County; only a frequently flood-damaged and repaired trestle at Huntingdon, a small station adapted for use at the Huntingdon County Fairgrounds, and a water tank and relocated freight station in a park at Dudley remain. Some of the H&BT railroad shops in Bedford County do survive.

The situation with the EBT is remarkably different. Perhaps because the EBT was part of a vast complex that included rail line and structures, company towns, coal mines, and wooded acreage, it was able to attract an interested buyer after coal operations ceased. Rather quickly, a part of the railroad began operating as a tourist attraction, thus preserving the depot, roundhouse, repair shops, turntable, and other buildings at the railroad headquarters in Rockhill Borough. Structures along unused portions of the right-of-way have fared less well with respect to maintenance, but many survive, including a coal trestle and a switch engine house containing an engine at the Mount Union yard, long bridges at Aughwick Mills and Pogue, small depots at Saltillo and Robertsdale, and deteriorating tunnels through Sideling Hill and Rocky Ridge. Virtually the entire right-of-way is undisturbed, though overgrown, and much track remains in place. The EBT has been designated a National Historic Landmark.

Coal and Coke

The Broad Top coal region, which extends into Bedford and Fulton counties, includes parts of southern Huntingdon County, embracing Carbon, Wood, and a section of Todd townships. The region is named for Broad Top Mountain, which has a broad table-like top and contains coal classed as semi-bituminous, a hardness that falls between hard and soft coal. Isolated from other coal deposits, small country mines were reportedly opened in the Broad Top coal field in the early nineteenth century. This coal was used primarily at nearby blacksmiths' forges. By 1840 activity in the coal field had increased, with the census recording the county's ten coal mines, producing 58,500 bushels of coal.³⁴

Railroad transportation was the key to opening commercially viable mines in the region. The Pennsylvania Railroad extended from Philadelphia through Huntingdon County to Altoona in 1850 and by 1852 provided transport across the state to Pittsburgh. While there was considerable interest in a railroad on the western side of Broad Top Mountain as early as 1847, various obstacles caused delay until the Huntingdon & Broad Top Mountain Railroad (H&BT) incorporated in 1853. Construction then proceeded rapidly and the first coal passed over the line on the western side of the coal field from Hopewell to Huntingdon in 1856. Early planning for a railroad to the east side of Broad Top Mountain encountered lengthier delays. A charter granted in 1848 failed to result in the organization of a company. Success was finally achieved in 1874 when the owners of Rockhill Furnace completed the East Broad Top Railroad (EBT) between Mount Union and Robertsdale.³⁵

Mine development followed immediately upon completion of the H&BT, and the railroad shipped almost 43,000 tons of coal in its first year of operation. By 1860, the load had increased to nearly 188,000 tons, reflecting the rapid strides made by mine operators. Although the railroad owned coal lands which it either leased for development or ran on its own, mines on the west side of Broad Top Mountain were owned by a number of different individuals, partnerships, and companies. In this respect, the area was very different from the east side of the coal field, which was dominated almost completely by the Rockhill Iron and Coal Company, owners not only of the mines and the EBT, but also coke ovens and iron furnaces. In 1875, the first year Rockhill Iron and Coal operated the East Broad Top coal field, more than 57,000 tons of coal were mined, with output rising in succeeding years to 100,000 tons.³⁶

By 1881, Huntingdon County's portion of Broad Top coal production was estimated at 390,000 tons, a total that was not surpassed until 1902 when output exceeded 460,000 tons. While there was some fluctuation, overall the period from 1902 to 1915 was characterized by a rise in coal output.

³⁴ Rainey and Kyper, 18; I. D. Rupp, History and Topography of Northumberland, Huntingdon, Mifflin, Centre, Union, Columbia, Juniata and Clinton Counties, Pa. (Lancaster: G. Hills, 1847), 202.

³⁵ Africa, 37-38.

³⁶ Jon D. Baughman and Ronald L. Morgan, From Coal to Glory: The History of the Huntingdon & Broad Top Mountain Railroad & Coal Co. (Saxton: privately printed, 1988) 19-21; Rainey and Kyper, 43.

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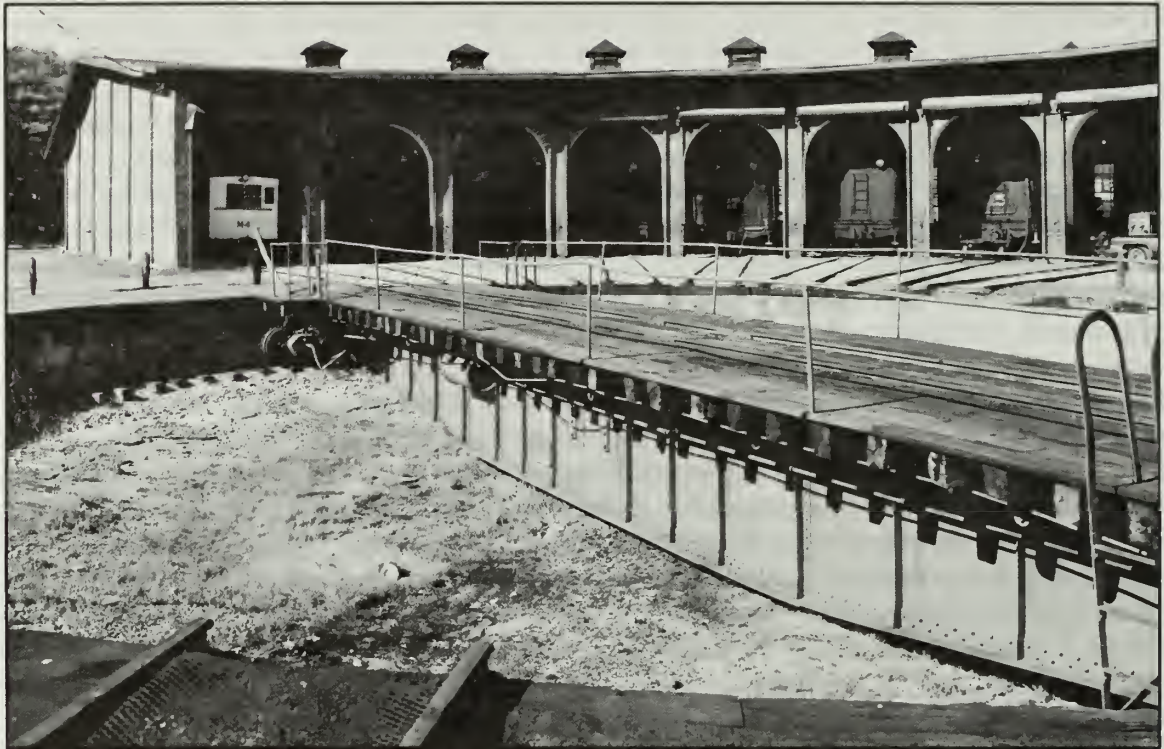


Photo 2. East Broad Top Railroad Roundhouse and Turntable. Rockhill Furnace, Pennsylvania. Photo by Jack E. Boucher.

Peak production in the county came in 1918 when 1.3 million tons of coal were mined. During the first half of the twentieth century, Huntingdon ranked between sixteenth and twentieth among the twenty-five or twenty-six counties producing bituminous coal in Pennsylvania, with output falling after World War I and averaging one-half million tons per year through the 1930s.³⁷

Both charcoal and coke are concentrated heat-generating products, the former derived from the controlled burning of wood, and the latter from the controlled burning of coal. Both have been used in metallurgical processes with great success. The first reported coking of Broad Top semi-bituminous coal was by William Firmstone at the Savage Iron Works (Todd Township) about 1835. Firmstone, an Englishman experienced in the use of coke, obtained the coal from a Savage-owned mine in Rocky Ridge and presumably coked it in a mound on the ground, by a method analogous to charcoal-making. Though primitive by later standards, this method produced dense, well-structured coke.³⁸

In the last quarter of the nineteenth century, coke manufacture in the Broad Top region received attention from Pennsylvania's second geological survey, which published two reports by John Fulton,

³⁷ Pennsylvania's Mineral Heritage (Harrisburg: Department of Internal Affairs, 1944), 15-26.

³⁸ John Fulton, "On the Coking of Bituminous Coal," Appendix to Report of Progress in Bradford and Tioga Counties (Harrisburg: Second Geological Survey, 1874-78), G 248; Rainey and Kyper, 18.

Fulton, general mining engineer for the Cambria Iron Company. His report, "On the Methods of Coking Coal for Furnace Use; its Efficiency and Economy, as Compared with Anthracite Coal in the Metallurgy of Iron," stated unequivocally, "that coke is destined to become the leading fuel for blast furnaces, and to retain this position from its almost inexhaustible source of supply, its calorific efficiency, and its continued economy." He judged Broad Top coal "very good for the production of a bright, open, tenacious and strong coke." Comparative analysis of Connellsville and Bennington coking coals showed Broad Top coals yielding higher percentages of fixed carbon and, therefore, of coke.³⁹

The first large-scale coke oven operation in Huntingdon County began at Rockhill Furnace No. 2 in 1875. Percival P. Dewees, whose experience with charcoal-iron furnaces in the area dated back more than thirty years, had decided to establish a more modern iron operation in which coke would replace charcoal as fuel; \$2 million in capital was raised and the Rockhill Iron and Coal Company was organized in 1872. By every measure, Rockhill Iron and Coal's Rockhill No. 2 dwarfed even the largest of the old Huntingdon County charcoal-iron furnaces. Following in the tradition of self-sufficient iron plantations, this new endeavor also included the acquisition of all the facilities needed to mine, haul, and coke the coal. Rockhill Iron and Coal acquired 8,000 acres near Orbisonia from which both fossil and hematite ores, limestone, and sand were obtained, and 11,000 acres of coal and timber lands in the Broad Top region of the county. The physical plant included large brick casting houses and a blowing engine house, a 280' long stock house with air hoists, an office building, and two banks of coke ovens. Sixty-eight Belgian coke ovens, built adjacent to the furnace, consumed 40,000 tons of coal annually.⁴⁰ Recognizing the increasingly critical role of transportation in large-scale industrial undertakings, the company constructed the narrow-gauge East Broad Top Railroad to link company mines with the coking and furnace operations. The rail line extended to Mount Union, from which the Pennsylvania Railroad provided transportation east or west out of the county.

John Fulton's other report, "On the Coking of Bituminous Coal," addressed the relative merits of beehive and Belgian ovens, examining cost as well as product. The report revealed a complex relationship between the structure of various coals and the effects of coking in different types of ovens. In essence, beehive ovens were best suited for coal with a particularly high fixed carbon content, while Belgian ovens were geared towards a less high quality coal. Although based on the beehive design, Belgian ovens had flues and admitted less air than beehives. Ovens of one type were sometimes substituted for another kind during the history of an operation as a company strove to achieve the best product possible from its raw materials. Such a change was made at Rockhill in 1887, when 100 beehive ovens replaced the Belgian type.⁴¹

³⁹ John Fulton, "On the Methods of Coking Coal for Furnace Use; its Efficiency and Economy, as Compared with Anthracite Coal in the Metallurgy of Iron," Appendix A, Special Report on the Coke Manufacture of the Youghiogheny River Valley (Harrisburg: Second Geological Survey, 1876), L 120.

⁴⁰ Africa, 258-60; Rainey and Kyper, 27, 37-39, 54.

⁴¹ Fulton, "Coking of Bituminous Coal"; Rainey and Kyper, 52.

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At Minersville, on the west side of the Broad Top coal field, Robert Hare Powel constructed 105 Belgian ovens in 1882 to produce coke for his new furnace at Saxton. Using coal from two Powel-owned mines, the works had a capacity of 100 tons of coke per day. The coking operation was placed at the mine mouth rather than at the furnace, which saved hauling costs for Powel, who, unlike the Rockhill owners, did not own the railroad linking his mines and furnace. At Minersville, as at Rockhill, the Belgian ovens were eventually replaced by beehive ovens.⁴²

To house the workers drawn to the area to mine coal, the Rockhill Iron and Coal Company constructed two company towns in previously unsettled locations within the Broad Top coal region of southern Huntingdon County. Beginning in 1873, while building the East Broad Top Railroad, Rockhill Iron and Coal laid out the company town of Robertsdale near the Rockhill No. 1 mine. The town contained approximately fifty double plank houses erected for a work force of 100 miners. A nearby saw mill probably provided the planks, which were cut in lengths equal to the height of a two-story house, and then assembled into walls on the ground and raised as a unit. Plank construction of this type was fast and cheap where timber could be obtained on company lands.⁴³ Houses had generous lots, with garden plots and privies at the back, and were arranged in a grid of streets laid out around an existing road. At the center of town, adjacent to the railroad, stood a substantial two-story stone company store.

Robertsdale's original houses had identical two-story rectangular plans with gable roofs and symmetrically placed windows and doors.⁴⁴ In time, the town exhibited more variety in its residential buildings, as the original houses were enlarged by one- and two-story additions to the sides and rear, and as the company expanded the community to accommodate additional workers. Later company-built housing introduced different sizes, shapes and roof types: pyramidal and hipped roofs, shed-roofed wall dormers, and bungalows with clipped gables. All but the bungalows continued to display the company's preference for duplex housing.

In 1891, as Rockhill Iron and Coal's operations in the region expanded, it opened a mine two miles south of Robertsdale and erected the town of Woodvale. While similar housing was used at both Robertsdale and Woodvale, the new community included some different designs. In both towns, houses of the same type tended to be grouped together. Except for Fulton Street, Woodvale's plan resembled Robertsdale's -- a rough grid incorporating a pre-existing road. Added about 1915,

⁴² Africa, 230; Auction Catalog, Joseph E. Thropp. Remains of the beehive ovens in both these locations are substantial, considering Rockhill was abandoned in 1908 and Minersville about 1925. The Minersville site also includes the remains of a bank of rectangular Mitchell ovens, as well as the foundations of another bank begun in the 1920s and abandoned before completion. Rectangular ovens, a machine-drawn type of coke oven introduced to the United States in the early twentieth century, were never widely adopted and both they and beehive ovens were soon replaced by by-product coke ovens.

⁴³ Huntingdon County Historical Society, Historic Sites Survey, 1977-80.

⁴⁴ A photograph of the new town is reprinted in Nancy S. Shedd and Jean P. Harshbarger, Second Century, 1887-1987: A Huntingdon County Bicentennial Album (Huntingdon: 1987), 4.

Fulton Street winds along Great Trough Creek with nearly thirty houses lining one side of the road.⁴⁵

At its height, more than 1,000 miners worked in Huntingdon County, but employment decreased dramatically in the 1930s and by 1943 only 530 employees worked in the mines. Following a World War II build-up to more than 750 miners, employment plunged again to just 135 workers in 1954. In the early 1960s miners numbered fewer than fifty and production was less than 34,000 tons.⁴⁶ Since the 1960s, strip mining in a few locations has produced small amounts of coal and given employment to one or two dozen workers at the most. Two companies presently strip mine on the east side of the Broad Top coal field in the vicinity of Woodvale.⁴⁷

Refractory Brick Industry

American manufacture and use of refractory brick dates to the colonial period of settlement when potters used heat-resistant brick to fire ceramics in kilns. This fireclay brick met the demands of manufacture until the development and growing use in the 1870s and 1880s of coke ovens, Bessemer steel vessels, and open-hearth steel furnaces, which created a need for materials capable of withstanding more extreme heat. A study conducted in 1879 did not specifically relate to practical concerns of the steel industry, but tested the "standing up power" of twenty-one fireclay bricks submitted for trial and revealed the nature of the problems steelmakers confronted. Employing fairly rudimentary methods, the experiments determined that only one brick withstood the tests without rounding, cracking, crumbling, or melting.⁴⁸

By the 1880s the problem of fireclay brick strength was receiving serious attention. The Welsh-born Westmoreland County resident Isaac Reese, who pioneered American silica brick experimentation, knew of the successful manufacture of an improved refractory silica brick in Wales. Aware that the high-grade refractory consisted of ganister--a mix of quartzite and clays--bonded with lime, Reese sent his son abroad to study Welsh materials and methods of silica brick manufacture. By 1886, Reese, A. J. Haws in Johnstown, and Harbison and Walker's Star Works

⁴⁵ Lola Bennett, The Company Towns of the Rockhill Iron and Coal Company: Robertsdale and Woodvale, Pennsylvania (Washington, D.C.: National Park Service, HABS/HAER, 1990). Rainey and Kyper, 55; Jon D. Baughman and Ronald L. Morgan, The Robertsdale Story (n.p., 1974), 8. In Margaret M. Mulrooney, A Legacy of Coal: The Coal Company Towns of Southwestern Pennsylvania (Washington, D.C.: National Park Service, HABS/HAER, 1989), double-family housing is noted as one of the primary characteristics of coal-company housing in the region.

⁴⁶ Wilson, Polakowski, Heine & Simpson, Inc. Continuity Through Conservation (Huntingdon, 1967), 156, 179-82.

⁴⁷ Interview with James E. Park, former Broad Top coal operator, Broad Top City. 22 January 1989. The two best-preserved coal mining sites in the county are the Rockhill Iron and Coal Company's No. 5 or Slope Mine at Robertsdale and Joseph E. Thropp's Gordon and Melrose mines between Dudley and Barnettstown. The structures remaining at both locations are in ruins, but the surrounding areas have been minimally disturbed, thus preserving the archeological potential of the sites.

⁴⁸ Franklin Platt, "Fire Brick Tests," Second Report of Progress in the Laboratory of the Survey (Harrisburg: Second Geological Survey, 1879), MM 268-79.

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in Pittsburgh had succeeded in producing silica brick using ganister rock from Jesse Hartman's quarries in Blair County.⁴⁹

Manufacture of silica brick was not fundamentally different from other brick production. Whether clay or ganister, the raw material was first refined and then washed and screened prior to mixing into a "mud" for molding into bricks or other shapes. After the shapes were dried, they were burned at a temperature appropriate to the material and ultimate use. In the case of silica brick, ganister had to be crushed and ground prior to being molded into brick. Entering the new industry was relatively easy since the equipment and manufacturing procedures were so similar to other types of brick making.⁵⁰

Typically, experienced fireclay brick manufacturers moved into the production of silica brick. Fireclay brick continued to have useful applications (accounting for 65 percent of total refractories production as late as 1950), and many firms produced both types of refractory brick. By the turn of the century, refractories manufacturers usually built new plants near the source of raw materials and integrated vertically to control the process from extraction of the raw materials to sale of the finished products.⁵¹

In the early twentieth century silica-brick manufacture underwent considerable technical change; many of these changes were played out in Huntingdon County's refractories. By 1900 silica crushers and grinders, which had been made of iron, were replaced with sturdier steel equipment. Following the traditions of fireclay brick manufacturing, early silica bricks were molded by hand. Because of silica's abrasive composition, it was originally shaped in hardwood molds of cherry or maple, but eventually, steel replaced the wood molds. By the late 1910s machine presses began to appear. Several large refractories manufacturers pooled their resources and hired Charles L. Norton of Massachusetts Institute of Technology to make a silica-brick press machine. Norton's machines mechanically dropped silica mud into molds and finished them off with a rotary slicker. While such machinery was neither perfected nor widely adopted by the mid-1920s, it was nonetheless clear that hand-molded brick would soon be replaced by machine-pressed shapes.⁵² At Harbison-Walker's Mount Union plant both impact presses and power presses were used by the 1940s. While the plant continued to produce hand-pressed specialty shapes, by the 1970s hand-molded brick accounted for only a minor portion of their output.⁵³

⁴⁹ Corinne Azen Krause, Refractories: The Hidden Industry (Columbus, OH: American Ceramic Society, 1987), 25-29; James E. MacCloskey, Jr., History of Harbison-Walker Refractories Company (Pittsburgh, 1952), 39-40.

⁵⁰ Krause, 32-33; Moore and Taylor, 11.

⁵¹ Krause, 42 and 67.

⁵² MacCloskey 82-83; Arthur F. Graeves-Walker, "History of the Development of the Refractories Industry in the United States," Bulletin of the American Ceramic Society 20 (1941): 216; Krause, 114; Moore and Taylor, 83. This method was later superseded by power presses.

⁵³ Interview with Robert R. Wagner. Retired Harbison-Walker plant manager and coke oven production manager. Mount Union, Pennsylvania. 29 August 1991.

The technique for drying refractory brick was also mechanized during these years. While the earliest bricks had simply been sun-dried, by about 1890 most brick was dried on hot floors, which accelerated the drying process. By the 1920s tunnel dryers were used widely, although larger shapes continued to be dried on hot floors. The "green" brick was stacked on steel pallets and conveyed on rack cars to these dryers, which were heated by steam and kiln waste gases drawn through the tunnel by electric fan. The length of drying time depended on the size and nature of the brick, although most were dried for at least twenty-four hours.⁵⁴

The final stage of refractories production -- firing of the brick -- also changed in the early twentieth century. Early refractory brick was burned in periodic kilns that were manually loaded and unloaded. At first, these were small round or rectangular kilns. Later, they were replaced by large, round down-draft, or beehive, kilns that were bound with iron bands and had a capacity of 80,000 to 175,000 standard (9") bricks. The introduction of tunnel kilns brought continuous burning and an entirely new scale of mechanization to the industry.⁵⁵ No tunnel kilns were ever used in Huntingdon County plants, and in fact, only one refractories operation in the nine-county America's Industrial Heritage Project region installed tunnel kilns.⁵⁶

Huntingdon County's role in the silica-brick refractories industry derived from the presence of virtually unlimited reserves of ganister on its mountaintops, as well as in neighboring counties. Vast sections of ganister were exposed on the steeply pitched slopes, where the Juniata River cuts through Jack's Mountain. Once the commercial value of ganister was recognized, the exposed rock needed only to be transported to nearby works for processing. When the supply of free rock was depleted, quarrying moved to the top of the mountain. In addition to the abundance of raw materials, the refractory brick business was aided by direct rail connection to sources of coal for fuel and to the iron and steel centers where silica brick was used.⁵⁷

The W. H. Haws plant in Mount Union, constructed in 1899, was the first works in America built solely for the manufacture of silica brick.⁵⁸ Its location at the base of ganister-rich Jack's

⁵⁴ Moore and Taylor, 86; Thomas N. Kurtz, "History of Silica Brick," Bulletin of the American Ceramic Society 11 (1932): 31. At the Mount Union Harbison-Walker operation, installation of tunnel dryers occurred when the No. 2 works was constructed.

⁵⁵ Krause, 114-115; Moore and Taylor, 87; MacCloskey, 81-82; Kurtz, 31. Brick passed through these 300' to 450' long kilns over the course of three or four days, stacked much as they had been in periodic kilns, in rows with layers of burned brick interspersed irregularly to provide support. Installation of tunnel kilns was often a catalyst to mechanization of an entire plant, and by the 1930s and 1940s, nationally, vast amounts of skilled hand labor had been eliminated from refractories manufacture, with machine-pressed brick transported mechanically through the drying and burning stages of manufacture.

⁵⁶ The Kier Fire Brick Company's plant at Salina, Westmoreland County, had two tunnel kilns, built in the late 1920s. Kim E. Wallace, A Study of Refractories Towns (National Park Service, HABS/HAER, 1991).

⁵⁷ E. S. Moore and T. G. Taylor, The Silica Refractories of Pennsylvania (Harrisburg: Department of Forests and Waters and Topographic and Geologic Survey, 1924), 3-4, 11-12, 18-25, 35-40; J. Spotts McDowell, "A Study of the Silica Refractories," Transactions of the American Institute of Mining Engineers 57 (1918), 13-15.

⁵⁸ MacCloskey, 40.

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Mountain, adjoining the main line of the Pennsylvania Railroad, was ideal. The East Broad Top Railroad delivered semi-bituminous coal directly to the site from the Broad Top mines, and the PRR linked the plant to its iron and steel industry consumers in Johnstown and Pittsburgh.



Photo 3. Harbison-Walker Refractories plant. Photo by Jet Lowe.

The advantageous location of the Haws plant was immediately apparent, and over the next fifteen years Mount Union was transformed into the "silica brick capital of the world." After a disputed sale of the Haws plant to Harbison-Walker Refractories in 1900, Haws' former partner, Scott Dibert, founded the rival Mount Union Silica Brick Company in 1901. Two years later, Harbison-Walker built its No. 2 works next to its original plant, doubling its capacity. By 1911, a third brick company had joined the town's industrial ranks, with the construction of the Mount Union Refractories plant. While the refractories that were constructed after Haws' did not enjoy the same proximity to Jack's Mountain, good railroad service on the short hauls to their respective quarries helped minimize this disadvantage.⁵⁹

Alexandria witnessed the construction of a Federal Refractories plant in 1904. Federal Refractories was located west of town, at the base of Tussey Mountain, on a site remarkably similar to the Haws site at Mount Union. An incline connected the Federal plant with its mountaintop quarry,

⁵⁹ A Bicentennial Keepsake (Mount Union: Allen Welch, 1976), 27-31; Rainey and Kyper, 74-75.

and the recently completed Petersburg branch of the PRR passed within yards of the site, bringing coal to fuel the machinery and kilns, and hauling finished bricks to distant markets.⁶⁰

The demand for steel during World War I sparked an expansion in silica-brick manufacture, and employment at refractories in the county reached an all-time high of 1,800 in 1919 with Mount Union accounting for more than 1,600 of the total. Area residents could not satisfy the demand for labor, which was met instead by hiring eastern and southern European workers. The influx of new workers created a housing shortage, and Harbison-Walker built 100 company houses on Ganister Hill, where immigrant families shared their quarters with five to ten single boarders of the same nationality. Italians, as well as Austro-Hungarians, Serbians, Croatians, Russians, and Macedonians lived in the Ganister Hill section in 1910. Employees native to the area also occupied company housing, but their households included few non-family members. Later, as the wartime labor market expanded, and a third brick plant and a government munitions plant were built, Mount Union attracted a number of African-American workers from the south, giving the town a mix of nationalities and races new to central Pennsylvania at this time.⁶¹

The town of Kistler was completed in 1917 for employees of the Mount Union Refractories Company. Across the river from the plant, Kistler (Mifflin County) was an atypical company town in several ways. Most company towns were designed by engineers with minimal attention to aesthetics or town plans that might foster a sense of community. In the case of Kistler, however, the company strove for more than the basic control inherent in a company town. Influenced by late nineteenth and early twentieth century town-planning concepts, Mount Union Refractories hired John Nolen, a well-known planner, from Cambridge, Massachusetts, to lay out an "industrial village" on a tract of land acquired for that purpose. The assimilation of immigrant populations to the American way of life was a goal of the industrial village, hence planning emphasized community facilities and programs. The decision to engage a man of Nolen's reputation and philosophy may represent a particularly enlightened response to the conditions. Or, it may simply have been a business-minded experiment derived from the company's desire to do whatever it could to achieve a more stable, controllable work force. Regardless of intent, Kistler provides an important contrast to other contemporary approaches to company towns.

In his writings about the Kistler project, Nolen related the town's plan to theories he held concerning width of streets, set-back of buildings, landscaping and open spaces and, in particular, facilities that would draw the residents together into a community. Community buildings provided at Kistler housed an organized program of group activities such as sewing and knitting, nursing

⁶⁰ Harshbarger, et al. 78-79; Moore and Taylor, 47-48.

⁶¹ Commonwealth of Pennsylvania, Department of Internal Affairs, Second Industrial Directory of Pennsylvania, 1919 (Harrisburg: State Printer, 1919); U. S. Census, Population Schedules, 1910, for Alexandria and Mount Union boroughs; Bicentennial Keepsake, 33.

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instruction, athletics, and a volunteer fire company. While other company towns had community buildings that hosted activities, in few other towns were such activities company-sponsored.⁶²

The New York architectural firm of Mann and MacNeill was retained to design the houses, and Nolen placed two grids of streets on the triangular plot, arranged so that both provided access to the community buildings, parks, playground, and athletic field included in the plan. Seven types of single, double, and quadruple dwellings were built in Kistler, arranged either in concentrations of one type of house or in groupings that included a mix of the different types.⁶³

Reflecting general economic conditions, refractories employment in the county leveled off during the 1920s at about 1,500, fell to a low of 950 in the mid-1930s, and climbed again to about 1,300 during World War II. The wave of post-war prosperity carried the industry into the 1950s, but by the end of the decade, General Refractories at Mount Union and Federal Refractories at Alexandria shut down. The closing of General Refractories coincided with a shift to the production of chrome and magnesite brick at a new New Jersey plant that offered better access to imported materials. The company's Mount Union site was cleared in 1956 for a federal housing project. Maryland Refractories acquired the Alexandria plant in 1959 for the manufacture of refractory specialties, specifically grog, from reclaimed brick. Increased hauling costs forced a move to Ohio in the early 1980s, and the Alexandria plant was razed in 1988.⁶⁴

Harbison-Walker continued to operate, specializing in complex shapes for coke ovens. By the 1970s, however, rising fuel costs and shortages threatened profits and production schedules, and the plant closed in 1985, a victim of age and the depressed American steel industry.⁶⁵ North American Refractories (originally Mount Union Refractories) continued in business until 1990; however, its most recent operations bore little resemblance to earlier production, since silica-brick manufacture was no longer a thermal process.⁶⁶ Although only portions of the North American facility and the Harbison-Walker plant remain, they still convey the size and configuration of silica refractories manufacture.

⁶² John Nolen, New Towns For Old: Achievements in Civic Improvement in Some American Small Towns and Neighborhoods (Boston: Marshall Jones Co., 1927), 66-74; "American Red Cross Americanization Program," Mount Union Times, 4 September 1924; Photographs of social activities in Kistler, in the photograph collection of the Huntingdon County Historical Society.

⁶³ John W. Reys, The Making of Urban America: A History of City Planning in the United States (Princeton: Princeton University Press, 1965), 436-37; Sanborn Map Company, Mount Union, Pennsylvania (New York: Sanborn Map Co., 1919), 11.

⁶⁴ Figures drawn from Industrial Directories of Pennsylvania, 1922-1956; Interview with William Harshbarger, Employee of General Refractories when Mount Union plant closed. 9 February 1989; Shedd and Harshbarger, 84-85. Krause, 216-17.

⁶⁵ Harry W. Barr, Jr., et al. A Study of the Refractories Industry - Its Relationship to the U.S. Economy and its Energy Needs (Columbus, OH: Battelle Columbus Laboratories, 1973).

⁶⁶ Interview with Robert Haupt, Plant Manager, North American Refractories, Mount Union. 4 October 1988.

The survival of twentieth-century company towns beyond the period of company control contrasts sharply with the demise of the iron communities of the nineteenth century.⁶⁷ Entirely dependent on the industry that had provided their livelihood, residents of the earlier iron-producing communities had no choice but to seek work elsewhere when that industry shut down. The situation in the coal company towns of Robertsdale and Woodvale was fundamentally the same since the closing of the Rockhill mines coincided with the general collapse both of the Broad Top coal industry and, subsequently, the railroads that served the region. However, in the twentieth century the ability of residents to provide their own transportation to work in new locations, combined with area wide efforts to attract new industries to the region, allowed many families to survive the loss of employment, at least temporarily. Economic support services such as unemployment compensation, pensions, and welfare helped many, as well.⁶⁸ For the brick-plant employees at Kistler, the situation was similar to the coal towns. Kistler was not geographically isolated and benefitted from a vigorous economic redevelopment program in Mount Union as well as from employment opportunities in surrounding areas.⁶⁹

Conclusion

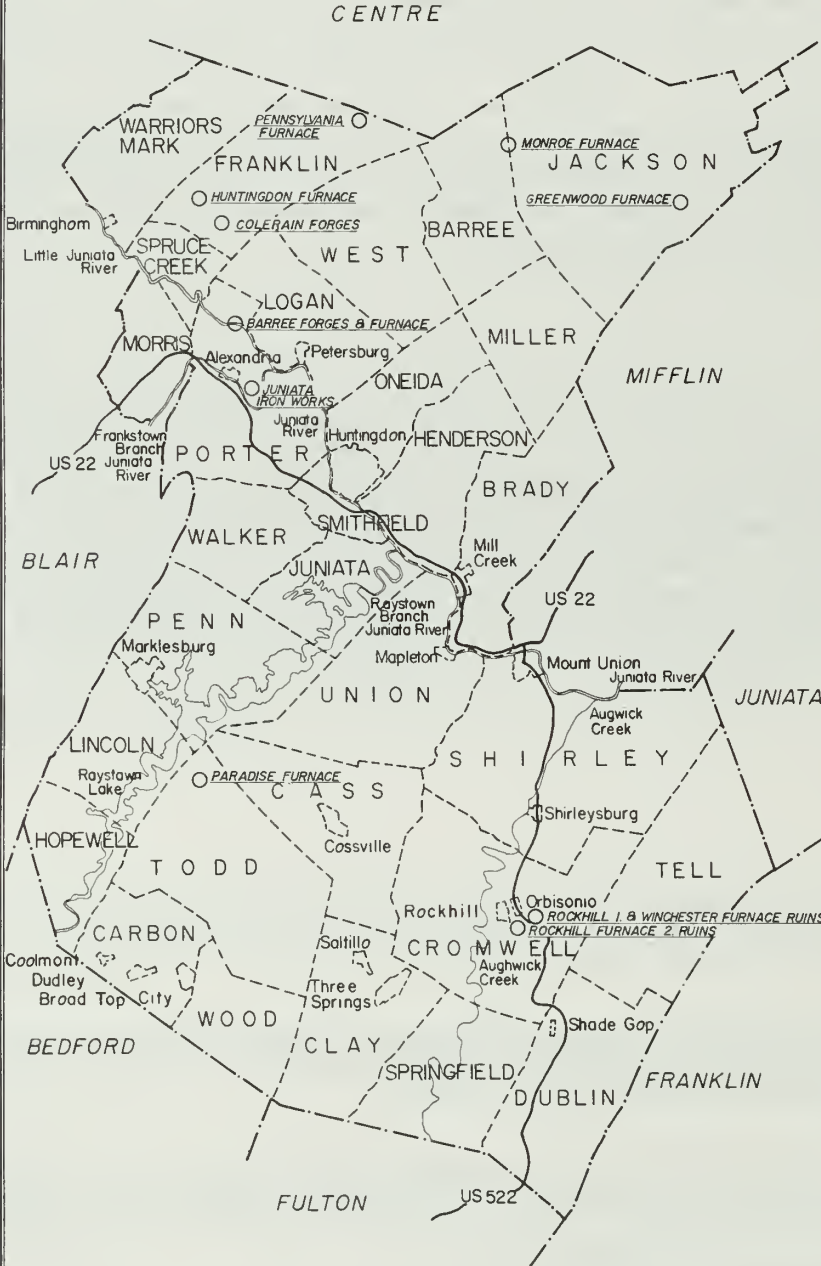
The most significant twentieth-century industries in Huntingdon County -- refractory brick, and coal and coke production -- were support industries to iron and steel manufacture. Although no steel was produced in the county, Huntingdon County's industrial output was considerably weakened by the decline of the American iron and steel industry, and the economic health of the county was severely damaged. Today, the refractories industry is no longer active in the county and only a handful of strip mining operations are at work. Agriculture persists as a source of livelihood, and in the county's major towns, Huntingdon and Mount Union, general manufacturing continues to be a significant industry.

⁶⁷ Houses in Robertsdale, Woodvale, and Kistler were sold by the companies and are now individually owned. North American Refractories, successor to the company that built Kistler, did not entirely cease operations in Mount Union, but greatly curtailed its work force and sold the majority of its Kistler properties.

⁶⁸ Baughman and Morgan, 14; Wilson, Polakowski, Heine & Simpson, Inc., Continuity Through Conservation: Huntingdon County Comprehensive Plan (Huntingdon, 1967), 1:179; The role of government programs in easing the plight of workers who lost the benefit of company housing is also evident in Mount Union, where federal housing was provided by the Huntingdon County Housing Authority for employees of Harbison-Walker Refractories, after that company razed its company houses in the early 1950s. See Shedd and Harshbarger, 85.

⁶⁹ For economic redevelopment efforts in both the Broad Top area and Mount Union see Wilson et al. 186-90 and Shedd and Harshbarger, 147. Knepp and Griffith, 7, 13-14.

PRIMARY METALS IN HUNTINGDON COUNTY PENNSYLVANIA



Legend:
 City or Borough: ○ Mount Union
 Township: - - - - - SHIRLEY

Scale:
 0 1 2 3 4 5 6 miles
 0 1 2 3 5 10 kilometers

STATE OF PENNSYLVANIA



HUNTINGDON COUNTY

Primary Metals

Barree Forge and Furnace

Current name: Greene Hills Methodist Camp

Construction date: 1796

N of Little Juniata River, opposite the village of Barree; 2 mi. N of Alexandria, Porter Twp.

DESCRIPTION: Two structures survive from the Barree Forge and Furnace on the Little Juniata River, near the village of Barree. Ironmaster's Mansion (1830s): this 45' x 25', two-story three-bay brick house is located on a slope overlooking the site of the ironworks. It is painted white and has a stone foundation. The asphalt roof and external chimneys are new; the original windows have been replaced, and the interior has been extensively remodeled. Furnace Stack (1864): this 30' square, coursed stone furnace stack is in ruins. Several of the upper limestone courses are missing and its height now varies from 6' to 15'. The work arch and tuyere arch, on the east and north faces respectively, are intact.

HISTORY: In 1795 Edward Bartholomew of Philadelphia purchased property on which his son-in-law, Greenberry Dorsey, established Barree Forge. The earliest ironworks in northern Huntingdon County, the forge took its name from old Barree Township in which it was located until the formation of West Township in 1798.



Photo 4. Remains of Barree Furnace stack, view of work arch.

Greenberry Dorsey, and later his widow and son, operated the forge until 1834, when a son-in-law, S. Miles Green, along with Edward B. Dorsey and others, began operating under the name Dorsey, Green & Co. This group was also involved in the operation of Union and Mill Creek furnaces, doing business at various times as Dorsey & Higgins and S. Miles Green & Co. Green,

Primary Metals

who was also associated with the management of Centre Furnace in Centre County, was the ironmaster at Barree Ironworks into the 1860s. Later his sons, Joseph and G. Dorsey, each were designated briefly as ironmasters. Until the mid-1870s, the ironworks continued to be owned by the Dorsey heirs, including the Greens.

The forge was improved and expanded repeatedly. In 1864 a furnace was added to the operation in order to meet the increased business created by the Civil War. In 1874, the Dorsey heirs sold the operation to A. L. Mumper of Bethlehem, who died the following year. His widow and young son, John, continued the business into the 1880s.



Photo 5. Barree Forge and Furnace, ironmaster's mansion.

Along with Huntingdon and Centre furnaces, Barree was among the oldest and most important ironworks in the Juniata Valley. Throughout its long period of activity, it was one of the most productive ironworks in the region. In terms of financial stability and longevity -- both in short supply at many ironworks -- Barree Forge was liberally capitalized and owned by a single family for almost its entire period of activity. Its quantity and quality of production contributed substantially to the reputation and wide use of Juniata iron.

Following the closing of the ironworks in the 1880s, owners of the property removed all the workers houses and the forge and furnace buildings, except for one. This brick house was first an ironmaster's residence and then a combination store and post office. The barn and some of the associated agricultural buildings probably date from the years when the ironworks was operating.

The irregular surface of the field where the forge stood and the quantities of slag visible on the ground suggest that it would reward archeological investigation. An engraving in Africa's History of Huntingdon and Blair Counties depicting the site about 1880 provides an approximate location of the buildings associated with the ironworks. The site is now used as a summer camp by the Central Pennsylvania Conference of the United Methodist Church.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883. Documents Relative to the Manufactures in the United States. (1832; reprint) New York: Burt Franklin, 1970, 321-22.
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- Huntingdon County Tax Assessments for Barree, West and Porter Townships, 1796-1876. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Linn, John Blair. History of Centre and Clinton Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- U.S. Census Bureau. Products of Industry, 1820, 1850, 1860, 1870, 1880.

Black Log Narrows Industrial Ruins

1 mi. E of Orbisonia on Rte. 522, Orbisonia

Construction date: 1826

DESCRIPTION: The industrial ruins along Route 522, east of Orbisonia, include the remains of four structures. Cromwell Grist mill (1826): this three-story stone mill, measuring approximately 45' x 35', retains parts of three walls, including most of the south wall, parallel to the edge of the highway. This wall features corner fireplaces at both the first- and second-floor levels on both ends. Mill House: relatively little remains of this stone building. Rockhill Furnace (1831): a mound of earth and remnants of stone work, perhaps part of the wheel pit, mark the area east of the mill ruins where this furnace is thought to have been located. Winchester Furnace (1833): the base of the stone-constructed furnace stack, to a height of 8' to 10', appears to survive under a covering of earth and vegetation, not far west of the mill ruins.

HISTORY: The varied ruins at this site where Black Log Creek breaches Black Log Mountain are the remains of an industrial settlement that operated here during the second and third quarters of the nineteenth century. They are related by their early association with Thomas T. Cromwell, for whom the surrounding township is named, and by the use of water power from Black Log Creek.

Thomas T. Cromwell's stone grist mill was the first structure built on this site in 1826. The Rockhill Furnace followed in 1831 and the Winchester Furnace in 1833. Cromwell began the construction of Rockhill Furnace east of his grist mill in 1830, but sold it to Thomas Diven and William Morrison, who put it into blast in 1832. Within five years, James M. Bell acquired Rockhill Furnace, and leased it until 1849 to a succession of operators whose principal iron interests were in Franklin Township, in northern Huntingdon County. In 1849, Rockhill was bought by Issett, Wigton & Company, Franklin Township operators, who ceased production in 1857 and finally sold in 1864 to Lorenz & Leamer. They, in turn, sold in 1868 to Lewis Royer and Percival Dewees, who were beginning to acquire iron properties for the Rockhill Iron & Coal Company. They

Primary Metals

operated the old furnace briefly, until new Rockhill No. 2 (see Rockhill Iron & Coal Company: Rockhill Furnace No. 2) was constructed in 1873.

After selling Rockhill Furnace in 1831, Thomas Cromwell erected Winchester Furnace just west of his mill. He operated the furnace for a few years, and then leased it to others until 1856, when it ceased operation. Rockhill Iron & Coal Company later acquired the property for its ore, timber, and water rights.

Cromwell's grist mill was destroyed by fire in 1879. The future of this group of archeological ruins is currently in doubt as a consequence of plans to improve Route 522 in this area.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
Documents Relative to the Manufactures in the United States. 1832. Reprint (2 vols. in 1). New York: Burt Franklin, 1969.
Huntingdon County Tax Assessments for Shirley and Cromwell Townships, 1830-1876. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino: Golden West Books, 1982.
U.S. Census Bureau. Products of Industry, 1850, 1860, 1870.

Colerain Forges

W side of Rte. 45, 0.75 mi. S of Franklinville, Franklin Twp.

Construction date: ca. 1810

DESCRIPTION: The ironmaster's mansion at Colerain Forges, located on a bend of Spruce Creek and Route 45, at the intersection of a side road to Huntingdon Furnace, is the only surviving structure associated with the forge operations here. The mansion is set in a grove of old trees and there are remains of a formal boxwood garden.

Basically T-shaped, the house was apparently built in sections, of four different building materials, now unified by a coat of white paint. The top of the T is the front or main part of the house and is partly frame and partly brick. The two-story residence has a five-bay front featuring a round-columned one-story porch across a part of the south-facing facade. The front entrance, opening into a wide center hall with an open staircase, has a half-round fanlight and sidelights. Construction of the front block of the house at two different times is the apparent cause for the slightly off-center placement of the entrance and the second-story Palladian window above it. This slight asymmetry would be almost unnoticed if not for a single centrally positioned front dormer in the gable roof. Stylistic details suggest both front sections of the house were constructed between 1830 and 1850.

The two-story plastered brick mid-section is probably the oldest part of the structure. Access from the main block of the house is through doors at the back of the first-floor hall and from the stair landing. Its long east side, with a full-length porch, was probably the original front when the stone portion of the house stood alone. The stone portion of the house probably dates from the 1810s.



Photo 6. Colerain Forges, ironmaster's mansion.

The rear two-story portion of the house is covered with board-and-batten siding, joined to the north end of the stone mid-section. It appears to be the newest addition to the structure, dating probably from about 1860. (For drawings of this mansion see HABS drawings PA-615.)

A two-story stone outbuilding, east of the mansion, may have served some function in the iron operation or may simply have been an unusual stable or carriage house. A two-story log house, on the next property northeast of the mansion, could have been a worker's or manager's house.

HISTORY: Three forges were constructed at this location on Spruce Creek in the 1810s: Upper and Lower Sligo, in 1810 and 1814, by Patton and Roach; and Marshall's, in 1814, by Samuel Marshall. Control of the forges changed frequently in their early years. Between 1819 and 1826, John Lyon and Robert T. Stewart, owners of Pennsylvania Furnace, obtained and consolidated them under the name Colerain Forges. About 1828, Lyon and Stewart began taking in additional partners, and in 1831 acquired Huntingdon Furnace from John Gloninger & Co. During those years, various aspects of their vast iron holdings operated under a variety of names: Barnett & Shorb; Lyon, Shorb & Co.; Lyon, Foster & Co.; and Shorb, Stewart & Co. The latter name was longest associated with Colerain Forges, and David Stewart was the long-time manager, residing in the ironmaster's mansion from about 1830 until his death in 1869.

The forges' total production of blooms between 1828 and 1860 was 29,661 tons, or an average of nearly 1,000 tons annually, valued at more than \$60,000. This was one of the county's most

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profitable iron works and its output exceeded (by \$13,000 to \$18,000) the value of pig iron produced at either Huntingdon or Pennsylvania Furnaces.

The extent and profitability of the Colerain Forges enterprise is also reflected in the size and grandeur of the ironmaster's mansion, which is exceeded in Huntingdon County only by the Lyon mansion at Pennsylvania Furnace. In the absence of surviving industrial structures -- a typical condition at the region's early forges -- the Colerain mansion and its extensive grounds signify the great wealth associated with iron enterprises in Spruce Creek Valley.



Photo 7. Colerain Forges, possible worker's or manager's house.

Sources:

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- Huntingdon County Tax Assessments for Franklin Township, 1800-1876, Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- U.S. Census. Products of Industry, 1850, 1860.

Greenwood Furnace

Current name: Greenwood Furnace State Park
5 mi. E of McAlevy's Fort on SR 305, Jackson Twp.

Construction date: 1834

DESCRIPTION: Located on the grounds of a state park and nursery, structures surviving from the period of iron production at Greenwood Furnace (1834-1904) include: two furnace stacks, six buildings, worker house foundations, church and cemetery. Furnace structures are now intermixed with forestry department structures built from 1906 to 1930, Civilian Conservation Corps (CCC) construction from the 1930s, and more recent park and nursery buildings. Ironmaster's Mansion (1834): the four-bay, two-story house of coursed stone rubble has a two-story rear ell with a half gable roof. Alterations to the original house include removal of the plaster coating (visible in early photographs), the addition of two external chimneys and probably the addition of the little south side bay; the interior is said to be much altered. Church (1865): a one-story rubble stone building, gable to front, with a side entrance porch and cross-gabled cupola. Meat House: a one-and-one-half-story log building with a rough rubble stone foundation. It has narrow white siding like later nursery buildings. Blacksmith Shop: a one-story post-and-beam structure, 85' x 30'; it has new board-and-batten siding and metal roofing and it has been converted into a museum. Bookkeepers' House: a three-bay, two-story post-and-beam house, 33' x 32' including ell, has a rubble stone foundation and old board-and-batten siding under its present narrow horizontal siding. Stable near Bookkeeper's House : a one-story post-and-beam outbuilding with old vertical siding under the present horizontal siding. Stack No. 1 (1834): the ruins of this stack, approximately 15' high, were excavated about 1976; recent stone infill of the north arch is poorly done. Stack No. 2 (1864): the 30' x 30' x 30' stack of coursed sandstone blocks was reconstructed in 1936 by the CCC, leaving its four arches open to walk through. The crucible remains exposed and the stack open to the top. The furnace is capped with concrete.

HISTORY: Greenwood Furnace was established in 1834 by Norris, Rawle & Co. Comprised of entrepreneurs from southeastern Pennsylvania, this firm had recently acquired the Freedom Iron Works near Lewistown, Mifflin County. Their intention was to produce pig iron at Greenwood for refining at Freedom Forge. The availability of large tracts of virgin timber to supply charcoal to the furnace dictated Greenwood's remote location. Originally, iron ore and some of the limestone needed was hauled to the furnace from the Mifflin County side of Stone Mountain, and the iron hauled thirteen miles back over the mountain to the forge. Later, discovery of ore deposits closer to the furnace eliminated some of this difficult labor.

John Hagey contracted to construct the furnace, and the stone stack was first assessed in 1835, at \$10,000. By 1850 the operation employed seventy-three men and thirty-four horses and mules in annual production of 1,600 tons of pig iron, worth \$35,000. Ownership of the enterprise passed in 1849 to John A. Wright & Co., whose principal owner was the same John A. Wright then engaged in laying out and promoting the new railroad center of Altoona. Total capital investment had risen to \$40,000 in 1850.

In 1857, a reorganized Freedom Iron Co. -- in which John A. Wright remained an important figure -- resumed ownership. The operation expanded and in 1860 had a total capital investment of \$100,000, 140 employees, and produced 1,800 tons of iron. A second furnace was erected in 1868,

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Photo 8. Greenwood Furnace, stack No. 1 on left, stack No. 2 on right. Photo by Jet Lowe.

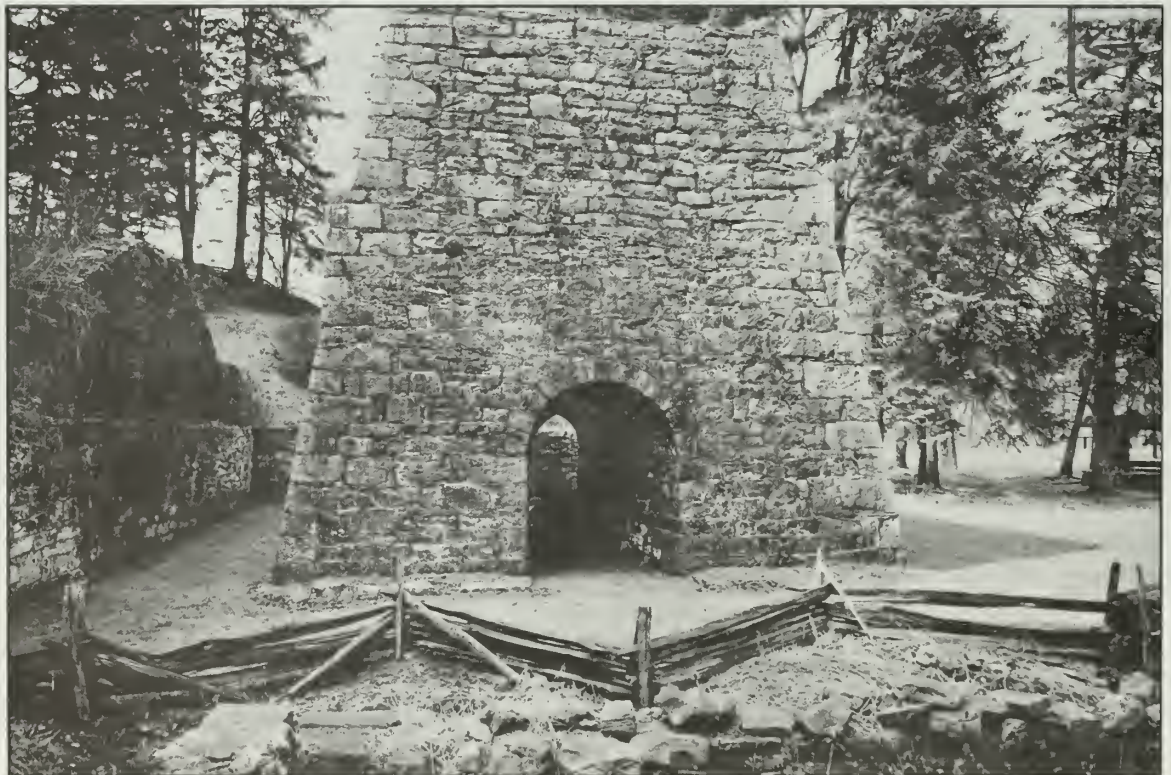


Photo 9. Stack No. 2 at Greenwood Furnace. Photo by Jet Lowe.

resulting in an 1870 report of \$400,000 capital invested, 230 men employed, and more than 3,000 tons of iron produced (worth \$154,000), making it the county's largest iron operation.

Freedom Iron Company became Logan Iron and Steel Co. in 1872, and continued to operate Greenwood Furnace until 1904. It was the last Huntingdon County furnace to go out of blast. Its longevity can certainly be credited in part to the utilization, by the parent company, of the iron from Greenwood in the production of rolled and bar iron at its extensive Mifflin County works. The operation there gave rise to Standard Steel Co., manufacturers of steel railroad wheels, which survives today at Freedom Iron Company's original location near Lewistown.



Photo 10. Greenwood Furnace, church.

The Pennsylvania Department of Forest and Waters acquired the Greenwood Furnace lands for reforestation soon after the last blast in December 1904. A state tree nursery was established at Greenwood in 1905, and a state park in 1930. Both have erected structures on the site that are historically interesting themselves. A dam in the park is included in a National Register listing of CCC projects in Pennsylvania; it is of special significance because it was used in conjunction with a small turbine and generator unit to produce electricity for the park before commercial electric service was available in the area. The small stone generating tower remains at the breast of the dam, and the turbine and generator, although removed from the tower, remain in storage at the park.

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Greenwood Furnace is the county's most complete and best-preserved iron furnace site open to the public. The stacks, church, and cemetery, along with a reconstructed charcoal-burner's hut and a museum in the former blacksmith shop, are maintained as historic sites and interpreted for park visitors. Research at the site, including archeological work at the stacks and workers' house foundations, has been continuing since 1976, and new interpretive displays for the museum are currently being developed.



Photo 11. Greenwood Furnace church interior. Photo by Jet Lowe.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- History of the Susquehanna and Juniata Valleys. Philadelphia: Everts, Peck and Richards, 1886.
- Huntingdon County Tax Assessments for Barree and Jackson Townships, 1834-1876. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Smith, James O., and Hawn, G. Merle. The Valley and the Fort. McAlevy's Fort: Stone Valley Civic Group, 1978.
- U.S. Census Bureau. Products of Industry, 1850, 1860, 1870.
- Wolfe, Barry, Superintendent. Interview by author, 15 July 1988.

Huntingdon Furnace

2 mi. NW of the intersection of township road 31106 with Rte. 45 at Colerain Mansion, Franklin Twp.

Construction date: 1805



Photo 12. Huntingdon Furnace stack. Photo by Jet Lowe.

DESCRIPTION: Huntingdon Furnace is the most extensive and best-preserved iron furnace site in Huntingdon County. Together with the furnace, farms, and ore mines that surround it, this site exhibits the vast extent of a large-scale iron community. Seven structures survive in close proximity to the furnace stack. Stack (1805): the stone blast furnace stack, 30' x 30' x 30', of

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random range limestone and sandstone, with round-arched openings on the east and north faces, is in excellent, unrestored condition. It offers important evidence of original construction techniques, retaining tie rods and starplates and refractory materials from an early date. Company Store: a three-bay, two-story brick building, painted white, is approximately 30' x 25', with a two-story rear ell. Converted to a residence at least sixty years ago, the building displays many features added at that time: decoratively shaped, exposed rafter ends on house and porch roofs; steel-framed casement windows; exterior stone chimney and stone-pillared side porch; latticed, hipped-roofed front stoop. Office: the 25' x 20', two-story, two-bay building of coursed sandstone rubble, has six-over-six-light double-hung windows. The large stone chimney at the end of a paved area (southwest side) remains from a now-demolished section of the original building. Ironmaster's Mansion (1851): the front block of this two-story L-shaped frame mansion is 50' wide with five bays and three gable-roofed dormers. Its three-bay porch features a paneled ceiling and wall above wainscoting, and decoratively patterned cast-iron architectural elements. The rear ell has two different roof heights, reflecting varied interior ceiling heights and story levels. The standing-seam metal roof overhangs intricately patterned trim which surrounds the entire house. Six-over-six-light double-hung windows are combined with paired round-topped attic windows in the gable ends. Grist mill (1808): the 50' x 45', three-and-one-half-story rubble-stone building predates the 45' x 35' post-and-beam addition with its weathered clapboard siding. The mill retains its overshot water wheel. Of all-iron construction, the wheel was supplied with water from an iron pipe that



Photo 13. Huntingdon Furnace, grist mill. Photo by Jet Lowe.

extends from the creek to the wheel. The wheel and pipe, as well as the metal roof of the mill building, are deteriorating. The north wall of the mill is partially collapsed where the wheel shaft pierces it. The massive interior timbers are finely finished, with chamfered posts and girders, and beading on the joists and undersides of flooring. Some milling machinery remains, as does a small AC generator manufactured by the Crocker-Wheeler Company. Mill House: the 20' x 15', two-story stone section with large gable-end fireplace was recently restored and has a new roof and large new wing. Worker's House: this two-story exposed log house, 24' x 18' with rear ell, is the only known example of half-dovetailed log construction in the county; the integrity of the house is greatly compromised by its 1920s casement windows and stone-pillared porch.

HISTORY: Huntingdon Furnace was developed by George Anshutz, an experienced ironmaker from Alsace, France. Anshutz had built the first iron furnace in the Pittsburgh area in 1792. However, after only a few years the venture failed, in part because it was too far from its source of ore. Anshutz came to the Juniata Valley seeking a favorable iron-producing location, and by 1796 had joined with other investors in building a furnace on Warriors Mark Run, two miles north of the present furnace site. By 1805, the first stack had been abandoned and the present furnace built. Doing business at this time as John Gloninger & Co., the Huntingdon Furnace operation acquired thousands of acres of timber, ore mines and farm land. A forge, established by Phineas Massey on Spruce Creek in 1798, was occupied by the Huntingdon Furnace owners beginning in



Photo 14. Huntingdon Furnace grist mill drive train, with Crocker-Wheeler generator in left foreground. Photo by Jet Lowe.



Photo 15. Ironmaster's mansion, Huntingdon Furnace. Photo by Jet Lowe.

1800, and a stone mill was erected about 1808. The enterprise also developed Tyrone Forges, six miles away on the Little Juniata, where a rolling mill, slitting mill, and nail factory operated, in addition to a large grist mill that survives today (included in the HAER survey of Blair County). The Manufacturers' Reports of the 1820 census showed the combined Gloninger enterprises employing 206 men, which probably does not include the charcoal producers, ore miners, and farmers associated with the operation.

In the 1830s Huntingdon Furnace's vast holdings became the property of the "Iron King," Peter Shoenberger, of the Juniata Valley and Pittsburgh (although his empire extended beyond this region). At his death in 1854 the land passed to his sons, George and John. By the 1880s the furnace was out of blast because of the depression in the iron trade. However, the furnace farms were still cultivated and more than a century later the properties continue to be successfully farmed. The present owner, Edward Newlin, is the latest in a long line of farmers who have presided over the large-scale farming operations that replaced the intense industrial activity that once dominated this site.

The stone grist mill was built about 1808 to supply flour for the iron-workers' families and feed for the horses, mules, and cows at Huntingdon Furnace. It continued to serve farmers in the area until about 1920. Additionally, in the first half of the nineteenth century, it is reported to have accommodated the first Sunday school and church meetings of the iron works community. Later,

after it ceased to be used for grinding grain, its turbines were replaced with the metal water wheel that survives; this wheel was subsequently connected to a small AC generator that the Lake and Hindman families used to furnish their property with electricity.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Bruegebors, Barbara. "Country Scene Brings to Mind Bit of History" Centre Daily Times, (State College, PA), 26 May 1984.
- Huntingdon County Tax Assessments for Franklin Township, 1790-1833. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Huntingdon Furnace Record Books. Lists and notes made by Nancy Shedd and George Drobnock at Huntingdon Furnace, 12 September 1976. (Notes in the possession of Nancy Shedd.)
- Private photograph collection of Newlin Family, owners of Huntingdon Furnace. Tyrone, Pennsylvania.
- Nearhoof, Elizabeth. Echoes from Warriors Mark, Pennsylvania, and Surrounding Areas. Boalsburg: Printed privately, 1968.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.
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Juniata Iron Works

Current name: Hellyer's Mill; Berwick Manor

Construction date: ca. 1838

1 mi. E of Alexandria, between old canal/railroad bed and Frankstown Branch of Juniata River, Porter Twp.

DESCRIPTION: Located on the Frankstown Branch of the Juniata River, one mile east of Alexandria, six buildings associated with Hatfield's Juniata Iron Works survive -- two ironmaster's mansions, a store and post office, a grist mill, and two workers' houses -- on a flat piece of ground between the river and the former canal bed (still identifiable as the recently abandoned bed of the Petersburg-Williamsburg Branch of the PRR). Ironmaster's Mansion No. 1 (1841): this 47' x 23', two-story brick house with a 20' x 20' rear ell has a random range stone foundation, asphalt roof, and six-over-six light windows. The original five-bay front faces south to the river, but the house was reoriented to the north and stylistically updated, probably in the 1870s, with brackets under the eaves, a gracefully arched porch, bay window, and different shutters from those on the south. Store and Post Office: the original 24' x 15' building has a brick first story and frame second story, with a 25' x 12' frame wing to the rear. The four-bay building had two central front doors, one now converted to a window. It has a stone foundation, asphalt roof, six-over-six-light windows, and new three-car garage with shed roof attached to the east side of the rear wing. Grist Mill (1856): this three-and-a-half-story 50' x 36' mill, with a two-and-one-half-story shed-roof addition to the west side, has a post-and-beam timber frame, clapboard siding, a random range stone foundation with a semi-circular arch over the tail race, and a slate roof. The interior is whitewashed; no equipment remains. The building is overgrown and deteriorating. Two Workers' Houses (1840s): measuring 35' x 25', one workers' house is two-story frame and L-shaped, with a four-bay front and a one-story addition to the north side. The second is a 35' x 22' two-story frame duplex with a four-bay front and one-story rear additions. Both have rubble stone foundations, metal roofs, and asphalt siding. (A third very small house with a huge exterior brick chimney does not appear to date from the years when the iron works operated.) Ironmaster's Mansion No. 2 (1867): this two-story 50' x 28' brick house with a 45' x 20' rear section has a random stone foundation, asphalt roof, six-

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over-six-light windows, bracketed eaves, and a two-story porch on the east side of the rear section. Early photographs show cast-iron decoration on the porches.



Photo 16. Juniata Iron Works, two-family workers' house.

HISTORY: Development of the iron works at this location began in 1838 with the construction of a forge by Abraham Hatfield and a rolling mill by Samuel Hatfield. First located on the south side of the Frankstown Branch, on a tract called Berwick in the original warrant, the works were known as Berwick Forge and Juniata Rolling Mill. In 1843, Samuel Hatfield bought the forge, and in 1845 added a puddling or run-out furnace for the production of blooms. Hatfield and his son, Samuel, Jr., moved the iron works from the south to the north side of the river in the late 1840s, perhaps after suffering damage in the "Pumpkin Flood" of October 1847. Production figures for 1850 show the relocated operation employed sixty men and produced 1,100 tons of blooms and 150 tons of bar and sheet iron, with a combined value of \$57,500.

The enterprise expanded in its new location during the 1850s with the addition of grist, saw, and plaster mills. By 1860 employment at the ironworks rose to ninety, with twelve men in the rolling mill and seventy-eight at the forges and puddling furnace. Production for the year totaled 150 tons of bar iron, 200 tons of sheet iron, 350 tons of charcoal blooms, and 500 tons of puddling blooms, valued at \$73,000. The products of the grist, saw, and plaster mills added \$12,850 to the company's gross income, with the employment of only four additional workers. The Juniata Iron Works name came into use during this peak period in the operation's history.



Photo 17. First ironmaster's house (1841) at Juniata Iron Works.

The rolling mill was destroyed by fire in 1869 and was not rebuilt, but production figures for 1870 suggest a more efficient forge operation had been effected, with a work force of only forty-five men producing 480 tons of charcoal blooms and 600 tons of puddling blooms, valued at \$80,700. The business came to an end, however, with the 1875 closing of the Pennsylvania Canal, upon which the Hatfields had depended for transporting their products. Porter Township tax assessments for 1876 indicate the works had been vacated, and by 1883 the machinery had been dismantled and only a few of the workers' houses remained, along with the idle saw mill.

Only the grist mill continued to operate, eventually becoming known as Hellyer's Mill, the name by which it is still known. During the early twentieth century, Hellyer's Mill produced power for the Alexandria-based Wilson Electric Company, that powered the electric trolley line in Huntingdon. Following a flood in March of 1907, which interrupted generation at the mill, a local newspaper reported that a 300-horsepower steam engine was to be installed to insure power during high-water emergencies. This was seen as a temporary measure until completion of the Warrior Ridge Power Plant (see entry) provided reliable power fulltime. Electric generation at this site probably came to an end when the Warrior Ridge plant was activated later in 1907, but some evidence of the electrical installation remains in the western side addition. The feed mill operation continued into the late 1950s as George E. Knott's Big Juniata Roller Mills.

The iron works property has been divided into two separate parcels: the 1841 ironmaster's mansion, store, grist mill, and worker houses; and the 1867 ironmaster's house. The ironmaster's mansions

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and store are in excellent condition, but the mill is seriously deteriorated and one workers' house is vacant.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
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Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.
Harshbarger, Jean P., et al. Hartslog Heritage. State College, PA: Alexandria Bicentennial Association, 1975.
Porter Township Tax Assessments, 1834-1876, Huntingdon County Records, Huntingdon County Historical Society, Huntingdon, Pennsylvania.
The Monitor (Huntingdon, PA), 22 March 1907.
U.S. Census. Products of Industry, 1850, 1860, 1870.

Monroe Furnace

Current name: Pennsylvania State University Experimental Forest (owner) Construction date: 1847
6 mi. NW of McAlevy's Fort on Rte. 26 at intersection with township road to Mooresville, Barree Twp.

DESCRIPTION: Located at the intersection of Route 26 and a side road to Mooresville, this sandstone furnace stack, 30' x 30' square at the base and about 20' high, is intact except for the lower 10' of the northeast corner. The stack has triangular arches on three sides: a 14' work arch on the east, a 12' tuyere arch on the north, and a small 8-1/2' arch on the south. The charging platform was on the slope to the west. When the site is bare in winter, the water course, supplying a wheel pit on the north side of the stack, can be traced along the hillside to a small dam in Shaver's Creek. Ten years ago, the "sow" and "pigs" of the casting troughs could be distinguished in front of the casting arch, but subsequent deposits of cinders from highway drainage ditches have obscured them. All the furnace buildings were removed long ago, but the foundations of fourteen worker houses can be found lining both sides of the road to Mooresville.

HISTORY: Monroe Furnace was constructed in 1846 and 1847 by General James Irvin, a prominent Centre County ironmaster who was associated with ten iron works in that county and two in Huntingdon County. Despite his long experience and notable success in the iron business, he was unable to withstand the economic depression of the mid-1850s and retired from the iron business in 1857. In 1850, Irvin employed fifty men at Monroe Furnace, producing 958 tons of pig iron valued at \$21,000. However, by 1851 the assessed value of the enterprise had been reduced from \$11,000 to \$3,000. By 1855, Monroe was sold to George W. Johnston & Co. of Boalsburg. Johnston established a foundry to produce cast-iron stoves. Under his name the operation continued until 1864, when it was acquired by the Freedom Iron Co., owners of Greenwood Furnace (see other entry). The foundry operated until 1864.

A number of stone foundations of workers' houses can be discovered along both sides of the road from Monroe Furnace to Mooresville. Two one-and-one-half-story log houses farther along this road, about one-and-one-half miles from the furnace, were identified by an earlier survey as possible workers' houses that had been moved to their current locations. Remains of the furnace and community lie within the Pennsylvania State University's experimental forest.



Photo 18. Monroe Furnace, view of tuyere arch.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
 Barree Township, Huntingdon County Sites Survey, 1977-80. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
 Huntingdon County Tax Assessments for Barree Township, 1847-1870. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
 Linn, John Blair. History of Centre and Clinton Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
 U.S. Census Bureau. Manuscript Report of Manufactures, 1850.

Paradise Furnace

Current name: Trough Creek State Park
 5 mi. SE of Entriken, 1.5 mi. N of SR 994, Todd Twp.

Construction date: ca. 1830

DESCRIPTION: The industrial resources at this state park in Todd Township consist of a furnace stack, an ironmaster's mansion, a small log building that may have been a worker's house, and a cemetery dating from the iron-furnace period. Stack (1830s): this random range stone furnace stack with rubble-filled walls is 28' square and 15' to 20' high. The face of the stonework, left of the casting arch, is gone, exposing the interior walls and the lining of the bosh. Two stone piers of the charging bridge survive. Ironmaster's Mansion (1830s): this 50' x 35', two-story five-bay stone house is stuccoed and scored to make it appear to be brick. The L-shaped structure has six-over-six-light windows, an asphalt roof, and new porches on the west (front) and south. The interior



Photo 19. Paradise Furnace, view of work arch. Note support rods spanning space back of the work arch.

has been extensively remodeled. Worker's House: a two-story 25' x 20' hewn log house, with inverted v-notch corners, was moved to its present site and converted to a park museum. There is a chance that it was not moved far from its original location and is a surviving worker's house from the furnace site. Cemetery (1805): located on a hill top, one-half mile from the stack, this cemetery was thoroughly overhauled about fifteen years ago and its mostly unmarked stones were arranged in perfect rows. Among the markers that survive from the Knoblaugh-ownership period is a gravestone that is quite unusual in the region. Carved on both sides, with one side featuring an angel at the top, the stone is dated 1805.

HISTORY: Iron interests were first developed in this part of the county about 1798 by George Knoblaugh of Frederick, Maryland, who established a bloomery near the mouth of Trough Creek. It survived only six years, and nothing is known of its production or the cause of its demise. In 1830, Reuben Trexler of Berks County erected an iron furnace on Trough Creek, which operated only two years. The enterprise was revived between 1835 and 1840 as the Savage Iron Works and a forge was added. This period saw the arrival of William Firmstone from Shropshire, England, who applied his knowledge of coke in iron manufacture to experiments with coal from a local mine. In 1841 Trexler was again in possession of the furnace, with Savage retaining the forge. P. P. Dewees, later an important figure at Rockhill Furnace No. 2, became manager of Trexler's furnace in 1843, and the name was changed from Mary Ann to Paradise Furnace. Dewees departed in 1847; the forge ceased operation in 1850, and the furnace stopped production in 1852. The

business was revived briefly between in the mid-1860s by Horatio Trexler & Co., which again called on Dewees to act as manager. The operation closed permanently in 1867.

About 1915, the former iron plantation lands were acquired by the Commonwealth of Pennsylvania as state forest lands. In the 1930s, the area was developed as Trough Creek State Park by a resident force of CCC workers. The park is now surrounded by the federally maintained Raystown Lake.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
 Union and Todd Township Tax Assessments, 1796-1876, Huntingdon County Records, Huntingdon County Historical Society, Huntingdon, Pennsylvania.
 Rainey, Lee and Kyper, Frank. East Broad Top. San Marino: Golden West Books, 1982.
 U.S. Census Bureau. Products of Industry, 1850.

Pennsylvania Furnace

0.10 mi. W of Rte. 45, just S of Centre County line, Franklin Twp.

Construction date: ca. 1834

DESCRIPTION: The ironmaster's mansion, five or six workers' dwellings, outbuildings, an unusual agricultural building, and the furnace ruins survive at this site in northern Spruce Creek Valley, on the Huntingdon-Centre county line. Ironmaster's Mansion (1834): this L-shaped house of native limestone, measuring approximately 70' x 50', varies in height from two-and-one-half stories on the east end to a full four stories on the west. The arrangement of the three-and-one-half-story five-bay front (north) is strictly symmetrical, and includes a paneled entrance door framed by a transom and sidelights and three gable-roofed dormers. The strict symmetry of the east gable end is achieved by six false windows (appearing as closed shutters), along with double chimneys and a pair of small six-over-six-light attic windows. The west and south walls and rooflines present a unique variation on the "half-gable L," seen in local examples as a one-and-one-half-story wing with half a gable roof. Here the ell is three stories on the south and four on the west, with what may be described as a half-gambrel roof, although the pitch of the upper slope is almost flat. The hipped-roofed porch on stone piers across the front dates from about 1920; the second-story porch on the east side of the ell is probably original. The house retains most of its period detail, both inside and out. Six outbuildings of indeterminate age, including a four-square, four-door privy, are found on the mansion grounds. (For student drawings of this mansion see HABS drawings PA-611.) Furnace ruins: a high stone retaining wall extends below the charging bank, above two sizeable mounds, one of which is thought to be the ruins of the furnace stack. Worker housing: five or six two-story houses, several of them in Centre County, appear to correspond to the location of furnace housing as shown on 1873 maps. Corn Crib: this 100' x 35' double corn crib is gable-roofed with an open area between the cribs. It sits on thirteen limestone piers.

HISTORY: In 1813, a partnership of John Lyon, Jacob Haldeman, and William Wallace established a well-capitalized iron furnace on the Huntingdon-Centre county line. With water power provided by Spruce Creek, the operation was named Pennsylvania Furnace, and by 1820 employed seventy men and produced 1,000 tons of pig iron annually. Robert T. Stewart and Lyon were the owners by that date. During the following decade, additional partners were taken in to form



Photo 20. Pennsylvania Furnace, ironmaster's mansion. Photo by Jet Lowe.



Photo 21. Rear view of Pennsylvania Furnace mansion. Photo by Jet Lowe.

variously named firms that established or bought shares in Sligo forges, Tyrone forges, and Huntingdon Furnace, as well as the Sligo rolling mill in Pittsburgh. John Lyon maintained his strongest interest in Pennsylvania Furnace and in 1834 built the twenty-eight-room mansion lived in by three generations of his family.

The Lyon mansion is the largest of Huntingdon County's ironmaster's houses and one of the best preserved, retaining much of its period detail, including cast-iron fireplace inserts and hand-made hardware, as well as many outbuildings. A half dozen workers' houses remain, as well as a huge double corn crib for feeding the furnace mules, the retaining wall for the charging bank, and the ore-washing site.



Photo 22. Pennsylvania Furnace, single-family workers' dwelling.

Pennsylvania Furnace was always part of a larger iron-producing enterprise. Pig iron produced here was turned into blooms at Sligo, Colerain, or Tyrone forges, and conveyed to the Sligo Works in Pittsburgh for rolling. The capacity of the furnace placed it among Central Pennsylvania's largest charcoal furnaces: from its initial production of about 1,000 tons of pig iron annually, its output increased to 1,500 tons by the 1820s and to almost 2,000 tons in later years. Steam machinery was added in 1856, and in 1859 the furnace was described as a "steam and water cold-blast charcoal furnace." The operation ceased in 1888.

Primary Metals

Huntingdon and Centre counties' almost equal prominence as producers of Juniata Iron led to certain disputes concerning which county could rightfully claim Pennsylvania Furnace as its own. An 1826 Bellefonte writer asserted that the "stack, nearly all the buildings, ore-bank, coaling-ground are within Centre County," but the operation was consistently taxed and listed by the census in Huntingdon County.

Sources:

- Documents Relating to the Manufacture of Iron in Pennsylvania. Philadelphia: Convention of Iron Masters, 1850.
- Documents Relative to the Manufactures in the United States. 1832. Reprint (2 vols. in 1). New York: Burt Franklin, 1969.
- HABS, "Pennsylvania Furnace Mansion," PA-611.
- Huntingdon County Tax Assessments for Franklin Township, 1813-1876, Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Lesley, J. P. The Iron Manufacturer's Guide. New York: John Wiley, 1859.
- Linn, John Blair. History of Centre and Clinton Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Pennsylvania Furnace Homecoming: A Short History of the Pennsylvania Furnace Area, 1790-1972. N.p., 1972.
- U.S. Census. Products of Industry, 1820, 1850, 1860, 1870.

Rockhill Iron & Coal Company: Rockhill Furnace No. 2

0.5 mi. S of bridge between Orbisonia and Rockhill, Rockhill

Construction date: 1873

DESCRIPTION: Above-ground ruins at this site include a considerable length of one 280' stone wall of the furnace store house, partial brick outer walls and a stone-lined interior pit of the blowing engine house; segments of refractory brick material from the blast furnace stacks; and substantial remnants of two banks of beehive coke ovens. The location of the remains appear to conform exactly to late nineteenth- and early twentieth-century Sanborn maps of the site, confirming the generally-held opinion that the ground has not been seriously disturbed since removal of salvageable machinery in 1915.

HISTORY: In 1867, Percival P. Dewees, who twice served as manager of Paradise Furnace, purchased old Rockhill Furnace near Orbisonia, in partnership with Dr. Lewis Royer. The old charcoal furnace was reconditioned and put into blast in 1868, but its output was limited by a shortage of ore. Dewees' discovery of new sources of ore in 1870 attracted Edward, Percival, and Theodore Roberts of Philadelphia as investors in the operation and led to formation of the Rockhill Iron & Coal Company in 1871. These men saw the potential for the development of a large-scale modern iron works, which would use coal from the East Broad Top coal fields and be served by a rail connection with the main line of the Pennsylvania Railroad. Along with other investors from Philadelphia and Hazelton, the Robertses revived a charter issued to the East Broad Top Railroad in 1856, and began amassing coal and timber lands in the region. By 1873, the railroad was under construction; coal mines were being developed near what would become the town of Robertsdale, and the twin stacks of a new Rockhill Furnace were rising across Black Log Creek from the old furnace site, adjacent to the main yard and shops of the new railroad.

Taws and Hartman of Philadelphia designed the blast furnaces, which had 65' high wrought-iron stacks with 17' diameter boshes. Twenty-four boilers supplied steam to a pair of 635-horsepower engines, which drove four 24' fly wheels. The engines were made at the Southwark Foundry in

Philadelphia, at an estimated cost of \$70,000. Gases from the top of the furnaces passed through a down-comer to the boilers and four hot ovens, each containing forty U-shaped cast-iron pipes, through which the blast from the engines passed into the furnaces at a temperature of 800 degrees. The blowing engine house and two casting houses were constructed of brick; the 280'-long stock house had a one-story stone foundation, a wood-frame second story, and included a patented air hoist for moving stock. Originally, coke was produced in sixty-eight Belgian ovens, designed by J. King McLanahan of Hollidaysburg; these were replaced in 1887 by 100 beehive ovens.



Photo 23. Remains of two beehive coke ovens at Rockhill Furnace No. 2.

On January 1, 1876, the furnaces were blown in and soon produced 40 to 50 tons of iron per day, consuming an average of 400 tons of coal. At full capacity, the mining and manufacturing operations employed 700 men.

The depression in the wake of the Panic of 1893 and the labor disputes in the coal mines resulted in the closing of Rockhill Iron and Coal Company's works. Shut down for nearly ten years, the blast furnaces were returned to service in May 1902. A reorganized and recapitalized organization, Rockhill Furnace Company, leased the ore mines and furnaces. An average of 100 tons of iron was produced daily under the new management, using local sources of coal and limestone, but importing the majority of its ore by rail from the Great Lakes region. The furnaces operated until 1908, when the effects of another general business depression caused a complete shutdown. The business was never reactivated, and in 1915, the furnaces were dismantled and shipped to an

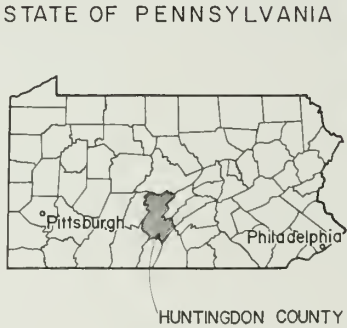
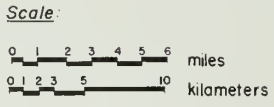
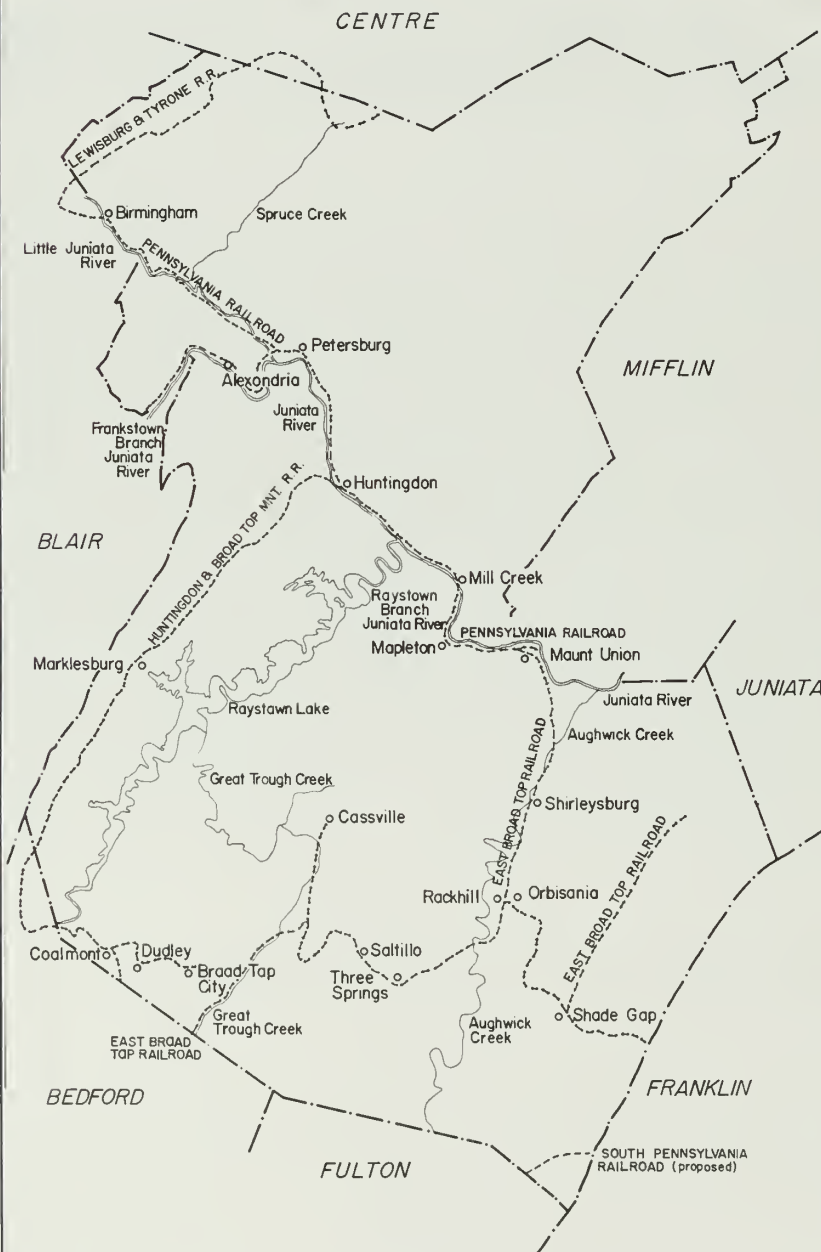
Primary Metals

ironworks in Tennessee. Currently owned by the East Broad Top Railroad & Coal Company, the site is overgrown and appears relatively undisturbed.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Deweese, John H. Report of Progress in the Juniata District on the Fossil Iron Ore Beds of Middle Pennsylvania. Harrisburg: Second Geological Survey, 1878.
- Photograph Collection. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Orbisonia Area Bi-Centennial. N.p.: The Bi-Centennial Committee, 1960.
- Rainey, Lee and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.
- Sanborn Map Company. Rockhill Furnace, Pennsylvania. New York: Sanborn Map Company, 1894, 1904, 1911.

TRANSPORTATION IN HUNTINGDON COUNTY PENNSYLVANIA



Transportation

Boyle Ice Plant

W side of Conrail tracks, W of Fifteenth and Penn streets, Huntingdon

Construction date: 1925

DESCRIPTION: This plant is located on the west side of the Conrail main line tracks in Huntingdon, across from an Owens-Corning Fiberglas storage yard at the corner of Fifteenth and Penn streets. The tall, one-story building measures 300' x 62' and contains brick walls and brick pilasters, and a flat roof. A small office area attached to the north end contains two floors. Supported by a reinforced concrete foundation, the building has large steel-framed windows in the freezing room, while the storage room is entirely windowless. The structure is abandoned and deteriorating.

HISTORY: In 1925 the Boyle Ice Company of Chicago constructed this facility to provide ice for refrigerated rail cars. The Huntingdon plant serviced all eastbound trains on the PRR, since it was the last icing station before arrival at eastern markets. An elevated steel platform above a two-track siding provided access to east and westbound trains. A chain conveyor moved ice from the plant's storage room through a tunnel beneath one track and then a steep incline took the ice to the elevated platform.



Photo 24. Boyle Ice Plant.

Transportation

Three deep on-site wells supplied water to the freezing room, where ice was produced in 400-pound blocks by an ammonia and brine process. Two overhead cranes lifted the cans used as forms for the ice, plunged them in water to separate the blocks from the cans, and conveyed the blocks to an adjacent room for stacking and storage at 28 degrees Fahrenheit. The original storage capacity of 3,240 tons was later increased by 3,000 tons. When built, the plant capacity was 250 tons of ice per hour, a rate of production maintained throughout its operation by careful maintenance of equipment.

Depending upon weather conditions and cargo, refrigerated cars required icing about every twelve hours. Fruits and vegetables used block ice; meat cars required crushed ice and salt to maintain a colder temperature. The plant serviced fifteen cars in a "pull," allowing three minutes to a car. A fifty- to sixty-car train might be serviced in an hour by a crew of men. Refrigerated cars were typically mixed with other freight cars, but John States, an employee at the plant for forty-three years, recalls icing 125-car trains hauling nothing but California grapes bound for New York City.

The plant operated twenty-four hours a day, employing eight to ten men per shift. The labor required of employees was difficult, including such tasks as unloading 50-ton salt cars with scoop shovels. During the Depression, employees worked twelve-hour shifts and were paid for only nine. Business slacked off because of competition from automatic refrigeration and truck transport; however, to cut expenses employees agreed to give up all benefits and vacations, and were on twenty-four-hour call. The plant was notified from Altoona when a train was expected, and men were called in immediately to prepare for it. This irregular schedule required of laborers made it easier for them to cope with the final closing of the plant in 1972.

Sources:

Reynolds, Joseph B. Letter to author, 17 January 1989.

Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1926.

States, John, Retired employee of Boyle Ice Company. Interview by author, 6 January 1989.

East Broad Top Railroad: Mount Union Yard

Current name: East Broad Top Railroad property

Construction date: 1873

E end of Shirley Street (Rte. 522), N of highway, Mount Union

DESCRIPTION: The EBT yard joins the borough of Mount Union on the southeast, lying between Route 522 and the North American Refractory plant. Remaining at this coal-cleaning site are a coal tipple for loading trucks, a concrete-block engine house in deteriorating condition and in which is stored a standard gauge switch engine formerly used in the yards, and multiple tracks, some lined with abandoned EBT coal hopper cars.

The area along the southern edge of the yard, fronting on Route 522, has been commercially developed and now contains a supermarket, drug store, and bank. These structures have had a negative impact on the historical integrity of the site.

HISTORY: The EBT yard in Mount Union was developed concurrently with the construction of the EBT line in 1873. In the yard products were transferred between cars of the narrow-gauge

EBT line and standard-gauge cars of the Pennsylvania Railroad. Later development and use of the site included the erection about 1922 of an overhead electric gantry crane that transferred timber belonging to the McKelvey Brothers Lumber Company from EBT to PRR cars. Beginning in 1933, after McKelvey lumbering activity had ceased, the timber transfer was adapted to lift standard-gauge cars off their trucks and place them on narrow-gauge EBT trucks, avoiding transferring the products from one type of car to another.

In the 1920s the Mount Union yard also saw development of an improved system of handling East Broad Top coal. The original apron conveyor facility in the yard was rebuilt in 1925 and a Chance sand flotation coal-cleaning plant installed (see EBT Chapter introduction). This huge structure dominated the Mount Union yard, and allowed the Rockhill Coal & Iron Company to ship nine grades of coal.

Today, both the coal-cleaning facility and the timber transfer are gone.



Photo 25. Remains at EBT's Mount Union Yard.

Sources:

- Rainey, Lee, and Kyper, Frank. East Broad Top (San Marino, CA: Golden West Books, 1982), 94, 128-131, 149.
 Welch, Charles H. History of Mount Union, Shirleysburg and Shirley Township (Mount Union: The Mount Union Times, 1909-10), 241-47.

Transportation

Huntingdon & Broad Top Mountain Railroad: Long Siding Station

Current name: Huntingdon County Agricultural Association: Farm Museum

Construction date: ca. 1890

Huntingdon County Fairground, 1 mi. S of Huntingdon on Fairground Road, Smithfield Twp.

DESCRIPTION: Located on the grounds of the Huntingdon County Fairground, this 22' x 18' frame building has a narrow wood clapboard exterior, concrete foundation, and asphalt roof. It is distinguished stylistically by stick-style brackets under its wide, overhanging eaves and gable ends, and by paired entrance doors on one long side and paired windows at both ends.



Photo 26. Long Siding Station of the Huntingdon & Broad Top Mountain Railroad.

HISTORY: This building was constructed as a station and office for the Huntingdon & Broad Top Mountain Railroad. It was originally located along the Fairground Road in the H&BT yard area, at what was called the Long Siding, where the Pennsylvania Sewer Pipe Company built its works about 1890. The establishment of that industry, in a formerly undeveloped area along the railroad, may have created a need for this station. Its style suggests a construction date around 1890.

The station was given to the Huntingdon County Agricultural Association for use as a fair office shortly before the railroad ceased operations in 1954. The building was moved a short distance to its present location by Robert Ross, and was placed on a new concrete foundation. Recently, the

fair directors built a larger office, and the former station has been converted to use as a small farm museum, open to the public during fair week. The old ticket windows remain in the building.

Source:

Laney, Kermit, President, Huntingdon County Agricultural Association. Interview by author, 31 October 1988

Huntingdon & Broad Top Mountain Railroad: Trestle

Current name: Conrail: Industrial Park Branch Line Trestle

Construction date: 1889

200 yards S of Smithfield Bridge (Rte. 26); Conrail mile marker 202.60, Huntingdon

DESCRIPTION: This multiple-span trestle carries the H&BTMRR across the Juniata River at Huntingdon. It contains a total of sixteen spans ranging in length from 33' to 79'. The bridge consists of simply supported riveted steel deck girder spans resting on ashlar sandstone and concrete piers. The original piers were likely of ashlar sandstone, however several have been replaced with reinforced concrete. The double-tracked bridge is in fair condition.



Photo 27. H&BT Trestle with Piney Ridge in the background.

HISTORY: Construction of the Huntingdon & Broad Top Mountain Railroad (H&BT) began in 1853 and was completed to a point eight miles south of Huntingdon by July 30, 1855. The forerunner of this trestle, a combination deck girder and through truss bridge, was part of the first phase of H&BT construction. It was destroyed in the 1889 flood, when an upstream highway

Transportation

bridge gave way and struck the railroad bridge, snapping it in two. The trestle was rebuilt as a deck girder structure over its entire length, making use of the surviving substructure of the earlier bridge.

Following the 1889 flood, the Pennsylvania Railroad made changes to its tracks through Huntingdon, which required some alteration of the alignment and elevation of the east end of this H&BT trestle. Repairs following subsequent floods, particularly those in 1936 and 1972, were responsible for modifications that are evident in the combination of stone and concrete piers which are extant. The trestle was not destroyed in these floods, however.

After the H&BT ceased operations in 1954, Conrail acquired the trestle. It is part of a one-mile siding that serves the Huntingdon Industrial Park.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.
- Rung, Albert M. Rung's Chronicles of Pennsylvania History. Huntingdon: Huntingdon County Historical Society, 1977.
- Shedd, Nancy S. and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Huntingdon, Cambria and Indiana Turnpike

1.33 mi NE of Rte. 22 and 1.5 mi NW of Huntingdon, Porter Twp.

Construction date: 1815 - 1821

DESCRIPTION: This portion of the Huntingdon, Cambria and Indiana Turnpike, crossing Warrior Ridge between Huntingdon and Alexandria, is extant and in relatively unaltered condition. The majority of this narrow, three-and-one-half mile road is unpaved. It is characterized by steep grades and sharp curves, particularly on the western slope of the ridge, and is perennially marked by the potholes, ruts, washouts, and dust or mud of which eighteenth-century travelers complained. East of the ridge, the road passes the Pulpit Rocks landmark sandstone formations. Lack of development along this part of the Huntingdon, Cambria and Indiana Turnpike preserves the isolation J. Simpson Africa ascribed to long stretches of the former turnpike.

HISTORY: Following unsuccessful efforts in 1806 and 1807 to improve a turnpike road from Harrisburg to Pittsburgh by way of Lewistown, Huntingdon, Ebensburg, and Blairsville, the Huntingdon, Cambria and Indiana Turnpike Road Company was incorporated March 20, 1810. After considerable delay, a meeting of citizens in the Huntingdon County Courthouse in January of 1814 succeeded in promoting sufficient interest in the project and in April of that year began to sell stock in the company. Africa described the Huntingdon, Indiana and Cambria Turnpike as the principal early road through the county and noted that "a considerable length of [it] passed through a rugged and sparsely settled region, unable to contribute any substantial aid" toward its construction. By 1821 the road was complete from Huntingdon to Blairsville, a distance of seventy-seven miles, but costs had exceeded the subscribers' stock payments, and the managers were reduced to issuing scrip to pay contractors for their work. Tolls were collected from turnpike users to assist in paying the costs of construction and maintenance.

The turnpike followed the course of one of the earliest paths through the area. It is basically the same route followed by present U.S. Route 22. The stretch of the Huntingdon, Indiana and Cambria Turnpike between Huntingdon and Alexandria, known locally as the Old Alexandria Pike, was bypassed in the early twentieth century, but continues to be maintained as a township road. It thus preserves something of the character of its turnpike days, especially in the vicinity of the Pulpit Rocks, which early travelers viewed with interest.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties. (Philadelphia: Louis H. Everts, 1883), 27-33.
 Harshbarger, Jean, et al. Hartslog Heritage. (State College: Alexandria Bicentennial Association, 1975), 31.
 Jones, U.J. History of the Early Settlement of the Juniata Valley. (Harrisburg: The Telegraph Press, 1940; reprint of 1856 edition), 322-23.

Huntingdon County Bridge No. 1: Frehn Bridge

Rte. 313, 2 mi. W of SR 475, Springfield Twp.

Construction date: ca. 1900

DESCRIPTION: Spanning Sideling Hill Creek in southern Springfield Township, this single span, pin-connected Pratt through-truss bridge measures 120' in length and is nearly 14' wide. It has a timber deck and gravity-type concrete abutments and wing walls.



Photo 28. Frehn Bridge.

Transportation

HISTORY: The Huntingdon County bridge office has no information on the history of the Frehn bridge, and a search of bridge contracts in the County Commissioners office did not reveal any information on its construction. It was probably erected about 1900. Although the Frehn bridge is on a remote dirt road with little traffic, it is high on the list of county bridges scheduled for replacement.

Sources:

Brown, Martin, Huntingdon County Commissioner. Interview by author, 9 December 1988.
Bridge File No. 1, Huntingdon County Bridge Office. Huntingdon County Courthouse.
County and Township Bridges in Huntingdon County, District 9 Office, PennDOT, Hollidaysburg, Pennsylvania.

Huntingdon County Bridge No. 6: Watkins Bridge

2 mi. E of Three Springs, just N of Rte. 994, Clay Twp.

Construction date: 1904

DESCRIPTION: Located two miles east of Three Springs, this single span, 52'-long pin-connected pony Pratt truss bridge has a 13'-wide plank deck and concrete-reinforced stone abutments.

HISTORY: Listed in state and county bridge records as Bridge No. 6, this single-span bridge was fabricated by the York Bridge Company in 1904 for the Huntingdon County commissioners. It spans Three Springs Creek, connecting an unpaved road with Route 994. An 1873 map indicates that the route which this bridge connects was once the principal route from Three Springs to Orbisonia. In fair condition, the bridge has been repaired twice by the county, in 1973 and 1985.

Sources:

Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A Pomeroy and Company, 1873.
Bridge file No. 6, Huntingdon County Bridge Office. Huntingdon County Courthouse.
County and Township Bridges in Huntingdon County. District 9 Office, PennDOT, Hollidaysburg, Pennsylvania.

Huntingdon County Bridge No. 8: St. Mary's Bridge

Rte. 522, 2.5 mi. N of Shade Gap, Cromwell Twp.

Construction date: 1896

DESCRIPTION: Located three miles north of Shade Gap, this single-span, 65'-long Howe through-truss covered bridge has half-open sidewalls of vertical planking, a metal roof, concrete-reinforced stone abutments, and a 17.5'-wide wood plank deck supported by four steel I-beam stringers.

HISTORY: This covered bridge, across Route 522 from St. Mary's Catholic Church, was constructed for the Huntingdon County Commissioners in 1896, at the cost of \$540.00; E.O. Rogers was the contractor. It is the only covered bridge remaining in Huntingdon County and one of only four Howe-truss covered bridges in Pennsylvania.

Appreciation has grown in recent years for St. Mary's Bridge, which enjoys high visibility along a busy state highway. This has resulted in increased attention to its maintenance and repair, and frequent renewal of its red and white paint. In 1982, four steel I-beams replaced the wooden stringers beneath the deck, but they are completely concealed by the planking of the sidewalls and

do not detract from the structure's historical character. The bridge remains in daily use, with a hefty 23-ton weight limit.



Photo 29. St. Mary's Bridge.

Sources:

Bridge File No. 8. Huntingdon County Bridge Office. Huntingdon County Courthouse.

Minute Book of Huntingdon County Commissioners. Huntingdon County Courthouse.

Zacher, Susan M. The Covered Bridges of Pennsylvania. Harrisburg: Pennsylvania Historical and Museum Commission, 1982.

Huntingdon County Bridge No. 9: Runk Bridge

1 mi. S of Shirleysburg, 0.25 mi. W of Rte. 522, Shirley Twp.

Construction date: 1889

DESCRIPTION: This pin-connected, steel Pratt through-truss bridge consists of two 134' spans. Wooden stringers support a 13'-wide yellow pine deck. The bridge has one concrete pier and high concrete abutments covered with a lime and concrete plaster.

HISTORY: County bridge records indicate that Bridge No. 9, or Runk Bridge, was constructed in 1889 by the Pittsburgh Bridge Company. Located one-and-one-half miles south of Shirleysburg, the bridge stands west of both U.S. Route 522 and the active tourist section of the East Broad Top

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Railroad (EBT). The bridge is one of the county's few remaining pin-connected Pratt through-truss bridges.



Photo 30. Runk Bridge. Photo by Jet Lowe.

Sources:

Bridge File No. 9, Huntingdon County Bridge Office. Huntingdon County Courthouse Reflections. Mount Union, PA: Mount Union Bicentennial Committee, 1976.

Huntingdon County Bridge No. 12: New Fording Bridge

Rte. 368, 0.75 mi. NW of Todd, Todd Twp.

Construction date: 1889

DESCRIPTION: Located on an unpaved township road less than one mile west of Todd, this single-span, single-lane, riveted pony Pratt truss bridge measures 63' in length and has an 11.7' steel grate deck; its stone masonry abutments were modified with concrete bridge seats and wing walls in 1978.

HISTORY: County bridge records indicate that the New Fording bridge was constructed in 1889, which suggests that it replaced a span lost in the great flood of that year. Its name suggests that a fording through Great Trough Creek was established at this location before any bridge existed. (It is not clear, however, why New Fording road and bridge were necessary since there has not been a settlement along the road, nor does it connect villages that were not already joined by the nearby road through Todd and Beavertown.)

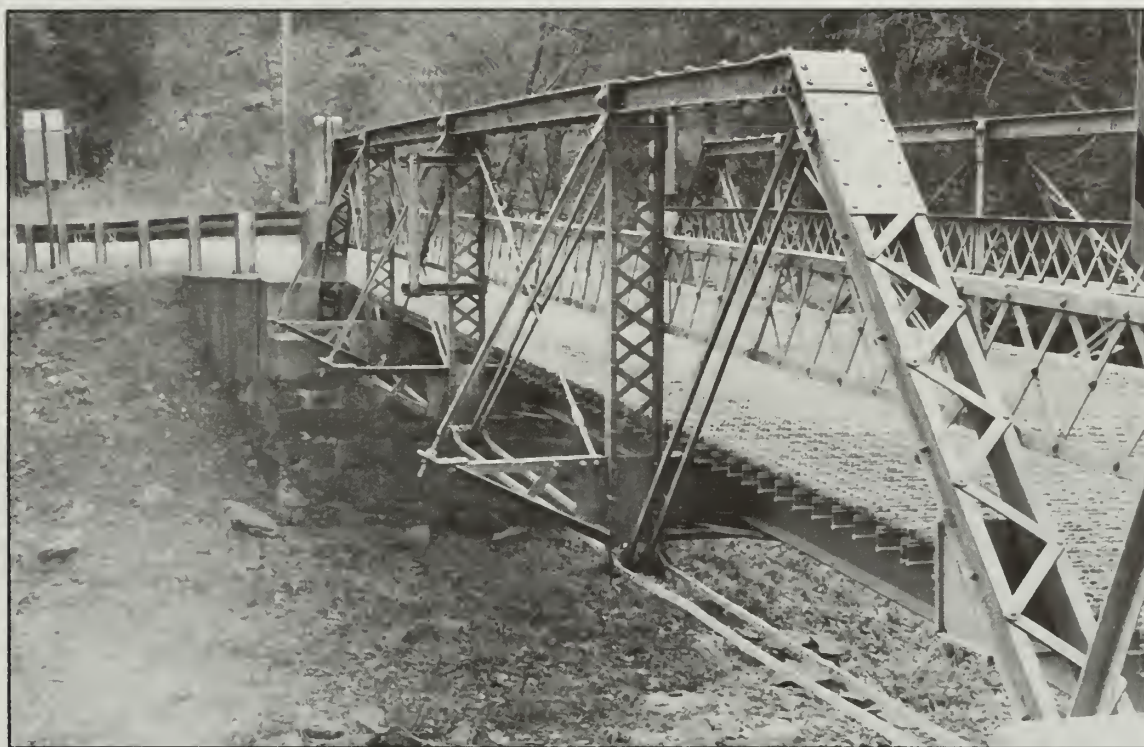


Photo 31. New Fording Bridge.

Sources:

Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.
Historic Highway Bridges in Pennsylvania. Harrisburg: Commonwealth of Pennsylvania, 1986.
 Bridge File No. 12, Huntingdon County Bridge Office. Huntingdon County Courthouse.
 County and Township Bridges in Huntingdon County, District 9 Office, PennDOT, Hollidaysburg, Pennsylvania.

Huntingdon County Bridge No. 14: Baker Bridge

Rte. 370, 1 mi. E of Newburg, 0.5 mi. N of Rte. 994, Todd Twp.

Construction date: 1917

DESCRIPTION: Located on an unpaved road one mile east of Newburg, this two-span, double-rib, closed-spandrel concrete-arch bridge measures 114' in length and has a 17'-wide paved deck with metal pipe railings. Each arch span is approximately 50' long.

HISTORY: This two-span filled-concrete arch bridge was constructed in 1917 across Great Trough Creek. One of several concrete-arch bridges erected in the region in the 1910s, it was most recently repaired in 1978.

Sources:

Historic Highway Bridges in Pennsylvania. Harrisburg: Commonwealth of Pennsylvania, 1986.

Transportation

Bridge File No. 14, Huntingdon County Bridge Office. Huntingdon County Courthouse.
County and Township Bridges in Huntingdon County. District 9 Office, PennDOT, Hollidaysburg, Pennsylvania.

Huntingdon County Bridge No. 15: Birmingham Bridge

Alternative name: Blair County Bridge No. 48
Off Rte. 453 at Birmingham, Warriors Mark Twp.

Construction date: 1898

DESCRIPTION: Spanning the Little Juniata River near Birmingham, this single-span 137' Pratt through-truss steel bridge has a 14.7'-wide deck of 3"-thick plank on steel stringers and beams. The bridge has cut-stone abutments and a metal crest with a design of six cut-out quatrefoils on the top chord at both ends of the bridge.



Photo 32. Birmingham Bridge.

HISTORY: This Pratt through-truss steel bridge abuts Route 453, immediately north of the entrance to the town of Birmingham. The bridge was erected in 1898 by the Penn Bridge Company of Beaver Falls, Pennsylvania, to replace a wooden bridge constructed in 1852. As built, it included a pedestrian sidewalk on the downstream side, which was later removed.

The Birmingham Bridge joins Blair and Huntingdon counties, with Blair County assuming actual responsibility for maintenance and the two counties sharing the cost equally. The bridge was

sandblasted and painted in 1978. A 1987 inspection found the structure in good condition, recommending renailling of the deck and eventual addition of more nailers.

This bridge is the only means of access to two dwellings on the Blair County side of the river. It receives little traffic; thus its 5-ton weight limit is not a limitation; because of limited demand, it is unlikely to be replaced.

Sources:

Gwin, Dobson & Foreman, Inc. Supplementary Inventory Report, Blair County Bridge No. 48, March 1987. PennDot District 9 Office, Hollidaysburg.

Huntingdon County Bridge File No. 15, Huntingdon County Bridge Office. Huntingdon County Courthouse.

Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Huntingdon County Bridge No. 20: Corbin Bridge

2 mi. SE of Huntingdon on road to Raystown Dam, Juniata Twp.

Construction date: 1937

DESCRIPTION: Located on the Raystown Branch, one-half mile south of its junction with the main current of the Juniata River, this one-lane, single-span, lightweight suspension bridge is 320' long, and 12.5' wide. Its main cables measure 2-3/8" in diameter. The prestressed wire rope cables, manufactured by Roebling & Son of Trenton, New Jersey, are supported on 39'-tall steel towers and anchored in concrete deadmen. The bridge is stiffened by a double intersecting Warren truss and has a macadam-paved wood deck. High cut-stone and concrete abutments with wing walls support fill at the bridge approaches.

HISTORY: This suspension bridge, also called the Corbin Bridge, was constructed in 1937 to replace a bridge swept away when a Penelec hydro-electric dam on the Raystown Branch gave way in the 1936 St. Patrick's Day flood. County bridge records state that the suspension bridge was fabricated by Reading Steel Products, Inc. The bridge type is highly unusual for the area -- it is the only suspension bridge in the six-county Pennsylvania Department of Transportation (PennDOT) district which includes Huntingdon.

Designed to carry a live load of 10 tons, the live load limit of the bridge was reduced to 7 tons in 1972 when a deck replacement project increased the dead load of the bridge itself. Serving one farm, a few year-round residences, and a cluster of vacation cottages along the Juniata, the bridge carries only a moderate amount of traffic and is not usually subjected to heavy loads. However, according to a recent inspection report, an excessive load in 1980 buckled the east truss, causing the weight limit to be set temporarily at 3 tons. Repair of the truss in 1981 permitted the 7-ton limit to be restored.

Sources:

Davis, J. Dain, PennDOT. Interview by author, 26 August 1988.

Bridge File No. 20, Huntingdon County Bridge Office. Huntingdon County Courthouse.

Souvenir Historical Book, Sesqui-Centennial Celebration of Huntingdon County Pennsylvania. Huntingdon County Historical Society, 1937.



Photo 33. Corbin Bridge.

Lloyd and Henry Warehouse

Current name: Laney's Feed Mill

Construction date: 1863

South Eighth Street, parallel to railroad, behind feed mill, Huntingdon

DESCRIPTION: The two-story warehouse building measures 97' x 35', and contains a low-pitched gable roof and a full basement. Various materials cover its old wood siding: the roof and east end are covered in corrugated sheet metal; the north facade is clad with homosote sheets; the west side contains corrugated fiberglass and asbestos shingles; and the south side (under roof joined to mill) contains a variety of materials including brick-patterned metal. This later siding may have been the material referred to on a Sanborn map of 1891. The interior has heavy wood framing, all sawn: first-floor walls have 12" x 10" posts, diagonally braced, and 3" x 5" studs. A row of 12" x 12" posts down the middle of the building supports a summer beam on which rests 3" x 12" joists, on 12" centers. Floors are double, one course laid across the joists, the other diagonally. Roof trusses of heavy timber and iron pins allow an unsupported clear span of the second-floor area. Two purlins support rafters of each roof half. Two other timbers run the length of the building, inside the acute angles of the trusses, providing lateral bracing for the trusses.

HISTORY: In 1863, along a narrow strip of land between the railroad and canal, the Pennsylvania Railroad (PRR) constructed a warehouse at Huntingdon, for the firm of Lloyd and Henry. These men also operated a similar PRR-built warehouse at Hollidaysburg for the transfer of freight from

canal to railroad. In 1869, S. E. Henry became sole owner of the Huntingdon warehouse. In a photograph of the building in its original location, lettering on the facade identifies S.E. Henry & Co. as "forwarding and commission merchants, dealers in produce, fish, salt, coal, steel, iron, nails, etc." John White, a Henry & Co. employee from 1874 to 1880, described the warehouse as the largest and busiest along the canal, with as many as forty men loading and unloading boats and cars at the wharf and siding. After the 1889 flood, the PRR moved its tracks at Huntingdon to the bed of the defunct canal, necessitating acquisition of Henry's ground and removal of the warehouse. Henry moved the building some 450' to its current location behind his flour mill (see Henry & Company Flouring Mill).

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
 Huntingdon Borough Tax Assessments, 1889-1892. Huntingdon County Courthouse, Huntingdon, Pennsylvania.
Huntingdon In the Early Days. Huntingdon: First National Bank, 1923.
 Rung, Albert M.. Rung's Chronicles of Pennsylvania History. Huntingdon, PA: Huntingdon County Historical Society, 1977.
 Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1884, 1891.

Pennsylvania Canal Survey Marker

Huntingdon County Historical Society, 106 Fourth St., Huntingdon

Construction date: ca. 1889

DESCRIPTION: This piece of roughly squared native limestone, 8" x 6" x 24" high above ground, bears the letters "P C" incised on one face. It was moved to the Huntingdon County Historical Society.

HISTORY: After abandonment of the Juniata Division of the Pennsylvania Canal, surveyors apparently marked the boundaries of the canal right-of-way prior to its being taken over by the Pennsylvania Railroad. The Newton Hamilton newspaper, The Watchman, reported in 1890 that the survey crew had gone through the area "a few years ago" setting stakes and stone markers along the canal bed. Concerned that these canal markers would be overgrown and lost, a number have been removed from their original remote locations and placed in the yards of persons interested in canal history. In addition to the one at the Huntingdon County Historical Society, others can be found in Huntingdon at the Dr. Robert Beck home, Taylor Highlands; at 923 Mifflin Street; 1830 Mifflin Street; and 504 Penn Street. Four are in use at the Sam Miller home, Main Street, Alexandria, as legs for a stone water trough; and another at the home of Joseph Clark, 105-1/2 West Milford Street, Mount Union.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
 McCullough, Robert, and Leuba, Walter. The Pennsylvania Main Line Canal. York, Pa.: The American Canal and Transportation Center, 1976.
 Shank, William H. The Amazing Pennsylvania Canals. York, Pa.: The American Canal and Transportation Center, 1977.
The Watchman (Newton Hamilton, Pennsylvania) 17 May 1890. Quoted in newspaper columns by Albert M. Rung in The Daily News (Huntingdon, Pennsylvania), December 1966-January 1967.



Photo 34. Survey marker for the Pennsylvania Canal.

Pennsylvania Canal: Guard Lock and Feeder Dam

2.5 mi. E of Huntingdon, S of Rte. 22, on Juniata River, Henderson Twp.

Construction date: ca. 1831

DESCRIPTION: The ruins of two canal structures remain at this location on the Juniata River, below its junction with the Raystown Branch, 2 miles east of Huntingdon. They are among the best preserved canal ruins in Huntingdon County. Guard Lock (1831): Two 90'-long parallel walls, 8' high and 15' apart, constructed of random range stone remain at the site of this lock on the northeast bank of the river. Indentations are visible at 2' to 3' intervals along the entire length of

the walls, indicating where vertical timbers were set into the stonework for attaching the horizontal planking that lined the lock. A considerable length of stone retaining wall also survives along the river protecting the narrow bank between the river and the lock from erosion. At the east, or downstream, end of the lock, the stonework curves outward into a mile-long earthen feeder canal. Some tumbled remnants of stonework remain at the eastern terminus of this canal, where the feeder joined the canal proper. Feeder Dam (1831): Stone and earth remnants of the timber crib dam survive on an island in the middle of the Juniata River and on its southwest bank; timbers from the base of the log cribbing remain submerged in the river bottom.



Photo 35. Pennsylvania Canal guard lock; view of east wall, looking southeast.

HISTORY: When contracts were let on November 19, 1828, for sections of the Juniata Division of the Pennsylvania Canal between Lewistown and Huntingdon, Uriah Wickwire was named to build the Raystown Branch feeder, and Dearmond, Rodearmel & Co. was contracted to construct the Raystown Branch dam. The purpose of the dam and feeder was to maintain the proper water level in the canal between this point and the town of Newton Hamilton, where the next feeder dam was located. In addition to allowing water to enter the system--thus replacing that lost to evaporation and leaks--guard locks were closed to protect the canal from flooding during periods of high water.

The guard lock and feeder also permitted boats built on Standing Stone Creek to enter the canal system. Vessels for D. Leech's packet line were made at a boat yard on Stone Creek that was

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supervised by David and James Stevens. These boats presumably entered the canal through the Raystown feeder.

Sources:

Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.

Clark, Joseph. Interview by author, 15 November 1988.

McCullough, Robert, and Leuba, Walter. The Pennsylvania Main Line Canal. York, PA: The American Canal and Transportation Center, 1973.

Webb, Dallas. Interview by author, 23 November 1988.

Pennsylvania Canal: Lock House

SE corner Hartslog Street and Shelton Avenue, Alexandria

Construction date: ca. 1832

DESCRIPTION: This two-story frame house at Hartslog Street and Shelton Avenue, in the town of Alexandria, is unusual as it is aligned with the diagonal course of the canal, rather than with its lot boundaries and the town streets. Measuring 22' x 20', with a 15' x 12' two-story addition extending along its east side (the present rear of the house), it has a rubble stone foundation, clapboard siding, asphalt shingle roof, and a porch around three sides. Early photos show the house fronting on the canal, with the ridge of the roof parallel with the canal. The house now fronts on, and has its roof ridge parallel to, Hartslog Street. It appears that the building was not turned, but had its roof reoriented when it was rebuilt. (The reconstructed gable roof is not as steeply pitched as the original.) The house retains little of its original character.

HISTORY: Lot No. 60, on which this former lock house sits, was purchased by the Pennsylvania Canal in 1835 with a house on it. If the present house is the one referred to in the deed, it must have been constructed after the canal course was determined, since it was sited so as to parallel the canal bed. It is also possible that an existing house on lot No. 60 served temporarily as a lock house, and was replaced at a later date. Few of the lock houses from the Pennsylvania Canal exist today, but this house, despite its modifications, is an important reminder of the significant role the canal played in the region's towns.

Sources:

Harshbarger, Jean P., et al. Hartslog Heritage. State College: Alexandria Bicentennial Association, 1975.

Alexandria Borough, Huntingdon County Historic Sites Survey, 1977-1980. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

Pennsylvania Railroad: Bridge between Mount Union and Kistler

E end of East Pennsylvania Avenue; Conrail mile marker 189.77, Mount Union

Construction date: 1906

DESCRIPTION: With a total length of 668', this six-arch stone railroad bridge spans the Juniata River east of Mount Union. It is built of the massive stone ashlar typical of Pennsylvania Railroad projects. The bridge is reinforced with concrete spandrels and has concrete curbing along the roadbed.

HISTORY: The Pennsylvania Railroad (PRR) replaced the bridge at this location, spanning the Juniata River between Mifflin and Huntingdon counties, in 1906 as part of a program of improvements begun in 1905 (see PRR: Jefferson and Division Street Underpass). A stone-arch bridge of six 100' spans replaced the former four-span deck truss bridge. The new bridge had a different alignment across the river, due to the railroad's new course through Mount Union. The old bridge was converted to accommodate automobile traffic.

A 1907 newspaper article detailing the program of railroad improvements between Ryde, in Mifflin County, and Mount Union noted the cost and results of the project with humor when it reported that the PRR had spent \$3.25 million to save twenty-two seconds of travel time. Construction of this bridge across the Mifflin-Huntingdon line required eight months and twenty days, ending in December of 1906.

Like most PRR stone-arch bridges, this one has been reinforced in recent years with concrete spandrel columns and curbing. The additions to this bridge do not obscure the craftsmanship of its masonry work as seriously as the partial reconstruction of other PRR bridges in Huntingdon County.

Sources:

A Bicentennial Keepsake. Mount Union: Allen Welch, 1976.

List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.

"PRR Spends \$3,250,000 to Save 22 Seconds." Semi-Weekly News (Huntingdon, Pennsylvania), 9 May 1907.

Reflections: Mount Union Area. Mount Union: Bicentennial Committee, 1976.

Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Pennsylvania Railroad: Bridge between Petersburg and Barree

Current name: Conrail: Little Juniata River Bridge

Construction date: 1914

1 mi. W of Rte. 305 at S end of new highway bridge over Little Juniata; Conrail mile marker 210.75

Porter and Logan twps.

DESCRIPTION: This six-span, deck girder bridge measures 307' in overall length; its main span is 25' long. A four-tracked bridge, it is topped by a concrete slab and has stone piers supporting reinforced-concrete pads on which the girders rest. A farm road passes underneath its western span.

HISTORY: According to Conrail records, this bridge was constructed in 1914 when there was almost no other railroad construction in the county. Information on the previous bridge at this location, or what occasioned its replacement, is unknown. The stone piers appear to date from the nineteenth century.

This crossing of the Little Juniata River, between Petersburg and Barree, occurs near the midpoint of a 2.3-mile straightaway that is most unusual in the Pennsylvania Railroad's tortuous Middle Division. This section of the rail line, west of Barree, includes the PRR's first tunnel west from Philadelphia. From here the line crossed the winding Little Juniata thirteen times in 5.7 miles.

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Sources:

Alexander, Edwin P. On the Main Line. New York: Bramhall House, 1971.

Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy & Company, 1873.

List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail Philadelphia, Pennsylvania.

Pennsylvania Railroad: Bridge over Shaver's Creek

S end of Petersburg, near junction of Shaver's Creek and Juniata River, Logan Twp.

Construction date: 1889

DESCRIPTION: This stone three-arch railroad bridge in Petersburg measures 134' in overall length.



Photo 36. Pennsylvania Railroad Bridge over Shaver's Creek.

HISTORY: According to Conrail records, this stone-arch bridge crossing Shaver's Creek, near the junction with the Juniata River at Petersburg, was constructed in 1889. Most likely, it replaced a bridge lost or damaged in the 1889 flood. Available records show six stone-arch railroad bridges constructed in the county between 1886 and 1889, suggesting that the PRR was engaged in a program of replacing its first-generation iron bridges with heavier masonry structures.

Conrail records indicate the most recent major repairs to the structure occurred in 1967, which may be when the metal brackets were added. This is the only stone-arch railroad bridge in the county that has not had concrete supports applied to its spandrel walls.

Sources:

- List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.
- John Nelson Thompson Photographs, Photograph Collection. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Petersburg and Shaver's Creek Valley. Huntingdon, PA: Petersburg Bicentennial Committee, 1976.

Pennsylvania Railroad: Huntingdon Stations and HUNT Tower

Current name: Amtrak

Construction date: 1872

Fourth, Fifth, and Allegheny streets, Huntingdon

DESCRIPTION: This complex of railroad structures includes three buildings adjacent to the main line tracks. Union Depot (1872): the 135' x 35', two-story brick building with decorative brickwork at the eaves and in recessed panels around its windows and doors has a stone foundation below grade, and a hipped roof of asphalt shingles and bracketed eaves. All windows were originally paired with brick arches spanning the openings; all first-story and some second-story windows were replaced with rectangular six-over-one-light windows. The interior retains much original detail. First floor: wainscoting, round cast-iron radiator, oak freight-office counter, labeled mailboxes, early light switches, lavatory fixtures, doors and hardware. Second floor: original arrangement of offices and corridor intact, fireplace with tile hearth, lavatory fixtures, double desk, early fuse box, wainscoting, radiators, original doors. Eastbound Shelter (1905): a 35' x 10', one-story frame structure with a band of windows facing tracks (four of six now infilled); the shelter has a large roof overhang at the eaves; the roof extends 10' over the platform at the west end of the building as a covered shelter. One original waiting room bench remains. Hunt Tower (1900): the 30' x 20', two-story signal tower with a 10' x 10', one-story addition has a first story of brick, second story of frame, and a hipped roof. Tall windows wrap around the building, some of which are now covered with plywood.

HISTORY: The Union Depot was built in 1872 to serve the PRR and the H&BT, which both had used existing buildings as passenger stations. At the time, the PRR tracks were located on Allegheny Street, the H&BT tracks began west of the new depot, and the Pennsylvania Canal passed south of the station, on the present railroad right-of-way. Orientation of the station was toward Allegheny Street, where a roof, supported by iron columns, extended over the sidewalk to shelter passengers and a conical-roofed, second-story tower projected from the northeast corner of the building. These Allegheny Street projections were removed when the station was reoriented southward in 1892.

After the flood of 1889 destroyed the partially abandoned Juniata Division of the canal, the PRR relocated its tracks to the canal right-of-way in many congested areas. In Huntingdon, the tracks were removed from their hazardous location in the middle of a busy street and relaid on the canal bed. This move necessitated relocation of the H&BT tracks as well, to an area on the north bank of the river. Passenger access shifted to the south side of the depot, and broad-roofed shelters were constructed over the new east and westbound platforms. About 1905, a small, enclosed eastbound depot was built under the existing roofed area, and a 25' addition was made to the west

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Photo 37. Huntingdon Station. Photo by Jet Lowe.



Photo 38. Pennsylvania Railroad, Hunt Tower. Photo by Jet Lowe.

end of the main depot. Relocation of the tracks also was responsible for construction about 1900 of the HUNT switch tower, just north of the tracks at the extreme west end of the platform area.

The Penn Central closed the Huntingdon Depot in 1965, and automation led Conrail to abandon the HUNT tower in 1985. The eastbound shelter remained in use for a number of years as a waiting room for passengers boarding both eastbound and westbound trains. This shelter is no longer in use. The switch tower was saved from demolition by Huntingdon Revitalization & Development, the town's Main Street organization, and is being restored for adaptive use. The interior of the deteriorating depot is threatened by a leaking roof.

Sources:

Photograph Collection, Huntingdon County Historical Society, Huntingdon, Pennsylvania.

Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1891, 1896, 1901, 1906.

Shedd, Nancy S. An Architectural Study of the Ancient Borough of Huntingdon. Huntingdon: John S. Rodgers Company, 1976.

Pennsylvania Railroad: Jefferson and Division Street Underpasses

Jefferson and Division streets between Water and Poplar, Mount Union

Construction date: 1907

DESCRIPTION: These two 40'-long semi-circular stone arch railroad bridges carry the PRR main line over Jefferson and Division streets in Mount Union borough. Utilizing the typical PRR construction material, massive stone ashlar, the highway underpasses are identical except that the one on Jefferson Street has stone steps rising along its eastern abutments, which once gave access to a pedestrian passage beneath the tracks.

HISTORY: Between 1905 and 1907, the Pennsylvania Railroad replaced all of its bridges between Mount Union and McVeytown, in Mifflin County, in a general upgrading of the system. The rebuilding program presented an opportunity to move the main line tracks in Mount Union from the middle of Pennsylvania Avenue to a safer elevated course through town. Construction of this viaduct, which followed the Pennsylvania Canal's abandoned path through town, began in 1906. Thousands of tons of earth, removed as a result of a deep cut between Newton Hamilton and Mount Union, were carted from Mifflin to Huntingdon County by contractors Drake and Stratton and used as fill for the viaduct.

Stone-arch bridges, 40' in length, were constructed over Division and Jefferson streets to allow vehicle and pedestrian access between the north and south parts of town. They are identical except for stone steps beside the Jefferson Street arch, leading to a pedestrian subway that connected the eastbound and westbound stations. The end of railroad passenger service to Mount Union, and demolition of the station in 1976 eliminated the need for this elevated subway. It was closed, and the steps have become overgrown; however, the "subway," the name residents have applied to the highway underpasses beneath the tracks, still stands.

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Sources:

A Bicentennial Keepsake. Mount Union: Allen Welch, 1976.

List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.

Reflections: Mount Union Area. Mount Union: Bicentennial Committee, 1976.

Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Pennsylvania Railroad: Little Juniata River Bridges

0.4 mi. to 4 mi. W of village of Spruce Creek;
Conrail mile markers 215.06 to 218.88, Spruce Creek

Construction dates: 1886 - 1902

DESCRIPTION: This group of ten stone-arch railroad bridges, located between the villages of Spruce Creek and Birmingham, are identified in the following chart by Conrail mileage-from-Philadelphia figures. All are multiple semi-circular arch bridges of stone ashlar; the majority are skewed. All have been reinforced with concrete spandrels or by rebuilding the spandrel walls with reinforced concrete.

<u>MILE</u>	<u>DATE</u>	<u>LENGTH</u>	<u>MAINTENANCE</u>
215.06	1899	5 arch, 298'	major repair 1933
215.27	1899	3 arch, 164'	major repair 1932
215.60	1900	4 arch, 228'	major repair 1962
216.14	1902	5 arch, 287'	major repair 1960
216.49	1892	4 arch, 162'	major repair 1962
217.25	1890	5 arch, 230'	major repair 1962
217.50	1889	3 arch, 194'	major repair 1918
218.42	1886	3 arch, 164'	major repair 1962
218.71	1888	4 arch, 221'	major repair 1963
218.88	1887	3 arch, 158'	major repair 1958

HISTORY: These stone-arch bridges, built between 1886 and 1902, carry the PRR main line over the Little Juniata River ten times in 3.82 miles. Just one-and-one-half miles east of the first bridge, a 1,155'-long tunnel was also required. Eli Bowen, a traveler on the newly completed rail line in 1852, commented on the unique problems which the rugged terrain presented:

Bridges! bridges!--is there to be no stop to these bridges? This is the most rascally little river we have yet met with; having crossed during the last five miles at least a dozen of these elegant iron structures, there is yet no end to 'em, for here we are again perched seventy feet in air, over the same stream, looking down at Ironville.

The original bridges were iron; early sketches and photographs indicate there were both deck-truss and deck-girder types constructed. William H. Brown, chief engineer of the Pennsylvania Railroad, began a twenty-year program of replacing metal bridges with stone in 1886.

Reinforcement of these bridges with steel and concrete occurred as early as 1918 and as recently as 1963; the modifications appear to have been directed more toward widening the decks than toward correcting defects in the stonework. These alterations have compromised the bridges' aesthetic quality.

Sources:

- Alexander, Edwin P. On the Main Line. New York: Bramhall House, 1971.
 Bowen, Eli. The Pictorial Sketch-Book of Pennsylvania. Philadelphia: Willis P. Hazard, 1852.
 List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia.
 Plowden, David. Bridges: The Spans of North America. New York: Viking Press, 1974.

Pennsylvania Railroad: Mount Union Freight Depot

Corner of Washington Street and Pennsylvania Avenue, Mount Union

Construction date: 1914

DESCRIPTION: This 42' x 35' two-story frame building, at the corner of Pennsylvania Avenue and Washington Street, has clapboard siding, a rubble-stone foundation, metal roof, and two-over-two-light double-hung windows. A narrow loading dock, covered by a bracket-supported shed roof, abuts the tracks on the north end of the structure; the original dock and entrance doors on this end have been replaced. A number of second-story windows have been covered with clapboard siding. The office area of the interior, across the back of the first floor, retains its narrow tongue-and-groove wainscoting and its original ceiling, counter, and light fixtures.



Photo 39. Mount Union Freight Depot.

HISTORY: A new freight depot was built in Mount Union in 1914, along the old PRR right-of-way on Pennsylvania Avenue. These tracks served as a siding for the PRR and a connection between the main line and the East Broad Top Railroad. The new depot occupied part of the site

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where the old freight office had stood; in fact, Sanborn maps of Mount Union for 1919 show a portion of the old one-and-one-half-story building attached to the east side of the new structure. The line of the old roof can still be distinguished on the east side of the present building.

Although the freight depot has been unused for twenty years or more, it appears to be structurally sound. Conrail has announced plans to demolish the building, but a group of citizens is attempting to acquire it as a site for the community library or a senior citizens' center.

Sources:

Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.

Reflections: Mount Union Area. Mount Union: Bicentennial Committee, 1976.

Sanborn Map Company. Mount Union, Pennsylvania. New York: Sanborn Map Company, 1911, 1919.

Pennsylvania Railroad: Old Bridge over Stone Creek

S of Penn Street, between First and Second streets, Huntingdon

Construction date: 1849

DESCRIPTION: This abandoned railroad bridge, one of the few original PRR main line bridges still extant, consists of four semi-circular stone arches, each approximately 25' in length. This early structure parallels a highway bridge and a railroad bridge presently used by Conrail. All three bridges span Stone Creek. The voussoirs and keystones are smooth-faced, while the remainder of



Photo 40. PRR bridge over Stone Creek.

the stone work is rock faced. The top courses of stone are gone, and the top of the bridge is planted with forsythia and small shrubs.

HISTORY: The Pennsylvania Railroad constructed this stone arch bridge over Stone Creek, at the eastern end of Huntingdon Borough, in 1848 and 1849 when its first single track was laid through the county. Contracts for the sections through Huntingdon were let in May 1848, and the first train passed through to Huntingdon on June 6, 1850. In 1892 when the main line was relocated to the former Pennsylvania Canal bed, just south of the original railroad alignment, this bridge was abandoned. A layer of soil gradually formed on top of the structure, and about ten years ago it was planted with flowering shrubs. Huntingdon borough keeps the area mowed and trimmed.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Alexander, Edwin P. On the Main Line. New York: Bramhall House, 1971.
- Photograph collection. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

Pennsylvania Railroad: Spruce Creek Tunnel

1 mi. E of Spruce Creek, 2 mi. W of Barree;
Conrail mile marker 213.73, Spruce Creek Twp.

Construction date: 1850

DESCRIPTION: This 1,151'-long brick-lined tunnel through a spur of Tussey Mountain is 32' wide. It was built for the PRR's original single-track line, but later accommodated two tracks. Its eastern rock-faced portal retains its original appearance, while the western portal was combined in 1900 with the portal of a second tunnel constructed when the main line was four-tracked. The original structure is now used for a single eastbound track.

HISTORY: This tunnel on the south side of the Little Juniata River in a rugged area between the villages of Barree and Spruce Creek was the first constructed on the PRR main line as it pushed west toward Altoona. Work began in July 1848 and was completed before September 17, 1850. The arduous tasks of hand digging and blasting to build the tunnel were carried out largely by Irish immigrants.

A second tunnel at this location, with a slightly different alignment, was constructed in 1899-1900. As work on the new tunnel was being completed in the spring of 1900, a contract was let for widening the original tunnel as soon as traffic could be diverted onto the new tracks. Following that project, the original tunnel was used for eastbound traffic only.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Alexander, Edwin P. On the Main Line. New York: Bramhall House, 1971.
- List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.
- Rung, Albert M. Rung's Chronicles of Pennsylvania History. Vol. II. Huntingdon, PA: Huntingdon County Historical Society, 1984.

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Photo 41. East portal of the PRR's Spruce Creek Tunnel.

Pennsylvania Railroad: Spruce Creek Tunnel 2

1 mi. E of Spruce Creek, 2 mi. W of Barree;
Conrail mile marker 213.72, Spruce Creek Twp.

Construction date: 1900

DESCRIPTION: This 1,075'-long brick-lined tunnel, 32' wide, was built for two tracks, but now accommodates a single westbound track. Its eastern rock-faced stone portal is separated from an earlier 1850 tunnel by a narrow strip of woods, while the western openings of the two tunnels are joined in a double portal.

HISTORY: This second PRR tunnel, boring through a spur of Tussey Mountain, was constructed in 1899-1900, north of and nearly parallel to the original tunnel. The project was part of the four-tracking of the main line which occurred at that time. More than 200 immigrant Italian and southern black laborers were employed in its construction. They were housed in a collection of shanties west of the site that was known as Tunneltown.

Sources:

- List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.
- Rung, Albert M. Rung's Chronicles of Pennsylvania History. Vol II. Huntingdon, PA: Huntingdon County Historical Society, 1984.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

The Globe (Huntingdon, Pennsylvania), 1899-1900.

U.S. Census. Spruce Creek Township, Huntingdon County, Population Schedule, 1900.

Pennsylvania Railroad: Spruce Creek Underpass

SR 45, 0.3 mi. W of village of Spruce Creek;

Construction date: 1901

Conrail mile marker 214.85, Spruce Creek Twp.

DESCRIPTION: This 30'-wide stone-arch underpass, beneath the PRR main line just west of the village of Spruce Creek, allows motor traffic on Route 45 to pass under the tracks. The 8'-2" clearance posted for the arch, combined with its right-angle approach from the south, restricts the size of vehicles able to use the underpass.

HISTORY: The Spruce Creek underpass was constructed beneath the PRR main line in 1901. An 1873 map of the village appears to show a grade crossing--one of three in this little village--rather than an underpass, at this location.

Traffic descending the steep grade that Route 45 negotiates at this point, must make a sharp right angle to proceed through the underpass, making this a particularly hazardous section of highway. Low clearances at this underpass and through one of the spans of the PRR Spruce Creek Bridge have caused all large-truck traffic to be routed around this section of Route 45.

Sources:

Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.

List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.

Pennsylvania Railroad: Standing Stone Creek Bridge

S of Penn Street between First and Second streets at mouth of Stone Creek;

Construction date: 1891

Conrail mile marker 201.88, Huntingdon

DESCRIPTION: With a total length of 132', this stone arch bridge has three spans of rough-faced stone. A 12' extension of reinforced concrete covers the stone work on the north side. A builder's plaque on the south face of the bridge is no longer legible.

HISTORY: This PRR bridge over Stone Creek, at the eastern end of Huntingdon borough, was constructed in 1891 and 1892 when the tracks through Huntingdon were moved from Allegheny Street to the bed of the defunct Pennsylvania Canal. It replaced a stone-arch bridge constructed in 1849 (see PRR: Old Bridge over Stone Creek), just slightly upstream from the present bridge. The contract for building this bridge was awarded in March 1891 to Brown Bros. and Sims, who used a large force of Hungarian laborers to complete the work. The first trains ran over the new track in February 1892.

Railroad records show that the width of the bridge was expanded in 1948 by the addition of a concrete section to the north side.

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Photo 42. View of south side of Standing Stone Creek Bridge. Photo by Jet Lowe.

Sources:

List of Undergrade and Overhead Structures. Office of the Chief Engineer-Maintenance of Way, Conrail, Philadelphia, Pennsylvania.

Photograph Collection. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1891.

The Semi-Weekly News (Huntingdon, PA), 19 March 1891; 25 January 1892.

Pennsylvania Railroad, Petersburg Branch Line: Alexandria Station

Shelton Avenue between Hartslog and Church streets, Alexandria

Construction date: ca. 1900

DESCRIPTION: This small one-story frame station is 14' square, with board-and-batten siding and a pyramidal slate roof, supported by brackets under the eaves. The west side of the station has a window for the sale of railroad tickets. The building was moved to its present location about 1903 when a larger Alexandria station was built. Garage doors were installed on the south side at that time. It is currently unused, except for storage, and is unmaintained and deteriorating.

HISTORY: This small frame building was presumably built when the Petersburg-Williamsburg Branch line of the Pennsylvania Railroad was constructed through Alexandria in 1900. Its size suggests it was adequate only for the sale of passenger tickets and as an office for paper-work. It originally stood on the south side of the tracks, across Hartslog Street. The Alexandria Memorial



Photo 43. Alexandria Station of the PRR.

Library was also constructed in 1900 across the street from the railroad station. According to local tradition, the two library contributors, William Woolverton and William Thompson, felt the town needed a more prepossessing station, and they donated heavily to replacing this modest wood building with a larger, brick structure whose architecture was more in keeping with the imposing library building. William Baker, then owner of the old "Shelter Inn," across the tracks from the station, is credited with salvaging the frame station and, eventually, converting it into a garage. Ironically, it survives, while the station that replaced it was demolished before 1964 to make way for the Alexandria Fire Hall.

Source:

Harshbarger, Jean P., et al. Hartslog Heritage. State College: Alexandria Bicentennial Association, 1975.

South Penn Railroad: Tuscarora Tunnel

Current name: Pennsylvania Turnpike Commission: Tuscarora Tunnel Construction date: 1884 and 1968
Huntingdon-Franklin county line; extreme southern tip of Huntingdon County, Dublin Twp.

DESCRIPTION: Located just west of Exit 14 on the Pennsylvania Turnpike, the Tuscarora Tunnel is a 5,326'-long, reinforced concrete-lined double tunnel that passes through Tuscarora Mountain in the southern tip of Huntingdon County. The tunnels are 30' wide at road level and measure about 33' high up to the top of each arch. Cast-concrete ceiling slabs, in 50' sections, allow a 16'-

Transportation

6" clearance; the tunnels' ventilation systems are contained within these ceilings. The tunnels are lit with fluorescent lights, and the walls are lined with 4-1/4" ceramic tile from the ground to the ceiling cove. The southern, eastbound, tunnel dates to the 1880s, while the northern tunnel was constructed in the late 1960s.

HISTORY: The South Pennsylvania Railroad Company, an outgrowth of several paper railroads chartered in the 1850s and 1860s, came to the attention of Reading Railroad President Franklin B. Gowen in the 1870s. Gowen was seeking a possible extension of the Reading west of Harrisburg. He enlisted support from William H. Vanderbilt and a group of Pittsburgh steel magnates dissatisfied with PRR rates. By 1882, rumors of South Penn connections with the New Jersey Central and New York Central, through PRR territory, had thoroughly alarmed PRR President George Roberts, who vowed to "smash the South Penn like a bubble."

In this competitive atmosphere, Vanderbilt ordered a topographic survey of the proposed road, following the southern route laid out by Charles L. Schlatter in 1840 for the PRR, which had been rejected in favor of the middle, or Juniata Valley, route. By September 1883, South Penn contracted for the construction of the new railway. The route included nine tunnels, on which work began immediately. Two years later, the road was 60 percent complete, at a cost of almost \$10 million.

J. P. Morgan brought the work to a halt, however, believing that building parallel, competitive lines would destroy American railroading. Morgan persuaded the New York Central and PRR heads to respect each others' "spheres of influence." Despite angry reaction and lawsuits in response to the deal, the South Penn was abandoned.

Fifty years later, the South Penn right-of-way was selected as the route for the country's first "all-weather, high-speed super-highway." Surveys conducted in 1936 by the Pennsylvania State Highway Department and the Works Progress Administration confirmed the feasibility of the route, using seven of the South Penn tunnels. The tunnels allowed the Allegheny Mountains to be negotiated with an aggregate vertical climb of 3,900' on 3 percent grades, compared with the roughly parallel Lincoln Highway's 13,880' on 9 percent grades. Three-quarters of the road was free of curves, a remarkable engineering feat considering the difficult terrain. The twenty-three-month construction schedule demanded by the federal financing arrangements, which required substantial completion by June 29, 1940, was a remarkable accomplishment as well. The deadline was met and the road opened on October 1, 1940.

Slightly more than two miles of turnpike crossed the extreme southern tip of Huntingdon County, including half of the mile-long tunnel through Tuscarora Mountain. The Shade Gap Branch of the East Broad Top Railroad offered the nearest rail connection to this section of the turnpike. An estimated 20,000 tons of concrete and bridge steel were delivered to Shade Gap and Neelyton by this route in 1938, and lesser amounts followed until completion in 1940.

The turnpike tunnels were critical to the super-highway's course through the mountains, but their two-lane width eventually caused serious delays, as the road served more than 31 million vehicles per year by 1960. Tuscarora, Kittatiny, and Blue Mountain were the last turnpike tunnels upgraded

by double-tunneling, between 1966 and 1968. Renovation of the 1940 eastbound Tuscarora followed, allowing two-lane, single-direction traffic through each tunnel.

Sources:

- Adams, John R. Senior Electrical Engineer, Pennsylvania Turnpike Commission. Interview, 18 January 1991.
- Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.
- Rung, Albert M. Rung's Chronicles of Pennsylvania History. Vol II. Huntingdon: Huntingdon County Historical Society, 1984.
- Shank, William H. Vanderbilt's Folly: A History of the Pennsylvania Turnpike. York, PA: American Canal and Transportation Center, 1973.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Spruce Creek and Water Street Turnpike Company: Toll House

1 mi. N of Spruce Creek village on W side of Rte. 45, Spruce Creek Twp.

Construction date: ca. 1849

DESCRIPTION: This building along Route 45 in Spruce Creek Valley is in disrepair. It is made of native limestone, with corners of fair-sized regular blocks and walls of small roughly coursed stones. Two stories high, the building is 15' in width on the front-facing gable and 20' in depth. The front has a door and window opening on the first floor, two window openings on the second floor, and two small window openings in the gable. The interior of the front wall is plastered. There is a small brick chimney at the top of the front gable, a stove-pipe hole at the first floor ceiling level on the interior wall, and a small flue incorporated into the stonework of the front wall. The roof is completely gone, most of the side and rear walls are in ruins, and the floors have collapsed into the foundation.

HISTORY: Chartered in 1846, the Spruce Creek and Water Street Turnpike Company erected this small stone building as a toll house. This building and a lot at "The Hook," so called for the bend in Spruce Creek at this point, appear in 1857 tax assessments; a second toll house in Graysville was assessed in 1861.

The area surrounding "The Hook" was a busy crossroads when the toll house was built. A ford across Spruce Creek marked the beginning of an early road to Barree Forge, over which some of the iron produced at Huntingdon and Centre furnaces was transported. Across the creek from the toll house stood the Hook Tavern, a double log building demolished about ten years ago. The side road branching off Route 45 between the toll house and the Hook School (now converted to a residence) was part of the Spruce Creek and Philipsburg Turnpike, and was once a through road to Huntingdon Furnace and Warriors Mark, where another toll house was located. The operators of Huntingdon Furnace were substantial investors in the Philipsburg road, while the owners of Colerain Forge were the majority stockholders in the Spruce Creek and Water Street Turnpike, indicating the importance of these improved transportation routes to the iron industries. Tolls for both roads were probably collected at this point. No trace remains of toll houses once located at Graysville and Warriors Mark.

Transportation

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.
Huntingdon County Sites Survey, 1977-1980. Spruce Creek Township. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
Huntingdon County Tax Assessments for Franklin Township, 1845-1876. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
Nearhoof, Elizabeth. Echoes from Warriors Mark, Pennsylvania, and Surrounding Areas. Boalsburg, PA: Privately printed, 1968.

State Reformatory: Bridge to Cypress Island

Current name: State Correctional Institution: Bridge to Cypress Island
E side of Pike Street, Smithfield section of Huntingdon, Smithfield Twp.

Construction date: 1905

DESCRIPTION: This two-span, steel Pratt pony truss bridge measures 192' in length and has a 16'-wide plank deck and cut stone pier and abutments. Its main span is 92' long. It crosses part of the Juniata River, joining the main property of the State Correctional Institution at Huntingdon with a large island in the river.



Photo 44. State Reformatory bridge to Cypress Island.

HISTORY: This bridge was built about 1905 for the State Industrial Reformatory to provide pedestrian and vehicular access to the prison's truck garden on Cypress Island. Prior to

construction of this bridge, it was probably necessary to ford the river to gain access to the island. The most recent major rehabilitation of the bridge occurred in 1972.

Sources:

Beaver, Allen. Maintenance Supervisor, State Correctional Institution-Huntingdon. Interview by author, 26 July 1988. Prison file. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1901, 1906.

Swinging Bridge

E of Rte. 26, 1/4 mi. S of junction of Rtes. 26 and 305 at Ennisville, Jackson Twp. Construction date: ca. 1910

DESCRIPTION: Located one-half mile south of Ennisville, spanning Stone Creek, this small suspension footbridge is approximately 50' long and 3' wide. The main cables are wire rope, supporting a wooden deck that measures 50' between the steel-frame towers. The main cables are anchored in concrete deadmen. Wooden steps rise from ground level to the height of the deck.

HISTORY: This suspension footbridge provides access to a farm across Stone Creek, and a vehicle ford is located a few yards below the bridge. Known locally as swinging bridges, pedestrian crossings of this sort were once common in the region. Thirty years ago two similar bridges existed a few miles away.



Photo 45. Swinging bridge over Stone Creek.

Transportation

Sources:

DeArmitt, Mrs. Harry, Jackson Township. Interview by author, 5 July 1988.

DeArmitt, Harry W., son of Mrs. Harry DeArmitt. Interview by author, 5 July 1988.

Harshbarger, Jean P., et al. Hartslog Heritage. State College: Alexandria Bicentennial Association, 1975.

EAST BROAD TOP RAILROAD HUNTINGDON COUNTY PENNSYLVANIA

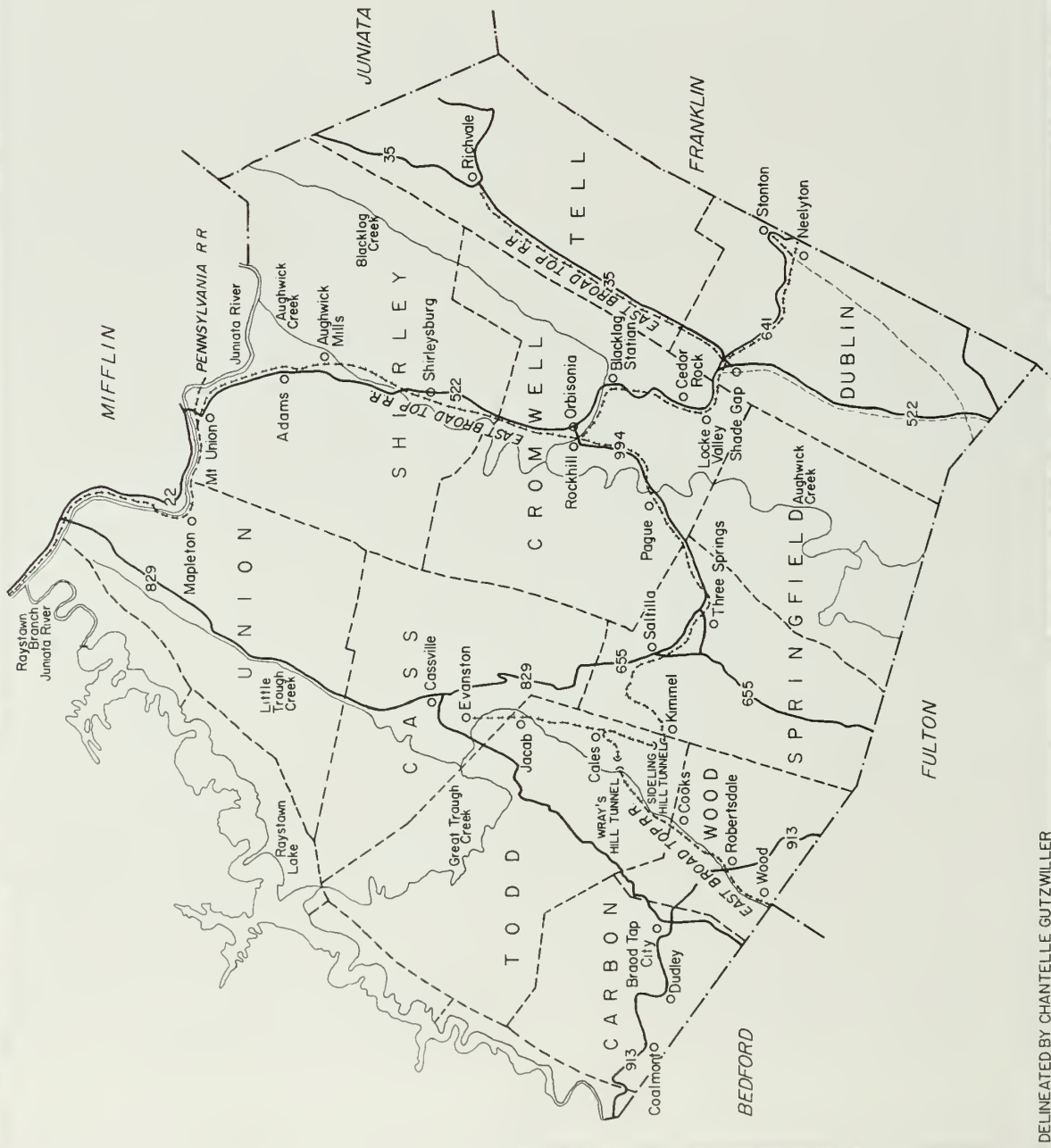


Legend:

- County Boundary
- Twp. Boundary
- Railroad - Proposed, never built
- Railroad - Operated
- Roadway



HUNTINGDON COUNTY



East Broad Top Railroad

Designated a National Historic Landmark in 1964, the East Broad Top Railroad (EBT) is a remarkably intact example of an Appalachian narrow-gauge steam railroad. It dates to 1872, when the owners of Rockhill Furnace sought to secure their future by developing a cheaper means of transportation to reach iron ore and coal in the region. While iron manufacture did not prove an enduring industry, the EBT continued to prosper well into the twentieth century, bolstered by the bituminous-coal trade and the refractory brick industry.

Prior to building the EBT, the Rockhill Iron and Coal Company had established a blast-furnace complex across Blacklog Creek from the town of Orbisonia and named the new community Rockhill Furnace. To service the furnace, the company installed a battery of coke ovens nearby, which burned coal from the mines around the new company town of Robertsdale, located nineteen miles to the southwest. Rockhill Furnace became the headquarters of the Rockhill Iron and Coal Company, and since it was about midpoint on the railroad, its office and shop complex were also established there on what had previously been farm land. Over the years, the shops were improved and expanded, and eventually were used to construct all of the freight cars as well as perform major locomotive repairs for the EBT.

Built to the most common gauge of American narrow-gauge rail lines, three feet, the EBT had the advantage of smaller rolling stock, and hence smaller loads; this accommodated tighter curves, and lighter bridge work and track structure. In addition, less grading and road construction were required. In the last quarter of the nineteenth century the EBT was one of a number of narrow-gauge railroads built in Pennsylvania.

Construction of the EBT began in 1872 and continued for more than four decades. The line was intended to serve the mineral deposits and coal fields on the eastern edge of the Broad Top Mountain plateau. Although an initial survey projected the EBT to connect with the Pennsylvania Railroad in the vicinity of Mapleton, the route was changed to tap iron ore and limestone banks in the Aughwick and Black Log valleys. A branch of the EBT, which stretched east and south along Blacklog Creek to Shade Gap, was built under separate charter in 1884. The Shade Gap Branch had several spurs built to serve ore banks and limestone quarries in the area. These included the lines to Goshen, Nancy, and Stanton. In 1891 the EBT was extended south from Robertsdale and in 1916 reached its greatest length, nearly thirty-three miles from Mount Union, with an extension to Alvan.

While built to haul coal and ore, the EBT gained business with the rise of new industry in its region, as seen in particular with the emergence of the refractory brick industry in Mount Union. Refractories manufacturers not only consumed vast quantities of coal transported by the railroad, but they used the EBT to carry raw materials to the brick plants. Occasionally track had to be added to carry the new loads. In 1911, for example, the Mount Union Refractories opened a ganister quarry above Three Springs, and new track was added to reach it. Likewise, when a deposit of fireclay was discovered at the top of the ridge just east of Shirleysburg, a spur off the main line was constructed.

By the turn of the century the region's iron industry was well into decline. Rockhill Furnace was blown out in 1908 and eventually scrapped in 1915. World War I stimulated tremendous demand

East Broad Top Railroad

for fuel, however, and coal continued as the primary source of profit for the EBT. The Robertsdale mines were expanded in the early twentieth century, and the railroad began upgrading its locomotives, rolling stock, and line to increase its coal carrying capacity. The EBT acquired new steel hopper cars for the coal traffic and bigger locomotives to increase efficiency. Heavy steel girder bridges were installed in many locations, and a four-span reinforced-concrete arch bridge was built across Aughwick Creek at Aughwick Mills. An enlarged coal-cleaning plant was built at Mount Union in 1915. By the 1920s the East Broad Top averaged four round-trip coal trains per day. Passenger service slowly declined as roads improved.

The longevity of the EBT can be directly traced to the construction in 1925 of an automated coal-cleaning plant at Mount Union. Previously, coal had been hand picked, but manual processing could not keep up with the increased volume of business. The new facility used the Chance sand flotation process, a method adapted from the anthracite industry, and it was the first major Chance system employed to clean bituminous coal. The new plant also allowed Rockhill Iron and Coal to more efficiently handle its transfer of freight from narrow-gauge to standard-gauge cars. Because freight transfer was time consuming and labor intensive, most narrow-gauge railroads succumbed quickly to truck competition. Coal was not so susceptible since it had to be cleaned and graded, thus allowing the transfer to standard gauge to be a part of the processing. The narrow-gauge line brought the coal into the plant where it was processed, and it was then reloaded into standard-gauge cars for further shipment.

The EBT halted its common-carrier service in the mid-1950s. Coal was rapidly being phased out as a home heating fuel and replaced by fuel oil, natural gas, and electricity. Diesel railroads came in and new coal fields were opened that were worked by cheaper surface-mining methods. The thin Broad Top coal seams had always been difficult to work, and underground mining in general was becoming unprofitable. Finally, in April of 1956, the EBT shut down. The Kovalchick Salvage Company of Indiana, Pennsylvania, bought the entire railroad. Some rolling stock was sold, but most remained stored in the yards at Mount Union and Rockhill Furnace.

In 1960 the town of Orbisonia approached the Kovalchick Company about reopening some portion of the railroad to help commemorate the town's bicentennial. The company agreed, and locomotives Nos. 12 and 15 were readied for service. The operation's success motivated the company to continue the tourist service, which has remained virtually unchanged since 1961. Four of the six remaining locomotives are serviceable along with a gas-electric car. Most of the shop complex is still intact, although little maintenance has taken place. The unoperated right-of-way has not been maintained and is heavily overgrown in places. Many of the trackside structures have succumbed to demolition or vandalism.

Despite the depredations of time and the elements, the EBT still presents a nearly complete example of a turn-of-the-century steam railroad. At the shops in Rockhill Furnace much of the equipment and machinery, including the overhead belt drive, steam engine and boilers, and machine tools are still in place, and a good portion of the original rolling stock remains. In addition to the locomotives, several passenger cars and two cabooses are part of the tourist service. A boxcar and several hopper cars have been restored and are used on special occasions to present an authentic period freight train.

Sources:

- Fleming, Howard. Narrow Gauge Railways in America. Daring Press, 1981.
Grenard, Ross, and Kramer, Frederick A. East Broad Top: To the Mines and Back. Carstens Publications, Inc., 1980.
Heimbürger, Donald J. Along the East Broad Top. River Forest, IL: Heimbürger House Publishing Company, 1987.
Moedinger, William, Jr. "East Broad Top," Trains. Vol. 20, No. 10 (8/41) 4-16.
Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.
Timber Transfer. Friends of East Broad Top. Vols. 1-7, 1983-1990.



Photo 46. Photo by Jack E. Boucher.

Aughwick Creek Bridge

Aughwick Mill Construction date: 1917

This four-span concrete bridge is 203' long and is reinforced with 40-pound railroad rail. Each span measures approximately 50' in length. Completed in 1917, the Aughwick Creek Bridge replaced an earlier iron truss bridge built in 1914.



Photo 47. Photo by FEBT for HAER.

Coles Tank House

Coles Summit Construction date: ca. 1900

The Coles Tank House supplied water to locomotives on the EBT. Located between the two railroad tunnels near the former junction of the EBT main line and the Coles Valley (Joller) Branch, the water originated at a spring on the side of the mountain behind the tank.

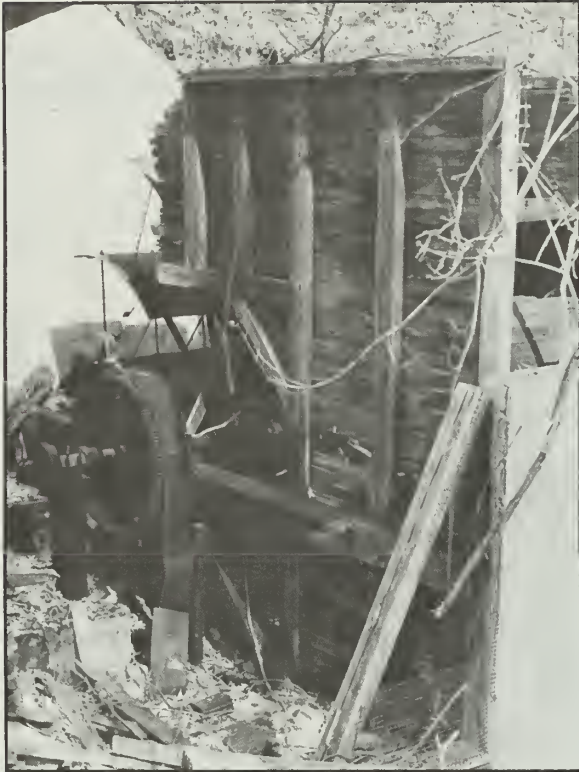


Photo 48. Photo by FEBT for HAER.

Fan House

Robertsdale

Construction date: ca. 1930

Of concrete block construction, the Fan House supplied fresh air to the Rockhill Coal Company's mine shafts in the Robertsdale area. It was abandoned in 1956. The fan and drive assembly are intact.

Orbisonia Freight House

Rockhill Furnace

Construction date: 1884

This freight house, constructed of wood with board-and-batten walls, served local freight customers in the Rockhill-Orbisonia area. During the 1930s and 1940s the building housed a local coal and lumber dealer.



Photo 49. Photo by FEBT for HAER.



Photo 50. Photo by FEBT for HAER.

Lamp House

Robertsdale Construction date: ca. 1930

This concrete-block building was used by miners to store their lamps. Batteries that powered the lamps were recharged here.



Photo 51. Photo by FEBT for HAER.

La Palace Hotel

Saltillo Construction date: ca. 1880

Located across the road from the Saltillo Station, the La Palace Hotel, a two-and-one-half story red brick building, went into operation once the EBT reached Saltillo.

Little Trough Creek Bridge

Robertsdale

Construction date: 1906

This single-span half-through girder bridge was constructed during a general upgrading of the EBT, probably replacing a wooden span. It is about 64' long and was built to accommodate a standard-gauge line. The stone abutments date to 1873.

East Broad Top Railroad

Little Trough Creek Bridge, 2

2 mi. N of Robertsdale

Construction date: 1909

This single-span half-through plate girder bridge was built during the general upgrading of the EBT. It is 77' long and wide enough to accommodate standard-gauge track. The bridge is on a skewed alignment crossing Trough Creek.

Orbisonia Depot

Rockhill Furnace

Construction date: 1907

Constructed in 1907 to replace an earlier depot, this two-story wood-frame building housed the EBT general offices. The platform eaves were added around 1910. The building still serves as a depot for tourist train service. Although located in Rockhill borough, it has always carried the name Orbisonia for the adjacent town. The Rockhill Post Office once occupied space in the south end of the depot.



Photo 52. Photo by Jack E. Boucher.



Photo 53. Photo by FEBT for HAER.

Paint Shop

Rockhill Furnace Construction date: 1905

The Paint Shop may once have been used as an engine shed. Marks on the floor of the building indicate that an earlier track was offset from the center. The one-story brick building has been used as a paint shop since 1917.



Photo 54. Photo by FEBT for HAER.

Pogue Bridge

Pogue, just W of Rte. 994

Construction date: 1910

This three-span deck truss and plate girder bridge is the largest on the EBT. The two Warren truss spans measure 104' each and the total length of the bridge is 268'. Crossing Aughwick Creek at its junction with Three Springs Creek, the Pogue Bridge rests on two stone piers and stone and concrete abutments.

East Broad Top Railroad

Robertsdale Depot

Robertsdale

Construction date: 1914

Of cast-stone construction, the Robertsdale Depot replaced an earlier depot that had been located across the road. The newer building functioned as the EBT depot until the railroad was abandoned in 1956. Since the mid-1950s it has been used as a television-repair shop and a gas station. The structure has been vacant since the mid-1980s.



Photo 55. Robertsdale Depot. Photo by Jet Lowe.

Robertsdale Post Office

Robertsdale

Construction date: ca. 1914

Constructed about the same time as the Robertsdale Depot and company offices, the two-story cast-stone Robertsdale Post Office operated until the 1960s. The second-floor apartment housed the postmaster and his family. After the post office moved to the building across the street, the original post office building was leased to commercial tenants. It has been vacant for almost ten years, and the interior is gutted and the roof leaks.

Robertsdale Wye Bridge

Robertsdale

Construction date: 1907

This deck plate steel girder bridge is 23'-2" long and its girders form a vee at its north pier, accommodating two tracks to form the two branches of the turning wye. The frog for the wye switch terminates at the south pier of the bridge. This unusual arrangement permitted a locomotive and passenger car in the short length of track south of the bridge.

Rockhill Furnace: Roundhouse and Shops

Rockhill Furnace

Construction dates: 1882, 1889 - 1904

Built in 1882, the Roundhouse consists of eight stalls that have been extended to accommodate larger locomotives. The building contains brick walls and an interior wood frame. Six original EBT 2-8-2 steam locomotives -- four of which are operable -- and a gas-electric passenger car are housed in the Roundhouse. The turntable is hand-operated.



Photo 56. Roundhouse with engine No. 14. Photo by Jack E. Boucher.

The EBT Shops have been located at this site since the 1870s with ongoing rebuilding and upgrading through the early 1900s. The shops include a Foundry, Blacksmith Shop, Machine Shop, Boiler Shop, Car Shop, Electrician's Shop, and Supply Shed. The entire complex is still

EAST BROAD TOP RAILROAD & COAL CO. NATIONAL HISTORIC LANDMARK

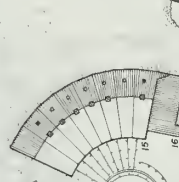
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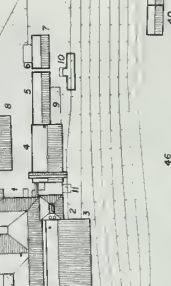
USGS ORBISONIA 5' QUAD
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ROUTE MAP
MILEAGE CALCULATED FROM MOUNT UNION



SITE PLAN
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23 Store House Addition
24 Store House Addition
25 Shed
26 Shed
27 Shed
28 Column
29 Maintenance Pit
30 Sand House
31 Ice House
32 Tailer
33 Stack Shed
34 Lumber Shed
35 Shed
36 Shed
37 Tiple
38 Executive Coach House (Not Erect)
39 Tard Shed (?)
40 Tard Shed (?)
41 Tard Shed (?)
42 Freight Station
43 Unknow
44 Unknow
45 Unknow
46 Unknow
47 Modern Trolley Barn
48 Tool Shed
49 Tool Shed

1 Machine Shop
2 Bailers/Stationary Steam Engine
3 Car Barn/Carpentry Shop
4 Foundry Storage Room
5 Paints Testing Shop
6 Electrical Shop
7 Blacksmith Shop
8 Fence Yard
9 Stacks
10 Coal Pit
11 National Historic Landmark Marker
12 Station (Erected)
13 Engine House (Marked)
14 Engine House (household)
15 Bus Garage
16 Turntable
17 Ash Pit
18 Point Shop
19 Morlie House (Farmer)
20 ERT Offices (Original)
21 Car House (Original)
22 Store House Addition

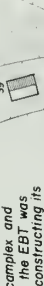
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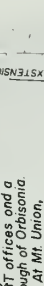
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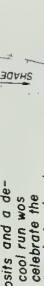
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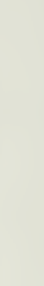
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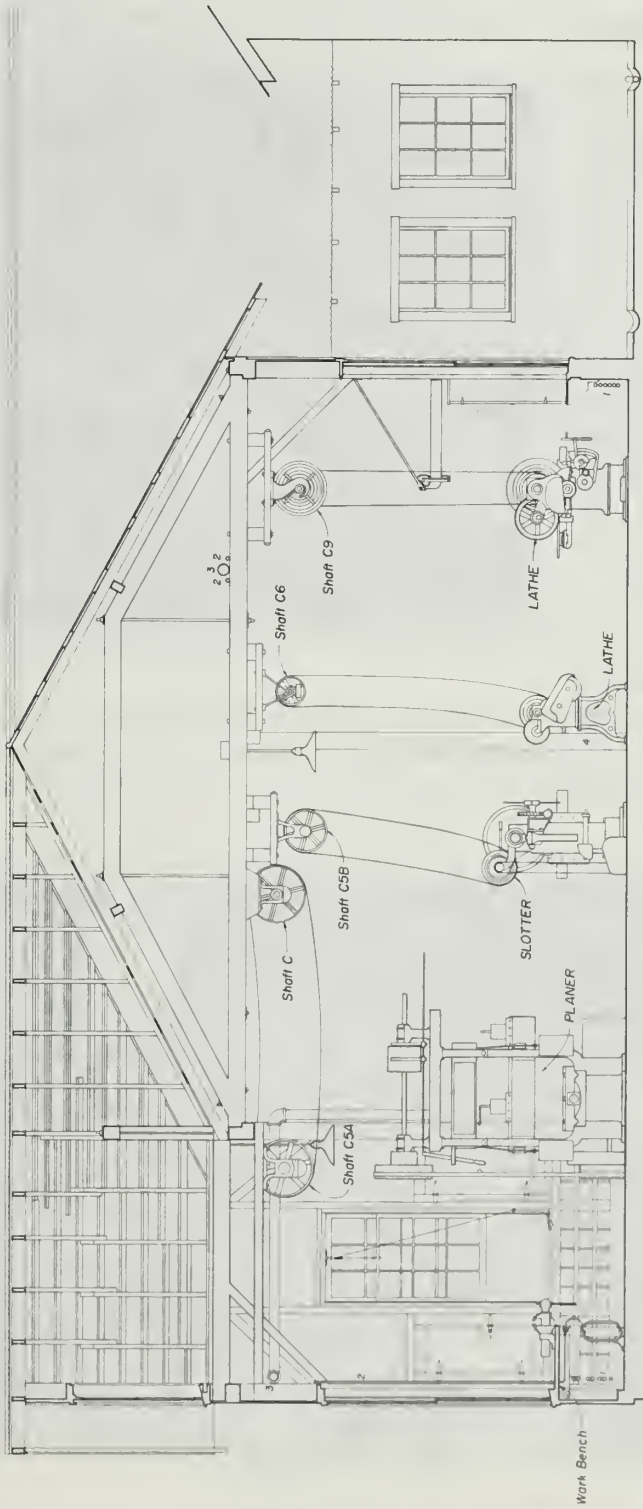


ROUTE MAP
MILEAGE CALCULATED FROM MOUNT UNION



The East Broad Top Railroad & Coal Co. (EBT) was originally chartered on April 1855 to mine and transport coal from the rich Broad Top field. Due to lack of financing, however, the railroad did not become a reality until fifteen years later when the Rockhill Iron & Coal Co. (RIC) was incorporated. The founders, a group of Philadelphia businessmen, bought a controlling interest in EBT stock, and made plans to construct a narrow-gauge line. The line was opened from Mt. Union to Rockhill Furnace, Robertsdale which was developed around Rockhill No. 1 Mine in 1870. The tracks were extended to a new mine of Woodville. Trains in-gauge cars of the Pennsylvania Railroad transferred to Rockhill Furnace, the company built an extensive shops complex and engine house. With its steam-generated/belt-driven machinery, the EBT was almost totally self-sufficient, maintaining its rolling stock and constructing its own freight cars. As the railroad prospered, passenger service was added to include public excursions as well as transport of miners in the morning. The tracks and bridges were substantially rebuilt, including the EBT offices and a passenger station, which replaced by Madeira, Hill & Co. (MHC) at Mt. Union. In 1934, the EBT was purchased by Madeira, Hill & Co. (MHC). At Mt. Union, 50-gauge coals to move on EBT rolls in 1935, after MHC's bankruptcy, bandholders reorganized the company as the Rockhill Coal Co. After World War I, rising labor costs, crippling strikes, diminishing coal deposits and a decreasing market took their toll. Finally, in April, 1956, the 31st anniversary of the EBT's opening, passenger service was discontinued. The EBT was designated a National Historic Landmark in 1964, and is the only narrow-gauge railroad still operating in the East

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. Pennsylvania Recording Project was started in 1989 by the Historic American Engineering Record, and the American Industrial Heritage Project, Ronald O. Cooley, Project Director. The fieldwork, measured drawings, historical reports and photographs were prepared under the general direction of Dr. Robert Kopsch, Chief, John A. Burns AIA, Principal Historian, and Alison K. Hodgdon, Senior Historian of the HAER Division of the National Park Service. The recording team consisted of George W. Stierack Jr. AIA (University of Detroit), Supervisory Architect, Richard L. Kochochogon (University of Tennessee), Christine R. Moon (University of Virginia), Elaine S. Berman (Auburn University), Patricia J. Sheet (UMD/US), Architectural Engineer, and Robert J. Bostrom (University of Detroit), Architectural Technicians, Lolo M. Bennett (University of Vermont), Historian and Jack E. Boucher, Photographer



CROSS SECTION AA
 MACHINE SHOP-NORTH WING LOOKING EAST

Lathe (U)
 Manufactured by Lodge & Shipley Machine Tool Co., Cincinnati, Ohio and W.E. Shipley, Philadelphia, PA May 23, 1905.

Lathe (R)
 I.D. plate missing. Has same base as lathe manufactured by J.G. Wheeler & Co., Worcester, Massachusetts.

Slotter (D)
 Manufactured by the Binsse Machine Co., Newark, N.J. March 7, 1903. Gear guard patented March 18, 1902.

Planer (T)
 Manufactured by Cincinnati Planer Co., Cincinnati, Ohio and Shipley Metal Working Machinery, Philadelphia, Pennsylvania.

- LEGEND**
- 1 Radiation pipe
 - 2 Compressed air line
 - 3 Steam line
 - 4 Modern wood post (to shore roof truss)

- NOTES**
- 1 Alterations due to building settlement have been rectified.
 - 2 Section line denotes to reveal end elevations of machinery.

- BUILDING MATERIALS**
- Roof Wood roof trusses & corrugated metal roofing
 - Walls Timber framed. Exterior vertical board and batten. No interior finish (structure exposed)
 - Floor Plank on wood boards

East Broad Top Railroad

fundamentally intact, complete with tools and furnishings, and continues to be used for light repairs. All of the buildings are of wood-frame construction. The dates of construction, based on the 1917 Interstate Commerce Commission Valuation Docket No. 648, are as follows:

Foundry (1884): a wood-frame building containing a grinder and a pneumatic blower; Machine Shop (1902): a large wood-frame building containing a stationary steam engine (1882) with flywheel and governor, two boring mills, a wheel lathe (manufactured ca. 1900 by William Sellers, Inc., of Philadelphia, and among the most impressive machines in the shop), two lathes, a planer, shaper, and slotter, two drill presses, punch and shears, a scaler, a power roll, and grinders; Carpenter Shop and Car Barn (1889): attached to

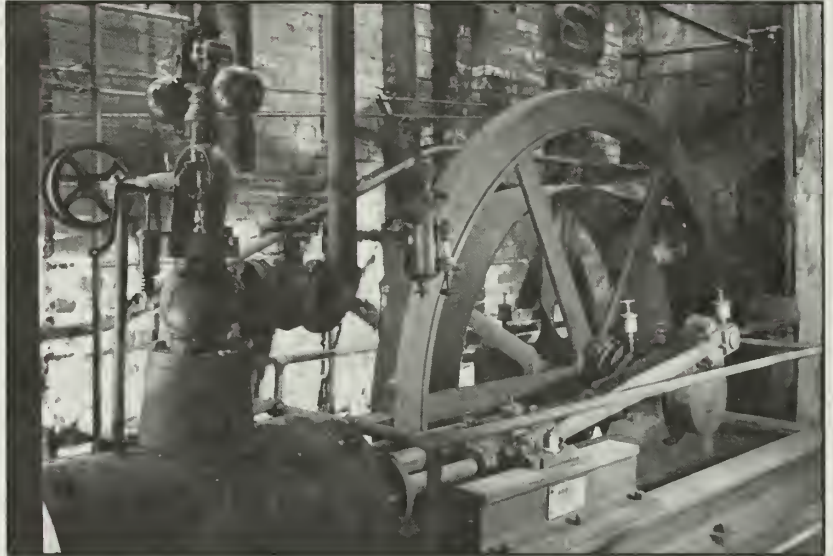


Photo 57. Machine Shop, stationary steam engine. Photo by Jack E. Boucher.

the Machine Shop, this wood-frame building contains a Westinghouse AC generator (20 hp), band saw, planer, and table saw; Boiler Shop (1902): also attached to the Machine Shop, the boiler shop is a wood-frame building; Blacksmith Shop (1904): a wood-frame building containing a coke-fired forge and a steam hammer.



Photo 58. Blacksmith Shop. Photo by Jack E. Boucher.



Photo 59. Photo by FEBT for HAER.

Rockhill Iron & Coal Company Office

Robertsdale Construction date: ca. 1916

Of cast-stone construction, this building was erected to provide office space for Rockhill Iron & Coal Company managers and clerks in the East Broad Top coal field. It is two stories tall and features red sandstone quoins. Situated at the head of the EBT's main line in the company-owned town of Robertsdale, the office was the administrative heart of the community until the mines shut down. The Kovalchick Salvage Company, which bought the coal company, maintains a

property manager in the building to oversee the company houses in which most Robertsdale residents are still tenants.

Rockhill Mine No. 5

Robertsdale

Construction date: ca. 1910

The Rockhill No. 5 drift mine opened in 1889, closed in 1952, and produced about 9 million tons of coal.



Photo 60. Photo by Jet Lowe.

Rockhill Mine No. 6: Power House

Wood Twp. Construction date: 1913

The Power House, a tall one-story steel-frame building, was operated in conjunction with Mine No. 6 and housed electric generators, hoist motors, and pumps. In addition to providing power for the mine, it supplied electricity for Robertsdale and Woodvale. Although activity at Mine No. 6 ceased in 1925, the power house continued as an air shaft and pump station for other mines in the vicinity. After the mines closed, the structures housed a footwear business and today is used as a furniture factory.

East Broad Top Railroad

Rocky Ridge Station

Todd Twp. Construction date: 1892

Of wood-frame construction with board-and-batten siding, the Rocky Ridge Station was constructed in 1892 to serve the small mining community of Rocky Ridge. The two-story building also served as a section house for this part of the EBT main line. The community of Rocky Ridge disappeared when local coal deposits were exhausted, and the station, although standing, is in poor condition with one wall collapsed.



Photo 61. Photo by FEBT for HAER.

Saltillo Station

Saltillo Construction date: 1909

The one-story Saltillo Station was built in 1909 to replace an earlier EBT station that had been constructed around 1892. Of wood-frame construction, it was modified to its present form in 1926 and was closed when the EBT suspended operation south of Orbisonia in 1956. Saltillo was the site of a tannery and the departure point for short railroad spurs to iron ore, limestone, and ganister rock deposits in the vicinity.



Photo 62. Photo by FEBT for HAER.



Sand House

Rockhill Furnace

Construction date: 1900

The Sand House supplied sand to locomotives for traction on wet or icy rails. Of wood construction with board-and-batten and asphaltic siding it is now inoperative, although there is still sand inside the tower.

Shirleysburg Bridge

Shirleysburg

Construction date: 1889

This single-span deck plate girder bridge was built to carry the EBT mainline over Fort Run near the site of Fort Shirley at the north edge of Shirleysburg borough. Measuring 33' in length, the bridge rests on stone and concrete abutments.

Photo 63. Photo by FEBT for HAER.



Photo 64. Photo by FEBT for HAER.

East Broad Top Railroad

Sideling Hill Tunnel

Near Kimmel

Construction date: 1874

Constructed by the EBT in 1874, the Sideling Hill Tunnel is 830' long and contains a solid-rock bore with timber bents partially supporting the unlined walls and ceiling. Both its portals date to the early twentieth century. After a locomotive derailment due to ice build-up in January of 1912, doors were put on the end of each portal to keep wind from blowing through.



Photo 65. Sideling Hill tunnel, west portal. Photo by FEBT for HAER.

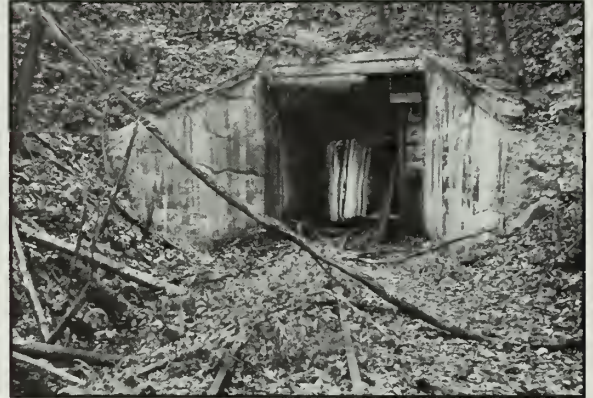


Photo 66. Sideling Hill tunnel, east portal. Photo by Jack E. Boucher.

Storehouse

Rockhill Furnace

Construction dates: possibly 1867, ca. 1900

The ICC Valuation Docket No. 648 lists the two-story storehouse of stone construction as built in 1867; its architectural style, however, seems to be from an earlier period, perhaps even the late eighteenth century. The stone building is in good condition, while the frame additions, built around 1900, are in fair condition.



Photo 67. Photo by FEBT for HAER.

Tank House Bridge

N end of Saltillo

Construction date: 1917

This single-span through plate girder bridge was built to accommodate standard gauging of the EBT main line. It measures 54' in length and rests on two stone abutments and one concrete pier.



Photo 68. Photo by FEBT for HAER.

Three Springs Bridge

Clay Twp. and Three Springs Borough

Construction date: 1873 and 1907

This single-span girder bridge carried the EBT main line over Three Springs Creek. Its width and load-bearing capacity would have accommodated standard-gauge rail.

Three Springs Bridge, No. 2

N of Three Springs

Construction date: 1906

This skewed through plate girder span is 135' long and rests on stone and concrete abutments.

Tunnel Roller Door Actuating Ring Pull

S of Rocky Ridge Station between main line and passing siding

Construction date: 1948

This pull mechanism was installed in 1948 to permit train crews to operate tunnel doors on the eastern approach to Wray's Hill Tunnel. Similar devices were installed at the west portal, Wray's Hill, and the north portal of Sideling Hill Tunnel. This system permitted the EBT to eliminate attendants who operated the doors at both tunnels.



Photo 69. Photo by FEBT for HAER.

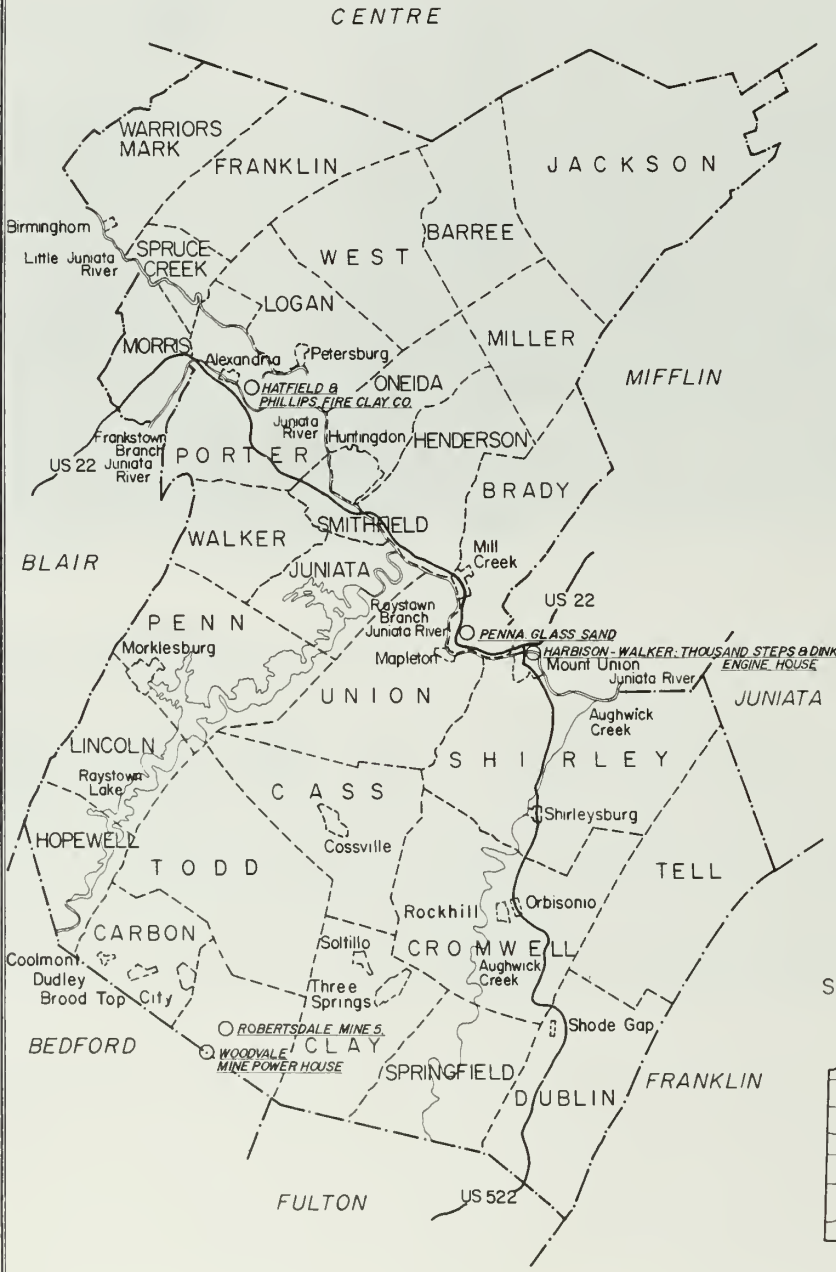
Wray's Hill Tunnel

3.5 mi. NE of Robertsdale, Todd Twp.

Construction date: 1874

This unlined single-tracked tunnel was bored through Rocky Ridge to gain access to the coal fields in the upper Trough Creek Valley. B. J. McGrann & Company of Lancaster contracted for the project. Also known as Rocky Ridge Tunnel, it measures approximately one-quarter mile in length. The original portals were dressed stone, and new ones made of concrete were applied in the early 1900s. Portal doors were installed to prevent winds from blowing through the tunnel in wintertime. Bitterly cold temperatures produced by strong winds could ice the tracks with water, which seeped from the walls and ceiling, and lead to derailment. In the late 1940s, a system of electric switches was installed to allow train crews to operate the doors when approaching and leaving the tunnel.

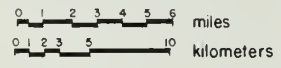
EXTRACTIVE INDUSTRIES IN HUNTINGDON COUNTY PENNSYLVANIA



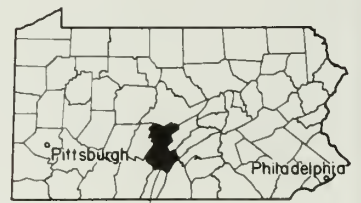
Legend:

- City or Borough: Mount Union
- Township: SHIRLEY

Scale



STATE OF PENNSYLVANIA



HUNTINGDON COUNTY

Extractive Industries

Hatfield and Phillips Fire Clay Company

3 mi. E of Alexandria on old Alexandria-Huntingdon Pike, Porter Twp.

Construction date: ca. 1900

DESCRIPTION: The Hatfield and Phillips Fire Clay Company buildings occupy two sites on the old Alexandria Pike (formerly the Huntingdon, Cambria, and Indiana Turnpike). Ridge site: this collection of adjoining frame structures on a steeply sloped site is of post-and-beam construction, with vertical wood-plank siding, concrete foundations, metal roofing, and a tall square firebrick chimney. The machinery includes: rotary dryer, ball mill (removed March 1989), stomper, conveyors, line shaft and pulleys, furnaces, dust catchers, fans. Much of the equipment was designed especially for this application by G. I. Phillips. Railroad site: the charred remains of two wooden storage silos, connected by an elevator shaft, have a small wood-frame shed at the base. An adjoining 60' x 20' building for bagging and storing clay is of balloon-frame construction with vertical wood-plank siding, metal roof, concrete foundation, and a 1970s roofed addition extended over a large concrete loading dock.



Photo 70. Hatfield and Phillips Fire Clay Company.

HISTORY: Samuel Hatfield, owner of the Juniata Iron Works, also owned land on Warrior Ridge in Porter Township where a rich deposit of fire clay was discovered in 1866. As the ironworks became less profitable in the 1870s, Hatfield began developing his fire-clay mine, employing ten men in the operation by 1883. The Second Geological Survey of Pennsylvania (1885) described Hatfield's mine and clay drying apparatus on the ridge, and his crushing and shipping operation near the Frankstown Branch of the Juniata River. Remains of the hot floors

Extractive Industries

are visible in the woods near the mine. Evidence suggests that the present structures were built about 1900, and therefore, were not part of the late nineteenth-century operations.

Jean Harshbarger, a member of the Phillips family that became associated with the Hatfields in the fire-clay business, researched the history of the operation and found that the composition and purity of the deposit made it desirable for use as refractory mortar. Her research shows that in 1885, John N. Hatfield and John Phillips purchased clay deposits in Logan Township, near Petersburg, and transferred their attention to that location when abandonment of the Pennsylvania Canal made shipping from the Porter Township site difficult. Their tipple near the Petersburg railroad station is prominent in late nineteenth- and early twentieth-century photographs of that area.

Harshbarger's research suggests the Porter Township quarry was reopened after the railroad was built to Alexandria in 1900. The proximity of the storage silos and sheds to the tracks supports that conclusion. Ted Schirm, long-time foreman at the Porter Township operation, was told that the move from Petersburg occurred when the clay there "turned yellow," indicating a change in the quality of the deposit. He reports that the company's Logan Township structures were dismantled, and the materials reused in erecting the present Porter Township works.

At the Hatfield and Philips Fire Clay Company fire clay was processed for use as refractory mortar. The clay was calcined at 2,600 degrees in a rotary dryer, and fired by a hard-coal stoker. After passing through a dust collector, it was conveyed to a hammermill--later a ball mill--for pulverizing. Fans created a vacuum that conveyed the product to a tank where it was screened, the tailings being returned to the ball mill for further processing and the finished product falling into a bin for trucking to the storage silos and bagging machine at the railroad siding. The clay was shipped in bags or in bulk to steel mills and other industrial customers. Sand, removed as overburden at the quarry, was also sold whenever possible to steel producers to use casting sand.

The operation was abandoned in 1976, and the buildings are deteriorating rapidly. Those on the railroad line were partially destroyed by arson. The buildings on the ridge are also vulnerable to vandalism, and the new owners anticipate demolition to eliminate liability.

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Pennsylvania Glass Sand Company: Keystone Works

Current name: U.S. Silica

Construction date: 1924

N of Juniata River, across from Mapleton, Brady Twp.

DESCRIPTION: The Keystone Works complex includes a primary crusher, two-story pilastered brick milling and washing building, three-story frame drying and screening building, brick pulverizing mill, tile foundry-sand processing plant, settling tank, pump house, machine shop, and concrete storage silos. West of the Keystone Works, along Route 655, is the abandoned Columbia Works--another glass sand site--containing a brick and frame storage building and a hipped-roofed stone and shingle company house. On the north side of Route 22, west of its junction with Route 655, are four frame workers' houses still owned by U.S. Silica.



Photo 71. Company houses built by the Pennsylvania Glass Sand Company at the Keystone Works.

HISTORY: Commercial development of glass-sand quarries in the vicinity of Mapleton began in the 1850s. Completion of the PRR stimulated the growth of this industry, as well as the development of the town of Mapleton. A number of plants were established by various owners, including the Southside Plant, Glendower Works, Phillips Sand Company, Juniata White Sand Company, Franklin Works, Columbia Works, Keystone Works, Westbrook Glass Sand Company, Pittsburgh White Sand Company, and Empire Works. In 1902, a group of Lewistown men organized the Pennsylvania Glass Sand Company, which in time combined the interests of all the Mapleton sand companies, as well as several plants in Mifflin County. The firm constructed the present Keystone Plant in 1923 and 1924.



Photo 72. Storage silo at the Keystone Works.

Huntingdon County's glass-sand industry was concentrated in the Mapleton area because of the outcroppings of Oriskany sandstone on the west side of Jack's Mountain. At higher elevations these resources yielded the ganister rock used by Mount Union's silica-brick plants. The early Mapleton plants supplied sand to the Pittsburgh-area glass industry, and now find markets nationwide. The extremely high-grade sand produced at the Keystone Plant was used in making the Mount Palomar telescope lens.

In the present operation, strict quality control is enforced in the processing of No. 1 and No. 4 sand, distinguished by the lower iron content of No. 1 sand compared with that of No. 4. Sand from different quarries is mixed to meet customer needs. Sandstone is hauled to the primary

crusher in 85-ton loads by giant Wabco trucks. After crushing in the primary and secondary crushers, the sand is conveyed to silos that feed the rod mill and washing equipment in the processing facility. Also contained in this building are the unused Chilean mills and chaser mills that the rod mill replaced in an early 1970s upgrading of equipment. Drying and screening to various degrees of fineness result in products for various applications including glass and ceramics manufacture, and components for paints and silicon products.

At a time when county industries, which once depended on rail transport, make almost no use of the railroad, the sand plant continues to ship about 40 percent of its products by rail. Trucks handle the remaining shipments. Since 1968, the Keystone Plant has been owned by a succession of large national and international corporations. In 1987, Pennsylvania Glass Sand and Ottawa Silica were merged into U.S. Silica, current owner of this operation, which operates fifteen plants and is the nation's largest producer of silica sand.

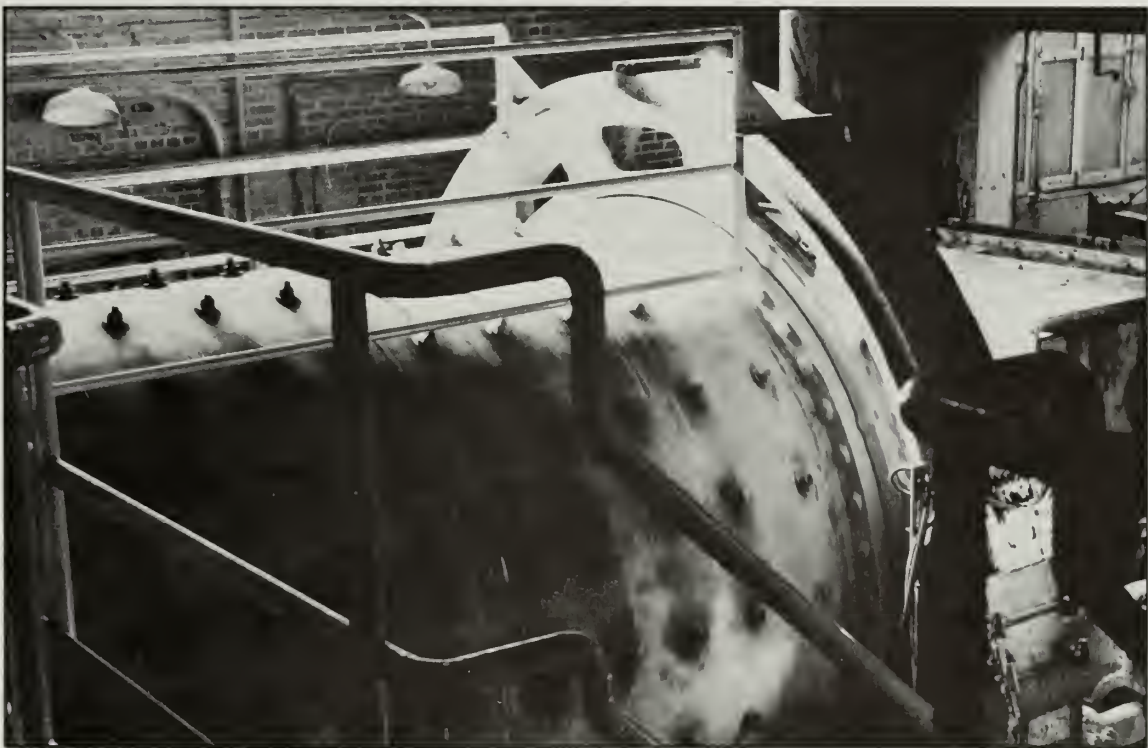


Photo 73. Pennsylvania Glass Sand: Keystone Works, rod mill.

Sources:

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Extractive Industries

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Rockhill Iron & Coal Company: Company Houses

126-136 Valley St., Rockhill Furnace

Construction date: ca. 1875

DESCRIPTION: Five gable-fronted double houses line the west side of Valley Street in Rockhill Furnace. Local residents refer to these five houses as Tarr Row. They are the only surviving company-built houses in Rockhill Furnace. Measuring approximately 35' x 30', the dwellings are of frame construction with clapboard siding, rubble-stone foundations, metal roofs, modest stick-style decoration under the eaves and in their front gables, and hipped-roofed porches across the fronts. Not all the houses retain all these original elements and some are no longer duplexes. The third house south of Meadow Street appears to remain closest to its original appearance.

HISTORY: After the East Broad Top Railroad and the new Rockhill Furnace were built in 1873, the borough of Rockhill developed across Black Log Creek from the town of Orbisonia. Streets were laid out in 1874 and houses for employees of the railroad and the furnace were constructed on land owned by the two closely related companies. Sanborn maps indicate that, in general, the arrangement of houses in Rockhill borough did not follow a standard plan, as was typical of company towns. Thus, this group of originally identical double houses represents a departure from normal practice in this company town and are recognizably different from other houses in Rockhill borough.

Deeds conveying the houses from company to private ownership in 1946 refer to the area as Tarr Row, implying that they were built during H.G.H. Tarr's brief term as general superintendent of the Rockhill Iron & Coal Company from 1875 to 1877. They line the west side of Valley Street, north of the residence associated with Tarr's successor, Alfred W. Sims. Tarr, in fact, may have lived there prior to Sims, but the house is associated with Sims because of his long period of occupancy. The Tarr Row houses face the Markle House, built early in the railroad's existence to serve as a hotel for visiting dignitaries and investors. Collectively, Tarr Row, the Sims house, and the Markle House were probably the earliest part of Rockhill borough to be developed.

Since passing out of company ownership in 1946, the houses have undergone alterations to suit the needs and taste of individual owners, but their uniform appearance from their original construction remains evident.

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Rockhill Iron & Coal Company: Company town of Robertsdale

On SR 913, Wood Twp.

Construction date: 1874

DESCRIPTION: Built to house workers at Rockhill No. 1 and No. 5 mines, Robertsdale includes approximately 100 wood dwellings, mostly duplexes; a frame church (1890); a stone store and warehouse (1874); three concrete-block structures that were the company office, railroad depot, and post office; two non-company stores; a brick and concrete-block theater (1948); and a stone or stone-veneered school (1935). The town plan consists of two grids, set at an angle to each other and connected by Route 913, which takes an S-shaped north-south course through town. Additional streets extend at angles from both grids. Great Trough Creek and the road bed of the East Broad Top Railroad bisect the town on parallel paths in an east-west direction, and Robertsdale curves around the former mine sites. The No. 5 slope-mine portal survives, along with foundations and other remnants of the tippie, engine house, lamp house, boiler house (all built in 1914), and other mining structures.



Photo 74. Rockhill Iron & Coal, duplex company housing on East Street, Robertsdale. Photo by Jet Lowe.

HISTORY: An 1873 map of the Broad Top area shows a single structure, labeled "Roberts," at the terminus of the newly built EBT. Construction began the following year on housing for 100 miners' families near the "old Houck mine," which had been acquired by the Rockhill Iron & Coal Company, developers of the EBT and the coal mines and iron furnaces it served. Named for the Roberts family, who were among the founders of Rockhill Iron & Coal, Robertsdale took shape north of the railroad, along Main, East, Cliff, and Church streets. The generous-sized lots and wide



Photo 75. Robertsdale, Company store. Photo by Jet Lowe.

streets of the town's original plan remain intact. The majority of original houses survive, though many have had later side or rear additions or exterior alterations. Many of the privies also survive, converted to wood or tool sheds.

By 1883 Robertsdale contained seventy double houses and a population of 700. Rockhill Iron & Coal operated a company store on Cliff and North Main streets, and the large, two-story stone building still stands. In 1890, the town's Methodist Episcopal congregation erected a church, apparently the first building in the community not built and owned by the company. It survives, with later additions and alterations.

Early twentieth-century expansion of the mines near Robertsdale prompted the company to construct a hotel, a new depot, company office, and post office prior to World War I, and the Liberty Theatre in 1918. Jesse McClain's independent store, where Robertsdale residents enjoyed their first alternative to dealing at the company store, was also built about this time. Another business reportedly significant in the community was the candy store. It was operated with the company's blessing, by Fannie Morgan after her husband was killed in a mine accident. The "barracks," built by the miners to shelter some twenty families evicted from their company-owned houses during the long and bitter strike of 1927-29, no longer stands.



Photo 76. Robertsdale, Reality Theatre. Photo by Jet Lowe.

Two later buildings important to the community are the Robertsdale High School, a stone building constructed with government aid in 1935 and now serving, with additions, as the Broad Top-area elementary school. The other, the Reality Theatre, is a two-story building constructed in 1948, some twelve years after a fire had destroyed the town's original theater.

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Extractive Industries

Rockhill Iron & Coal Company: Company town of Woodvale

SW boundary Huntingdon County, at Bedford and Fulton counties
(town in all three counties), Wood Twp.

Construction date: ca. 1891

DESCRIPTION: Approximately eighty frame houses, about three-quarters built for two-family occupancy, comprise this town in southern Wood Township, on the border of Bedford and Fulton counties. Public buildings include two churches, a social hall, and three former coal-company buildings: a brick machine shop/warehouse (1910s), frame mule barn (1930s), and concrete-block power house (1913).

HISTORY: The Rockhill Iron & Coal Company's 1891 opening of its Rockhill No. 6 (Woodvale) mine, two miles south of Robertsdale, gave rise to the town of Woodvale. The name honored the Wood family, original stockholders and officers of Rockhill Iron & Coal. The EBT was extended from Robertsdale to serve the Woodvale shaft. Dwellings for workers and their families were constructed west of the mine opening along the north side of the highway linking the town with Robertsdale and Broad Top City and on several streets branching off from the south side of the road and extending into Bedford County. Most of the residential buildings were frame double houses, similar to those erected by the company in Robertsdale in the 1870s and 1880s. Along the north side of the highway are a few houses unlike others in the two towns -- a row of four single dwellings, which are plastered on the outside. Woodvale's proximity to Robertsdale meant community buildings such as a store, school, and post office were not immediately built in Woodvale. However, as the town grew over the next three decades these buildings along with two churches, an athletic field, and a playground were built. Because there was already a Woodvale post office in Pennsylvania, the post office established in 1908 was officially designated "Wood," and local residents call the town by both names.

Increased demand for coal between 1915 and 1917 prompted the development of Rockhill mines No. 7, 8, and 9 in the vicinity of Woodvale. The company constructed nearly thirty houses on a new street east of the Woodvale shaft to meet the housing requirement. Extending 2,200' in length, Fulton Street has the unusual distinction of beginning in Huntingdon County, passing briefly through Fulton County, and ending in Bedford County.

During World War I, Woodvale attracted eastern European and Russian immigrants. They organized an Eastern Orthodox congregation and from 1916 to 1917 erected one of only three onion-domed churches in Huntingdon County (the others are in Mount Union and Huntingdon). St. Michael's burned in 1935, was rebuilt the following year, and remains active in Woodvale today. The Russian social hall, where dances and other community gatherings are held, is still an important part of Woodvale's social activities.

Fire has destroyed other Woodvale buildings through the years: the shaft house in 1912, the mule barn in the early 1930s, and the company store in 1937. The company replaced the shaft house and mule barn promptly, but the store was not rebuilt; residents once again depended on the Robertsdale store, which made regular deliveries in Woodvale.

The Woodvale shaft (Rockhill No. 6) closed in 1925, but other mines in the area remained more active than ever. In 1926, at Alvan, just a few miles from Woodvale, Rockhill No. 9 replaced the



Photo 77. Woodvale, Orthodox Church on left, Russian Social Hall on right.



Photo 78. Company houses in Woodvale, Broad Street. Photo by Jet Lowe.

Extractive Industries

slope mine at Robertsdale as the company's largest colliery. Mining activity began to decline in the 1930s, although there were periods of revival in the 1940s and 1950s and extensive strip mining in the 1960s. The L&B Coal Company of Waterfall and Dash Coal Company of Somerset currently strip on a small scale in the area; but few, if any, Woodvale residents are still miners.

A brick machine shop and warehouse building, erected in the late 1910s, and a 1930s mule barn, remain from Woodvale's mining era. Both buildings are vacant and decaying. Also standing is a 1913 brick and concrete-block powerhouse, which housed a steam engine and generator and furnished electricity for the local mines and the towns of Robertsdale and Woodvale. It is in better condition, although it has been modified and enlarged for industrial use in recent years. The "hot-water dam" beside it, a crumbling concrete structure on Great Trough Creek, supplied water for the steam boilers and was a popular swimming hole. Vacant after Penelec began to serve the area in the 1930s, the building attracted a shoe-company tenant in 1958 and became a furniture factory in 1978. It is Woodvale's only industry, with a part-time work force of about fifteen. The great majority of Woodvale's company-built dwellings survive and are now privately owned. Like Robertsdale, the town has no business interests, not even a grocery store or gas station.



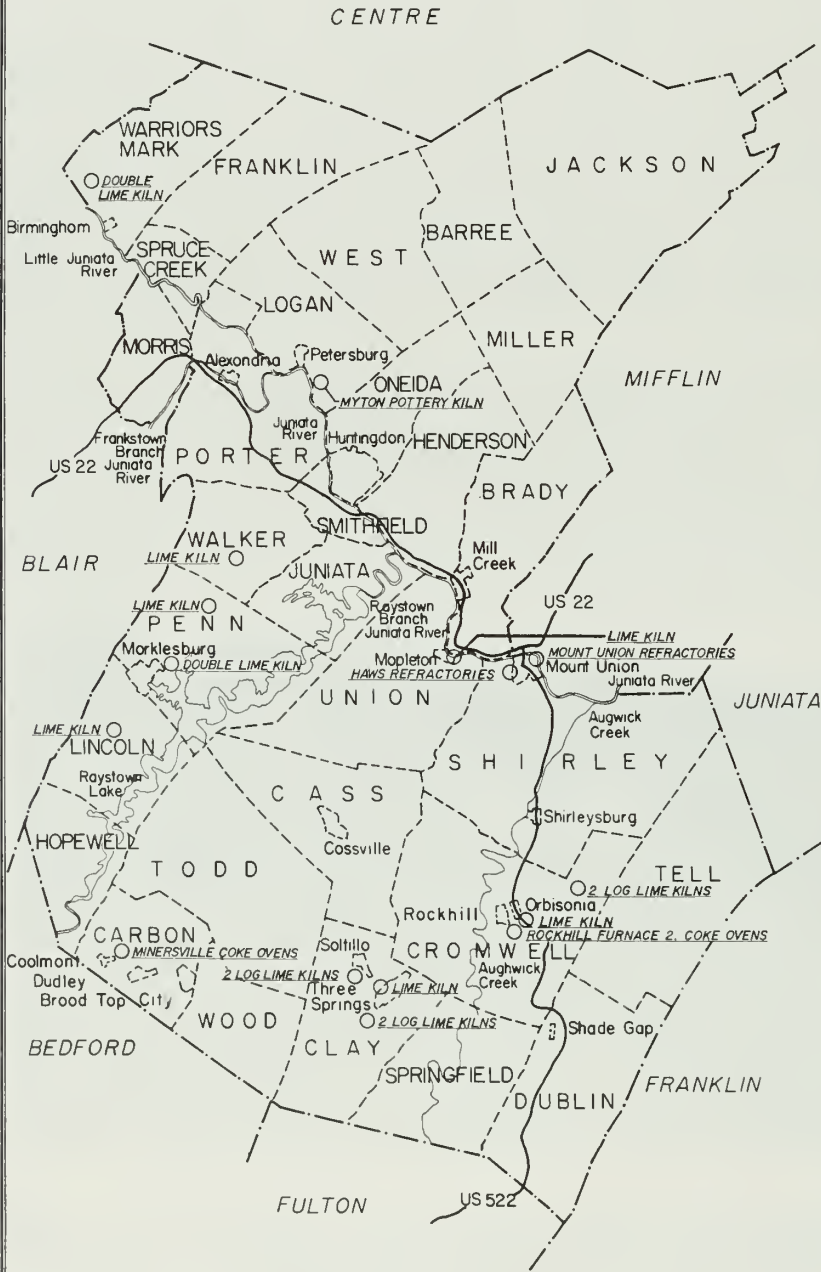
Photo 79. Woodvale, machine shop and warehouse.

Sources:

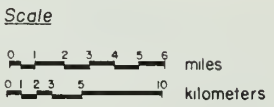
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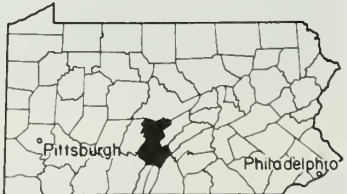
THERMAL PRODUCTS IN HUNTINGDON COUNTY PENNSYLVANIA



Legend:
 City or Borough: Mount Union
 Township: SHIRLEY



STATE OF PENNSYLVANIA



HUNTINGDON COUNTY

Thermal Products

General Refractories: Company houses

55, 57, 67, 69, 73, 75 Pennsylvania Ave.; 62, 64, 72 Water St., Mount Union

Construction date: ca. 1915

DESCRIPTION: These small one-and-one-half-story company houses in Mount Union, six on Pennsylvania Avenue and three on Water Street, are just 12' to 15' wide and 20' deep. Each house contains a gambrel roof, the gable end of which is oriented to the street; the front facades have two windows upstairs and a door and window on the first floor. Of balloon-frame wood construction, the houses now have a variety of roofing and siding materials.

HISTORY: Mount Union Silica Brick Company was the town's second oldest refractory brick company, founded in 1901. In 1915, the plant was purchased by General Refractories. Sanborn maps of Mount Union indicate that construction of these houses occurred between 1911 and 1919. They were probably built in an attempt to alleviate a critical housing shortage in Mount Union during that period, when the town's three refractories were booming and new workers were pouring into the area.

Nine houses survive from the original group of ten, and they exemplify the modest dwellings built by a company to meet its employees' need for shelter. They resemble company houses in Claysburg, Blair County, which was also a General Refractories plant site after 1922.

Sources:

A Bicentennial Keepsake. Mount Union: Allen Welch, 1976.

Tax Assessments for Mount Union First Ward, 1911-1929. Huntingdon County Commissioners Office, Huntingdon, Pennsylvania.

Deed Book L-8:434,438,444,449,451,462, Huntingdon County Recorder of Deeds, Huntingdon, Pennsylvania.

Krause, Corinne Azen. Refractories: The Hidden Industry. Columbus, Oh.: American Ceramic Society, 1987.

W. H. Haws Refractories Company

Current name: Harbison-Walker Refractories Company

Construction date: 1899

W end of West Shirley Street, Mount Union

DESCRIPTION: This large manufacturing site at the west end of Mount Union includes two complete silica-brick molding and drying works, known as the No. 1 and No. 2 works; two separate groups of thirteen and sixteen beehive kilns with tall square stacks; two small rectangular kilns for special orders; associated storage and shipping sheds arranged on the periphery of the works; one five-story pattern-making and storage building; a series of crushing and screening facilities that begin at the ganister quarry on Jack's Mountain adjacent to the plant and extend into the manufacturing site proper ending in a seven- or eight-story screening building, clad with corrugated metal, which dominates the site; the site also contains conveyors that connect the crushing and screening operations with the storage silos and the mixing and molding areas; nearby is a dust or mortar mill complex, carpenter shop, mule barn, old and new office buildings, and associated quarry sites on the north side of the Juniata River, with the remains of dinky railroad levels, a stone engine-servicing and repair shop on top of the mountain, and the "1,000 steps" of ganister rock in the



Photo 80. Harbison-Walker No. 2 kilns from the dry grind building. Photo by Jet Lowe.



Photo 81. Harbison-Walker, rotary drier and storage silos. Photo by Jet Lowe.

south face of Jack's Mountain in the Narrows near Mount Union, which workers used to reach the quarries.

HISTORY: The W.H. Haws Company, a Johnstown refractories manufacturer, began constructing a plant at Mount Union in 1899, and in 1900 sold the entire property to Harbison and Walker, of Pittsburgh, one of the largest refractory manufacturers in the world. The Mount Union plant was the first works in the United States constructed exclusively for the manufacture of silica brick. Within a few years, Harbison-Walker developed two adjacent plants on the site, known as the No. 1 and No. 2 works, which could operate independently if desired. Some modification of the No. 1 plant occurred during construction of No. 2, including the replacement of hot floors with tunnel



Photo 82. Interior of Harbison-Walker beehive kiln, looking through a series of kiln openings.

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dryers. Another subsequent modification saw the original arch-top rectangular kilns, which appear in early photographs of the No. 1 works, superseded by beehive kilns. By 1910, the entire plant employed more than 600 men and had the capacity to produce 150,000 bricks per day. In a 1917 advertisement, Harbison-Walker claimed to be the "largest manufacturer of refractory materials in the world," and called its Mount Union operation "the largest silica-brick plant in the world."

Both the PRR and EBT railroads served the plant. The EBT provided coal to fire the kilns and the steam boilers, which powered the crushing pans, and the PRR offered direct shipping to customers.

As the first refractories manufacturers to recognize the Mount Union area's abundance of ganister, Harbison-Walker acquired the most convenient sources of supply. Naturally exposed rock floes on the north side of Jack's Narrows supplied quantities of ganister, necessitating construction of a dinky tramway to bring ore cars across the Juniata River and the PRR main line. In the late 1940s mining operations were relocated to the mountainside directly above the plant, and the crushing and washing operations were placed at intervals on the slope. This new arrangement necessitated razing about 100 company-built houses, located south and west of the plant. To shelter the displaced families, Huntingdon County's housing authority built its first federally supported project on the eastern edge of Mount Union.

Frank Pollicino, an employee in the Harbison-Walker quarry in the 1970s, questioned John Shaffer, superintendent of the mine, about the steps in Jack's Mountain. Shaffer reported that he had his quarry workers build the steps in 1936 to provide better access to their work place. The project took place after the 1936 flood had destroyed the dinky bridge, and Shaffer may have been looking for work to occupy his men until the damage was repaired and quarrying could resume.

Early in its history, Harbison-Walker's Mount Union plant specialized in the production of "silica shapes," the myriad shapes and sizes of silica brick used in constructing coke ovens. According to Robert Wagner, formerly in charge of coke-oven production for Harbison-Walker, the plant in Mount Union and a General Refractories plant in Claysburg, Blair County, were the only operations in the nation to manufacture silica shapes exclusively. When the Mount Union plant closed in 1985, former customers became alarmed at their inability to purchase replacement shapes for coke ovens still in use. In response, the retired plant manager and three former employees assembled the varied molds required for coke ovens and shipped them to a plant in Utah where replacement brick can be manufactured. The remaining molds were then sold for scrap in April 1989.

Harbison-Walker's dominance in the refractories industry depended in part on the impact presses it patented and made at Mount Union. When Wagner began work at the plant in 1942, hand-molding accounted for 90 percent of production and was considered essential to the standards of quality demanded in silica shape manufacture. Successful impact presses increased production and made a better product because the machine-pressed brick was more dense and hence better able to sustain the high temperatures needed in coke ovens. By the mid 1960s the plant's coke-oven brick manufacture was about half hand molded and half machine pressed; by the late 1970s, about 95 percent of these refractory coke-oven shapes were machine pressed. The company still regards

the press design as a valuable industrial secret, and has destroyed the Mount Union presses since closing the plant.

Oil replaced coal as fuel for the plant in the early 1950s, and natural gas replaced oil in the 1970s. The advantage offered by the more precise temperature control these fuels allowed was offset during the 1970s by the disadvantage of increasing cost. Like many turn-of-the-century industries, refractories manufacture found itself engaged in a losing battle with the rising price of fuel, labor, and stricter environmental controls; at the same time considerable technological change in the steel and coke industries required refractories to adapt to meet their changing requirements. Harbison-Walker laid off employees in large numbers during the 1970s, calling them back when occasional large orders came in. In 1985, the plant shut down permanently. The property has been sold and the kilns are being demolished.



Photo 83. Harbison-Walker, interior view with bucket line feeding molding machine on left. Photo by Jet Lowe.

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Krause, Corinne Azen. Refractories: The Hidden Industry. Columbus, OH: American Ceramic Society, 1987.

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Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.

Reflections: Mount Union Area. Mount Union: Bicentennial Committee, 1976.

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Wagner, Robert R., Former plant manager. Interview by author, 4 October 1988; by Sarah H. Heald, 29 August 1991.

Welch, Charles Howard. History of Mount Union, Shirleysburg and Shirley Township. Mount Union: The Mount Union Times, 1909-10.

Limekilns

0.25 mi. E of Route 26, 2 mi. N of Marklesburg, Penn Twp.

Construction date: ca. 1880

DESCRIPTION: Located two miles north of Marklesburg on property now owned by the U.S. Army Corps of Engineers, this double limekiln of coursed stone rubble measures approximately 30' x 15' in plan and is 25' high. The kiln has two slightly tapered openings on the north face, approximately 6' wide at ground level and 6' high, with iron lintels supporting the stonework above them. Small arched openings, recessed within the larger openings, provided access to the base of the round interior chambers in which limestone was burned; wood fragments on the face of kiln above the openings indicate that the work area in front was roofed at one time. An earth ramp on the south side slopes to the top of the kiln. The limestone quarry is located just south of the kilns.

Another double stone-faced kiln survives in seriously deteriorated condition in Warriors Mark Township, near the currently active Narehood Brothers quarry, on the Blair-Huntingdon county line. Built against a high natural bank, its stone front was apparently tied into the bank with a series of long rods. The front was intact ten years ago, but now has collapsed, leaving its firebrick-lined interior exposed. This double kiln featured brick arched openings, which remain intact.

HISTORY: The double stone limekiln, near the Brumbaugh homestead in Penn Township, is the largest and best-preserved example of the numerous stone limekilns scattered throughout Huntingdon County. Despite their importance in the production of burned lime for agricultural use, virtually no account of their operation or ownership could be found. Some limekilns appear in the 1873 Atlas of Blair and Huntingdon Counties, but the limekiln near the Brumbaugh homestead does not appear in the atlas and probably did not exist at that date. It is believed, however, to have operated in the last quarter of the nineteenth century.

Fred Campbell, whose father had the Warriors Mark kilns built by the McIlvaine brothers of Spruce Creek about 1920, reports that they were draw kilns, filled with alternate layers of limestone and coal, and ignited by a layer of dry wood placed at the bottom. Once the fire was established, stone and coal could be replenished at the top and lime drawn out at the bottom in a continuous process. The operation was active for about twenty years.

The majority of county limekilns are single stacks, some relatively small and crudely built; however a number of kilns contain well-crafted stone work, as impressive as the region's stone-constructed blast furnaces with which they are sometimes confused. Many of the limekilns are crumbling, revealing that their stacks, in most cases, are lined with commercial firebrick. All utilized naturally steep banks, with additional earth ramps constructed if required. In all cases the kilns are



Photo 84. Double limekiln.



Photo 85. Detail of right opening of double limekiln.

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immediately adjacent to the source of limestone. Available information indicates all limekilns in the county ceased operating by the 1940s, if not earlier.

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Log Limekiln

Along farm lane E of Black Log Valley road, 1.2 mi. NW of intersection with
Rte. 522, Cromwell Twp.

Construction date: ca. 1920

DESCRIPTION: This 18' x 12' limekiln in Black Log Valley, east of Orbisonia, has a stone foundation with a roofed work area in front and partial poured-concrete sidewalls. Above 25' high, it is built against a steep bank; the kiln has three walls of round 6" to 8" diameter logs, overlapped at the corners, surrounding a round firebrick-lined shaft. The space between the shaft and the outer walls is filled with stones and earth.

HISTORY: This well-preserved log limekiln is the best example of its type in Huntingdon County. Little is known concerning its operations, though agricultural lime was probably produced here. Information from a 1978 historic sites survey suggests it may have been built in the 1920s, a date consistent with the condition of its logs and the use of poured concrete in the work area of the kiln.

A similar limekiln, a mile south of this example, was in reasonably good condition ten years ago, but is now in ruins; two examples south of Saltillo are decaying. Information on their building and operation is scarce. An 1873 atlas shows limekilns in identical locations to those found near Saltillo, but none at the Black Log Valley locations.

Sources:

- Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.
Historic Sites Survey, 1977-1980. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
Long, Amos, Jr. The Pennsylvania German Family Farm. Breinigsville, PA: The Pennsylvania German Society, 1972.
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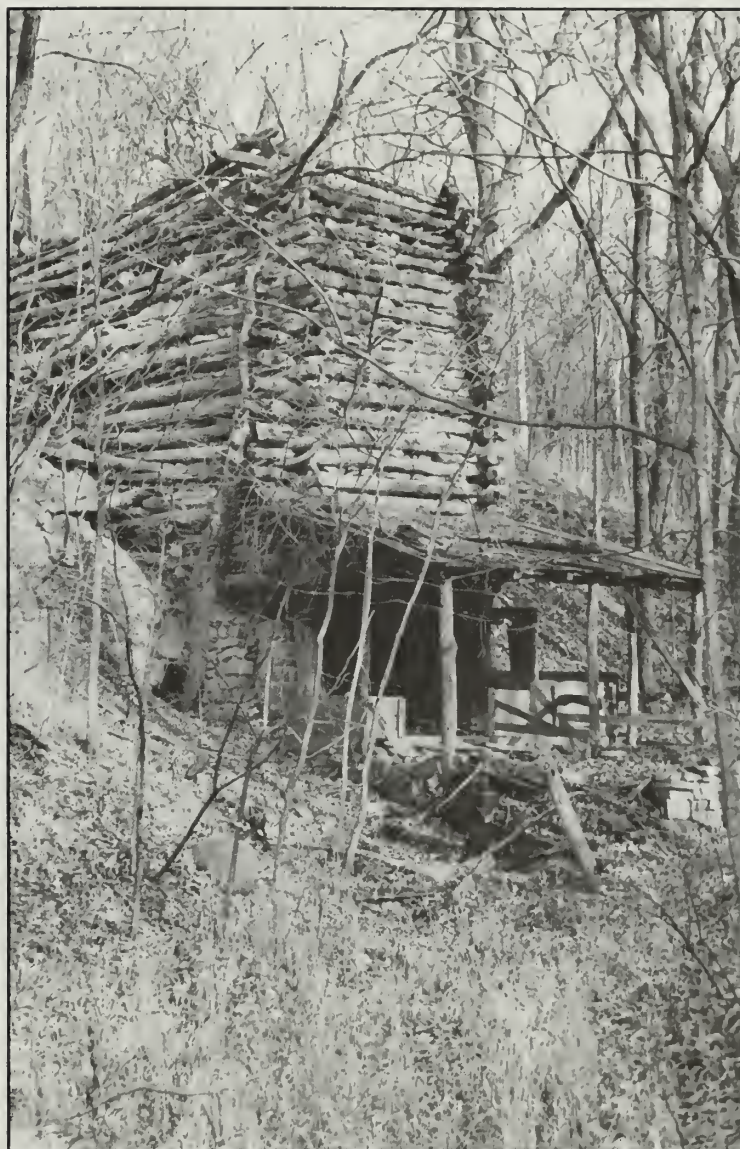


Photo 86. Log limekiln in Black Log Valley.

Minersville Mine and Coke Ovens

1 mi. E of Coalmont, N side of Rte. 913, Carbon Twp.

Construction date: ca. 1925

DESCRIPTION: This mine and coke works one mile east of Coalmont includes the ruins of two banks of ninety beehive coke ovens, the remains of a bank of Mitchell coke ovens, concrete piers of a trestle and coal tipple, foundations of several mine buildings, and several mine openings. The fronts of a number of beehive ovens retain the stone facing constructed around the doors.

HISTORY: In 1857 the Huntingdon and Broad Top Railroad Company opened the Prospect Mine on the Shoup's Run branch of the railroad one mile east of Coalmont. Robert Hare Powel

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purchased the mine in 1863, but operated it only briefly before turning his attention to his mines in Clearfield County and on the Youghiogheny River. In 1879, Powel revived his Broad Top interests, building a blast furnace at Saxton and constructing a set of Belgian coke ovens at the Prospect Mine to supply coke to the furnace. His were the first coke ovens at Minersville but are apparently different from those now at the site.



Photo 87. Minersville coke ovens.

A 1925 auction catalog described Joseph E. Thropp's iron and coal properties, the Thropp's Minersville-Melrose coke ovens, as well as an additional "sixty-seven partially built Mitchell ovens at the Gordon division." A 1913 map of Broad Top mines shows the Gordon Mine just west of the Prospect Mine, in the vicinity of the concrete piers that stand about a 1,000' west of the coke oven ruins. The Thropp brochure shows these piers supporting a tippie, with the coke ovens visible in the background.

The entire area between the coke ovens and the concrete piers contains low stone walls and foundations, remnants of the extensive operation shown in the Thropp catalog. The site may have considerable archeological potential.

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- Bennett, Lola M. The Company Towns of the Rockhill Iron and Coal Company: Robertsdale and Woodvale, Pennsylvania. Washington, D.C.: National Park Service, HABS/HAER, 1990.
- Gardner, James H. The Broad Top Coal Field of Huntingdon, Bedford and Fulton Counties. Report #10 Harrisburg: Wm. Stanley Ray, State Printer, 1913.
- White, I. C. The Geology of Huntingdon County. Harrisburg: Second Geological Survey, 1885.

Mount Union Refractories Company

Current name: North American Refractories Company

Construction date: 1911

E end of Pennsylvania Avenue, on W bank of Juniata River, Mount Union

DESCRIPTION: This Mount Union manufacturing plant occupies an eight-acre triangular site bounded by East Water Street, the East Broad Top yards, and the Juniata River. The complex includes an office, power plant, coal tipple, rock-crushing facility and storage silos, brick molding and drying plant, pattern-making and storage building, dust (or mortar) mill, three storage and shipping sheds, and two unused beehive kilns with round stacks.

HISTORY: The Mount Union Refractories Company was organized in 1911 and completed construction of its silica-brick manufacturing plant in 1912. The plant was the third such concern established in Mount Union in a period of less than fifteen years. Vast, readily accessible deposits of ganister rock, the raw material from which silica brick is manufactured, drew the brick companies to Mount Union. Being last on the scene forced Mount Union Refractories to develop quarries farther from its plant than those worked by Harbison-Walker and Mount Union Silica Brick. The East Broad Top Railroad, whose Mount Union yards bordered the Mount Union Refractories site, linked the plant to the company's quarries at Three Springs, and also provided Broad Top coal to fuel the power plant and kilns.

By 1919, Mount Union Refractories had expanded from eight to twenty-nine kilns and employed 885 men to satisfy the demand created by World War I. To alleviate the severe housing shortage Mount Union experienced during this period, Mount Union Refractories constructed company houses within the borough, in an area dubbed Little Kistler, and created the company town of Kistler, across the river in Mifflin County.

In 1922, the company constructed a fireclay brick plant in Clearfield County and changed its name to the U.S. Refractories Company. After a merger in 1930, U.S. Refractories became North American Refractories, which in its present abbreviated form, NARCO, remains the name of the Mount Union plant.

Employment at the plant leveled off by 1930 at about 450 and remained at that figure until the mid-1950s, when a gradual decline commenced. The closing of the East Broad Top Railroad in 1956 required the company to truck raw material to the plant, but oil and later, natural gas, had already replaced coal for fueling the kilns.

Further change was in store as steel manufacturers stopped using silica brick for furnace and oven linings. North American responded in the late 1970s by converting its Mount Union operation

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to the manufacture of specialties (non-clay refractories) for the steel industry. All but two kilns were razed about 1980. In 1988, fifty-seven employees occupied the plant that once required more than ten times that number in its operations. Many parts of the facility were obsolete and abandoned. The plant manufactured carbon magnesite refractories (trade named "Cardic") for electric steel furnaces and ladles, alumina porous products (trade named "Nargon"), and flexible non-permeable gaskets (trade named "Krojoc"). Its largest customer was Bethlehem Steel. NARCO was the only Mount Union refractories plant still operating, and it also ran a research center in nearby State College. Finally, in 1990 operations were shut down.



Photo 88. The two remaining beehive kilns at North American Refractories Company.

Sources:

A Bicentennial Keepsake. Mount Union: Allen Welch, 1976.

Haupt, Robert, Plant manager, North American Refractories Company. Interview by author, 4 October 1988.

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Reflections: Mount Union Area. Mount Union: Bicentennial Committee, 1976.

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Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album.
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Mount Union Refractories: Company town of Kistler

E side of Juniata River, across from Mount Union (Mifflin County)

Construction date: 1917

DESCRIPTION: Located on the northeast side of the Juniata River, across from Mount Union, the town of Kistler includes ninety-four company-built dwellings. These include seventeen two-family houses and seventy-seven single-family houses, built according to six distinct plans. Additional structures include a brick farmhouse, which predates the town, and a brick school built in 1936.

House types (using names recorded on John Nolen's plan for Kistler): "Double Valley Farm House" is a two-story duplex with a square plan, pyramidal roof, side entrance porches, and eight-over-one-light windows on the front. Six were built and all survive. "Double Mountain House" is a one-and-one-half-story duplex with a rectangular plan, gable roof with pent eaves, a wide shed-roof dormer on the front, and double front-entrance porches. Seven were built and three survive. "Double Capri Villa," a two-story duplex with a rectangular plan, contains a hipped roof, side entrance porches, and paired six-over-six-light windows on the front. Eight were built and all survive. "Georgian Cottage," a one-and-one-half-story single-family house with an L-shaped plan contains a gable roof covering a full front porch, center entrance, and a shed-roof dormer on the front. Thirty were built and all survive, though one is altered beyond recognition. "Vermont Farm House" is a one-and-one-half-story single-family dwelling with a rectangular plan, gambrel roof, pent eaves, center entrance with small covered stoop (some pedimented, some arched). Twenty-seven were built and all but one survive. "Norman Cottage" is a one-and-one-half-story single-family house with a rectangular plan (deeper than wide), an asymmetrical gable roof (gable end to the street) that is longer on one side to cover a side entrance porch, and a three-window bay projecting from the first-story front. Twenty-three were built and twenty-one survive. Kistler's street lay out and overall spatial arrangement followed Nolen's plan closely, but the number and type of houses built on most of the streets did not conform to the original plan.

HISTORY: Landscape architect and town planner John Nolen of Cambridge, Massachusetts designed the company town of Kistler for Mount Union Refractories Company in 1916. The New York architectural firm of Mann and MacNeill designed the dwellings and public buildings. As built, the town included six double- and single-family house types, as well as twelve four-family buildings that do not survive.

Nolen, a prominent city planner who gave the keynote address at the first national conference on city planning in 1909, presented his views on "The Industrial Village" in a 1918 publication of the National Housing Association. This work drew upon his experience with Kistler, and his preference for single-family houses is evident, as are his views on lot size, space between houses, street width, and the provision of sites for schools, community centers, parks and playgrounds. Kistler, in fact,

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exceeds the standards he considered desirable in the ratio of lots and streets to open spaces, having almost double the 15 percent he advocated as ideal for this purpose.



Photo 89. Kistler, "Double Mountain House" on the south side of Poplar Street.

The style of Kistler's two major public buildings, the community center, and the store/school, demonstrate the adherence of Nolen and Mann and MacNeill to the twentieth-century architectural predilection for colonial-revival design, especially as models for industrial city planning. The champions of this philosophy saw colonial-style buildings as expressions of our "national character," and, by extension, as influential in molding the character of industrial workers who lived there. An existing barn on the town site was transformed into a community center reminiscent of Mount Vernon, and similar design elements were incorporated into plans for the combination store and school. Writing about Kistler, Nolen commented on the refractory company's concern for community welfare: "It has endeavored not only to provide good houses in suitable surroundings, but also to cultivate a spirit of citizenship and social life among the inhabitants. The population being so largely foreign in its make-up, there is a distinct necessity for a lead to be given in the direction of Americanism."

Detailed maps and extensive photodocumentation of Kistler around 1920 indicate that Nolen's original plan is basically intact and that most of the buildings originally constructed remain. All houses are now privately owned and have been modified in a number of cases to suit owners' needs and tastes. The original building types are still easily recognizable, however, and many houses retain original shingle siding, clapboarding, windows and porches.



Photo 90. Kistler, "Vermont Farm House" on the south side of Poplar Street.

The public buildings, which Nolen considered so important in the planning of an industrial community, have fared less well. The community center was lost in a 1933 fire, and the combination store and school was recently demolished. A new firehouse replaced the original structure on a centrally located site, but the location chosen for a new school--built in 1936 at the eastern edge of town--violated Nolen's idea that towns should surround such centers of public activity.

The matter of a new school for Kistler did, however, provide the opportunity for a display of public pride. In 1924, when the school directors of Wayne Township purchased a prefabricated school to be erected in Kistler, Mount Union Refractories President R.P.M. Davis fired off a letter to the local newspaper, citing Kistler's distinguished origins and calling the ready-made school "inappropriate," "squatty," and "ugly." Davis's solution to the problem was simple: Kistler promptly became a borough, thus escaping the township school board's jurisdiction. Rather than suffer the indignity of a low-cost school in their midst, Kistler residents continued to send their children to classes in the company building until an appropriately stylish and substantial school was built as a public works project during the Depression.

Other public buildings and spaces in Nolen's plan have undergone change or were never built. A building at the corner of Hemlock and Riverside, identified on a 1919 map as the "Negro pool hall," is now a residence, and the athletic field that occupied the remainder of the block has been

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Photo 91. School and store building at Kistler. Built in 1917, this building was razed in 1991.

divided into building lots. The two churches included in Nolen's plan were never built. In fact, Kistler has had no churches within its boundaries, probably because of its proximity to Mount Union, which already offered a wide choice of churches when Kistler was built.

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Reps, John W. The Making of Urban America: A History of City Planning in the United States. Princeton: Princeton University Press, 1965.

Rhoads, William B. "The Colonial Revival and American Nationalism." Journal of the Society of Architectural Historians 25 (December 1976): 239-254.

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Myton Pottery Kiln

Current name: Suppes Estate

Construction date: 1873

1.2 mi. SE of Petersburg on road to Warrior Ridge; immediately adjacent to Conrail right-of-way, Logan Twp.

DESCRIPTION: All that can be observed at this site is a mound of earth, overgrown with trees and weeds, in a trash-littered area between the road to Warrior Ridge and the Conrail main line. Beneath the surface covering, however, lies the 18' x 14' stone and brick base of a stoneware pottery kiln.

HISTORY: Rebecca Myton and her son, Kennedy J. Myton, established a stoneware pottery business near Petersburg in 1873. An 1873 map shows the pottery location and lists the Mytons in the business directory as "R. Myton & Son, Manufacturers of Stone Water Pipe, Stone Pumps and Stone Ware, also Brick Manufacturers." They already operated a brickyard founded by Rebecca's husband, Samuel D. Myton, and thus had experience in the production of fired-clay products. John Magee was the first of a succession of potters and laborers employed by the Mytons. Edwin and Ephraim Thomas, brothers of William H. Thomas, who operated a stoneware pottery in Huntingdon in the 1870s, potted sporadically at Petersburg in the 1880s and 1890s.

Stoneware clay was mined on the Mytons' property nearby, and its discovery may have prompted establishment of the business. But the availability of local clay was not enough to offset the declining profitability of small stoneware potteries late in the century. It closed in 1896, and the kiln and other structures subsequently deteriorated.

In 1977 a dig, involving participants from Juniata College and the Huntingdon County Historical Society, uncovered the stone base of the kiln and exposed a labyrinth of arched brick flue chambers. While the site is now overgrown, archeological remains of the salt-glaze kiln, stoneware shards and kiln tiles and props are at the site.

Sources:

Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.

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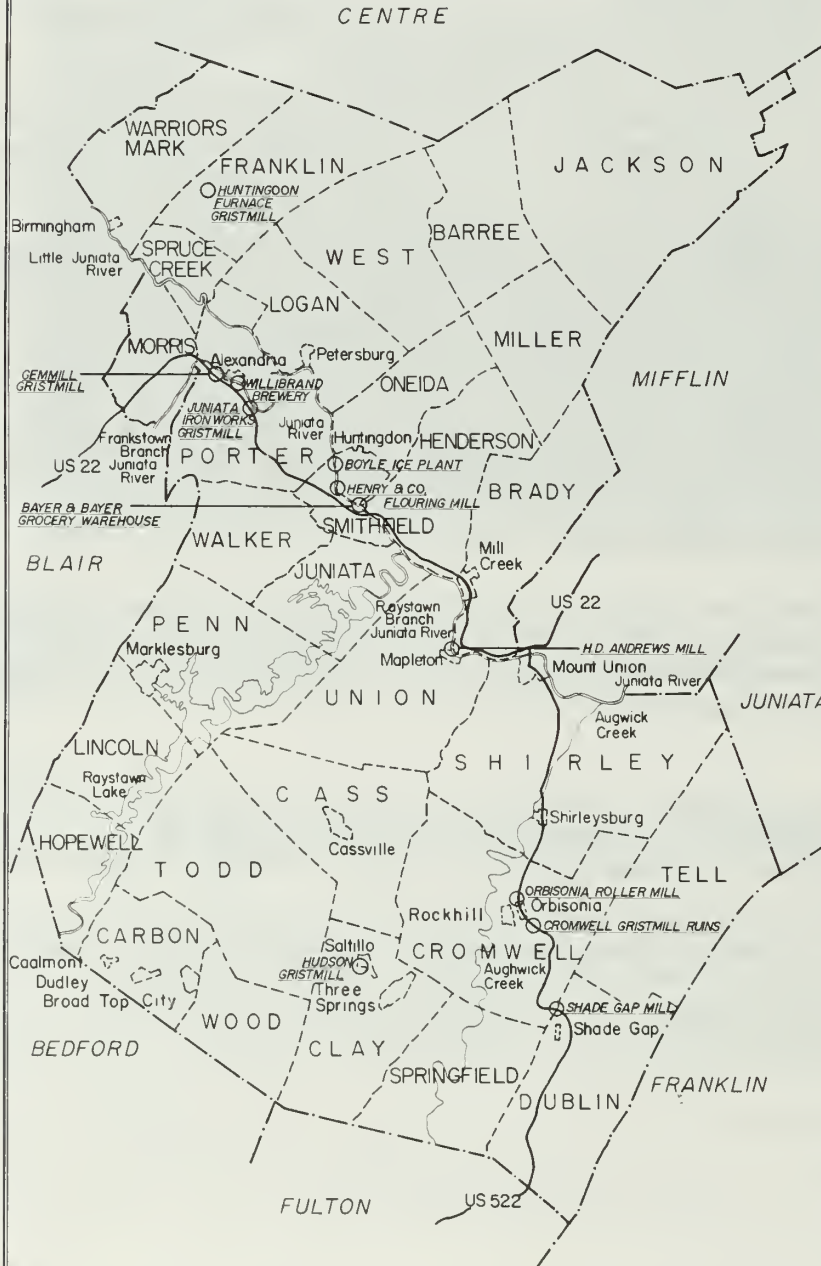
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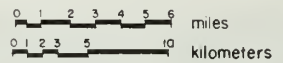
BULK PRODUCTS IN HUNTINGDON COUNTY PENNSYLVANIA



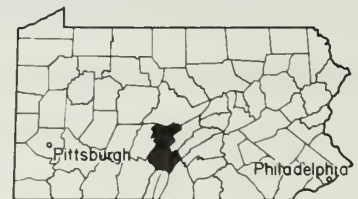
Legend:

- City or Borough. Mount Union
- Township. SHIRLEY

Scale:



STATE OF PENNSYLVANIA



HUNTINGDON COUNTY

Bulk Products

H. O. Andrews Mill

Current name: Mapleton Farm and Garden
N side of West Main Street, Mapleton

Construction date: 1914

DESCRIPTION: This 40' x 35', three-and-one-half-story frame mill has wood clapboarding, concrete-block foundation, and cross-gabled metal roof with a small fourth-story section housing the top of the elevator. There is a two-story frame addition and a series of semi-open one-story coal bins attached to the east side of the main building, and a one-story addition on the west side. Four large frame storage sheds have been built over the years: two predate 1920, one dates from 1937, another is more recent.

HISTORY: This feed and, later flour, mill developed as an outgrowth of H.O. Andrews' stave mill and contracting interests, in which he employed a large number of mules. In 1908, he and a group of farmers began buying feed in large quantities, and in 1914 Andrews hired Anderson Dell to construct a mill for grinding and storing feed. Soon after the mill was completed, Andrews added a coal-storage shed and became a coal dealer, as well. In 1918 he installed equipment for milling flour, but this commodity was produced for only a few years.



Photo 92. H. O. Andrews Mill.

Bulk Products

During the 1920s, Andrews purchased an additional mill and warehouse in Mifflin County and involved his three sons in various parts of the business, which became known as H. O. Andrews & Sons. With minor shuffling of personnel and responsibilities, the business remained relatively unchanged until 1948, when a heating-oil distributorship was taken on by the firm. After the elder Andrews' death, also in 1948, the feed, coal, and oil business was continued by his sons and grandson until 1986. The same products are handled by what is now called Mapleton Farm and Garden, which conducts business in the old buildings that have remained largely unaltered since the 1910s. Much of the original milling equipment remains in use.

Sources:

Employees of the Mapleton Farm and Garden. Interview by the author, 3 October 1988.

Love, James. Owner, Mapleton Farm and Garden. Interview by the author, April 1989.

Mapleton Centennial. N.p.: Historical Book Committee, 1966.

Bayer & Beaver Warehouse

Third and Allegheny streets, NE corner, Huntingdon

Construction date: 1900

DESCRIPTION: The warehouse is a 80' x 70' brick building, four-and-one-half stories in height, with a hipped roof of slate, and two hipped-roofed dormers on each slope of the roof. The building faces south toward Allegheny Street, with the first story opening on to a raised concrete loading dock. The first-floor level of the west facade features an arched doorway. The upper stories have ten windows across the front. The second- and third-story windows are tall, two-over-two-light arched double-hung sash; fourth-story windows are half as tall as those below, four-light, with arched tops. The building's newer west end and fourth story have cast-concrete window sills, while those in the original section are wood, now badly deteriorated. Signage on a wide band of brick, just below the fourth-story windows proclaims "Reeves, Parvin & Co. Wholesale Grocers" and, beneath it, the more weathered name of the original owners, "Bayer & Beaver." While the building appears structurally sound, it has received little regular maintenance in recent years.

HISTORY: The Bayer & Beaver wholesale grocery business began in 1894 as a partnership between T. Franklin Bayer and L. M. Kepler. In 1896, when Kepler sold his interest to John G. Beaver, the firm assumed the name of Bayer & Beaver. An 80' x 50' brick warehouse was constructed to house the company's operations in 1900, just west of the PRR's freight depot on Allegheny Street. The PRR siding was then extended to serve the grocery warehouse. The business was incorporated in 1903 with capital stock of \$125,000, and by 1912 it had sixteen employees, four of whom were traveling salesmen serving retail grocers in six counties. Around 1912 the expanding business required doubling the warehouse space by extending it 20' westward and adding the fourth and attic stories. Transfer of goods to the upper floors of the structure was accomplished by a large freight elevator.

In 1925, the warehouse was purchased by Reeves-Parvin & Co., a wholesale grocery firm founded in Philadelphia in 1828. The Allegheny Street warehouse served Reeves-Parvin until 1961, when operations were moved to a larger building in the recently developed Huntingdon Industrial Park. Since then, the former Bayer & Beaver warehouse has been used for storage by the State Correctional Institution.



Photo 93. Bayer & Beaver Warehouse.

Sources:

- Jordan, John W. A History of the Juniata Valley and Its People. New York: Lewis Historical Publishing Company, 1913.
- Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1901, 1906, 1911, 1926.
- Shedd, Nancy S. An Architectural Study of the Ancient Borough of Huntingdon. Huntingdon: John S. Rodgers Company, 1976.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Gemmill Grist mill

Current name: John J. Rhodes residence and hardware store

Construction date: 1833

W end of Main Street, Alexandria, at intersection with road to Barree, Porter Twp.

DESCRIPTION: Located at the west end of Alexandria's Main Street, this four-and-one-half-story mill measures 50' x 45' with a 20', two-story shed-roof addition on the west side. The first story of coursed limestone ashlar supports a three-and-one-half-story heavy timber post-and-beam frame. The mill's former clapboard siding is covered by red asbestos shingles; it has a metal gable roof on timber rafters and six-over-six-light double-hung windows (except for two contemporary "picture" windows placed in the front facade during conversion of the second floor to living quarters). The first three floors are now used as the owner's residence, hardware store, and

Bulk Products

woodworking shop. The mill's exterior character is well-preserved, and the condition of the building is excellent. No milling equipment remains.

HISTORY: In 1833 John, Jacob, and Zachariah Gemmill, grandsons of Alexandria's founder, Elizabeth Gemmill, constructed this grist mill, powered by the Frankstown Branch of the Juniata River. The mill was a business venture for the Gemmills, none of whom were millers, and was part of the growth and expansion that affected Alexandria following completion of the Pennsylvania Canal through the borough in 1832. Within a few years, Jacob Gemmill, who was also a physician, became sole owner. The 1850 census showed the mill, in which Gemmill claimed an \$11,000 capital investment, producing nearly 1,000 barrels of flour and 10,000 bushels of chop annually, with a value of \$9,300. In 1868, the mill was sold to J. H. Dysart, who was apparently responsible for the improvements reflected in the 1880 census. Three turbines powered the mill that year, driving four runs of stones, which enabled Dysart to produce flour and chop valued at \$27,000.



Photo 94. Gemmill Grist mill.

In 1888 Dysart sold the mill to Gustave Altman, whose son, Gustave Altman, Jr., eventually assumed ownership. In 1911, Altman Jr., operating as the Alexandria Flour Mill, advertised a specialty called Electric Light Flour, a name derived from the fact that the mill was used, concurrent with its flour and feed grinding, to generate electricity for the local Wilson Electric Company. How common this function of grist mills was during the early days of electric generation remains to be documented, but three Huntingdon County grist mills (see Huntingdon Furnace and Juniata Iron Works) are known also to have served in this capacity.

The flood of St. Patrick's Day 1936 destroyed the dam for this mill. It was not rebuilt, and the mill stood idle until sold in 1954 to John J. Rhodes. Rhodes used part of the building, from which the milling equipment had been removed, to operate an appliance business, and gradually converted additional portions to use as his residence, office, and woodworking shop. The fourth and attic stories have not been renovated.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties. Philadelphia: Louis H. Everts, 1883.
 Harshbarger, Jean P., et al. Hartslog Heritage. State College: Alexandria Bicentennial Association, 1975.
Huntingdon Directory, 1910-1911. Pittsburg: R. L. Polk and Company, 1910.
 Rhodes, John J., Owner of mill. Interview by author, 23 August 1988.
 U.S. Census. Products of Industry, 1850, 1860, 1880.

Henry & Company Flouring Mill

Current name: Laney's Feed Mill

Construction date: 1879

South Eighth Street, Portstown section, Huntingdon

DESCRIPTION: The Henry & Company Flouring Mill forms part of the present Laney's Feed Mill complex, which includes (in addition to the buildings described below): an historic warehouse behind the mill (see Lloyd and Henry Warehouse); a brick hardware store attached to the mill (1942); and the former Supplee-Wills-Jones milk plant (1920), which retains no historical integrity because of a serious fire and subsequent rebuilding. Henry & Company Mill (1879): a 60' x 45' pilastered brick building featuring metal tie rods with decorative star ends, heavy timber post-and-beam interior framing, and heavily hooded, arched windows. The original four-story building, with full basement and steep gabled roof with large dormers, was reduced to two stories with a flat roof after a 1935 fire. Elevators (1940): this pair of two-story structures are constructed identically but differ in size: 40' x 20', and 20' x 20'. The first stories are concrete block; second stories are stacked 3" x 3" x 10' timbers with vertical battens and tie rods in both directions, creating 10' x 10' grain bins; steep attics house the elevator heads. The larger elevator has twelve bins, the smaller one four. An exterior stairway ascends to the third floor of the larger elevator.

HISTORY: The four-story brick Henry & Company flouring mill was built in 1879 in the Portstown section of Huntingdon. It replaced an earlier mill at the same location, which had been established in 1851 by Mattern & Harrison in a converted canal warehouse. That mill was purchased in 1870 by Samuel E. Henry, Thomas S. Johnston, and B. Frank and Solomon H. Isenberg, who operated it under the Henry & Co. name until it burned in July 1879. The new facility erected by the partnership was Huntingdon's largest and most modern flour mill, with eight run of stones and an 80-horsepower steam engine. The Isenberg partners became sole owners in 1892, operating as the B. F. Isenberg Milling Company. Later the business was known as the Huntingdon Milling Company and was leased by various operators, although still owned by the Isenberg heirs.

Kermit Laney rented the mill in 1930 and operated it successfully until 1935, when a disastrous fire gutted the structure and destroyed his entire inventory. Laney purchased the burned-out building and began to re-establish the business in the first two stories and basement.

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Photo 95. Laney's Feed Mill, the former Henry & Company Flouring Mill.

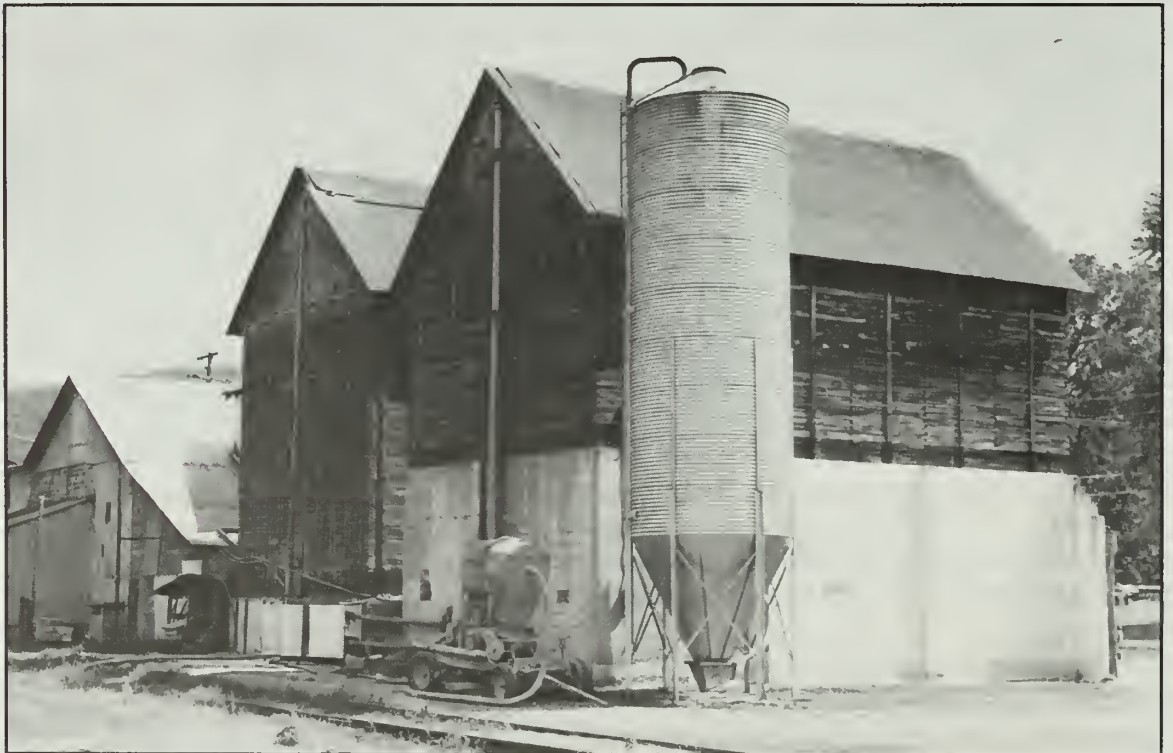


Photo 96. Laney's Feed Mill, storage elevators.

Before he could re-open, the St. Patrick's Day flood of 1936 wiped him out again. Laney rebuilt again and fifty-two years later remains in business at this site.

The Portstown section, including Laney's, was seriously damaged by the Agnes Flood in 1972. After this disaster all structures between the railroad and the river, except for the Laney buildings, were cleared by a federal redevelopment project. Laney's refusal to move has resulted in the preservation of the historic industrial structures he occupies.

Sources:

Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.

Laney, Kermit. Interview by author, 18 July 1988.

Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Hudson Grist mill

Current name: Crotsley Mill
Rte. 829, main street of Saltillo

Construction date: 1850

DESCRIPTION: This 36' x 28' frame grist mill in the middle of Saltillo borough has two-and-one-half story frame construction with clapboard siding atop a coursed rubble-stone foundation story. The structure's metal roof supports a centrally placed 12' x 6' gable-roofed fourth story, which houses the elevator head. A 24' x 12' two-story shed-roofed addition on the west side contains two large storage bins. The mill's 14'-diameter Fitz steel waterwheel, manufactured in Hanover, Pennsylvania, remains in place, though it is badly deteriorated.

HISTORY: Henry Hubbell, the pioneer owner of the land on which the town of Saltillo is situated, built grist and saw mills on North Spring Creek in 1797. A log dam one-quarter mile upstream provided water to a 14' overshot bucket wheel that powered both enterprises. In 1850, his heirs rebuilt the grist mill, which increased its value from \$400 to \$1,000. How much, if any, of the original structure was retained in the 1850 rebuilding is unknown. The mill was owned by George Hudson from 1850 to 1859, and then by Henry Hudson until 1864, when he sold it to A. K. Green before leaving to serve in the Civil War.

Philip E. Weaver and his son, Henry T., operated the mill from 1880 to 1920. In 1905 they replaced the buhr stones and installed modern milling equipment. In 1920, Edgar G. Weaver and Charles Crotsley further updated the operation by installing a 16-horsepower Fitz overshot steel waterwheel, with a 20-horsepower Fairbanks Morse kerosene engine for auxiliary power, used when water was low. They built the grain-bin addition to the west side of the mill over the tail race, and reinforced the log dam with concrete. Crotsley became sole owner in 1924, and continued the business until 1940.

In the early 1950s, Crotsley's son, Kenneth, removed much of the milling equipment in preparation for running a pre-bagged feed business in the building. This continued for only a brief period. The mill has been closed since that time, but remains in relatively good condition. It contains a cockle machine and a few other minor pieces of equipment.

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Photo 97. Hudson Grist mill.

Sources:

Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.

Crotsley, Kenneth. Interview by author, 30 November 1988.

Huntingdon County Tax Assessments for Clay Township, 1846-1876. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

Stuart, George A. "Curious Old Pennsylvania Grist Mill." The Millers Review and Dixie Miller (July, 1925): 17-18.
Out Of A Wilderness: Saltillo. N.p: Saltillo Borough Council, 1975.

Orbisonia Roller Mills

Current name: K. L. Mills Contracting and Supply
Corner of Water and Elliot streets, Orbisonia

Construction date: 1899

DESCRIPTION: Prior to its demolition in October of 1989 the Orbisonia Roller Mills stood at the corner of Elliot and Water streets. This 50' x 35', three-and-one-half-story frame mill was of post-and-beam construction with clapboarding, and contained a one-story rubble-stone foundation, metal roofing, and two-over-two-light double-hung windows. A covered hoist projected from the peak of the front gable toward Water Street, and cross-gable dormers housed the elevator heads at the top of the rear gable. The front facade had three heavily framed double doors with diagonal tongue-and-groove panels in the central bay of each floor. A two-story shed-roofed frame addition with one-story stone foundation on the west side of the mill was joined to a two-story concrete-

block ell that projected forward from the original front of the building. A one-story shed-roofed frame office extended to the east, in line with the original front.

HISTORY: The Orbisonia Roller Mill was built in 1899 by John and John Banks Ewing, father and son, on the site of earlier grist, saw, bone and plaster mills that had been operated by Thomas E. Orbison. At the elder Ewing's death in 1900, John B. Ewing became the sole owner of the new mill. In the 1920s, his son, John Boyd Ewing, entered the family business. Later, when W. Max and John Boyd, Jr., became associated with their father, the name was changed to J. B. Ewing & Sons. Two pieces of the Ewings' milling equipment remain in the building, and the top floor of the mill retains the hoists and elevator heads.

The mill complex most recently housed K. L. Mills Contracting and Supply, which opened in June 1987. In addition to selling building materials manufactured elsewhere, the business also fabricates custom-made wood roof trusses at this location. In October 1989 the mill building was gutted by a fire, and one month later the remains were torn down.

Sources:

Bi-Centennial of the Orbisonia Area. N.p.: The Bi-Centennial Committee, 1960.

The Daily News (Huntingdon, Pennsylvania), 11 November 1989.

Jordan, John W. A History of the Juniata Valley and Its People. New York: Lewis Historical Publishing Co., 1913.

McElroy, James Thomas, Jr. McElroy's Family Memories. Printed privately, 1930.

"Mills Opens Contracting and Supply Business." The Daily News (Huntingdon, Pennsylvania), 25 August 1987.

Sanborn Map Company. Orbisonia, Pennsylvania. New York: Sanborn Map Company, 1894, 1904, 1911.

Shade Gap Mill

1 mi. N of Shade Gap on Rte. 522, Dublin Twp.

Construction date: ca. 1846

DESCRIPTION: Less than a mile north of Shade Gap, along Route 522, stands this 40' x 30' three-story frame grist mill, with a one-story office joined to its southwest corner. The structure has a rubble stone foundation, timber post-and-beam framing, clapboard siding, six-over-six-light double-hung windows, and a metal gambrel roof with a centrally-placed cross-gable hoist housing on the west side. The mill's gambrel roof, unusual in this area, eliminated the need for an extension above the roof for the elevator heads. Virtually all the mill's late nineteenth- and early twentieth-century machinery remains in place.

HISTORY: Brice X. Blair erected this grist mill in the Shade Gap Narrows in 1846. Blair was the grandson of a pioneer settler in this area and the father of J. C. Blair, a prominent Huntingdon manufacturer. Blair sold the mill in 1854 to Mathias Shoop, who added an "engine and fixtures" (presumably a steam engine) to supplement the mill's water-powered wheel. Joshua Price became the owner in 1861, and the mill remained in the Price family until 1897. In 1912, it was purchased by C. S. Hess and was operated by he and his sons until 1973. Throughout its history, the mill produced flour and corn meal, as well as animal feeds.

The current owners purchased the mill in 1975, intending to continue milling buckwheat flour and corn meal, along with agricultural products. They erected modern structures adjacent to the old

Bulk Products

mill for their new equipment but have not yet produced flour. The old Shade Gap mill retains all of its early flour- and feed-milling machinery, including its water wheel, pulleys and shafts, elevators, and hoists. Only the diesel engine, most recently used by the Hesses for power, was removed. The majority of the old equipment was manufactured in Pennsylvania by the Wolf Company of Chambersburg and the Sprout Waldron Company of Muncy. The machinery occupies the first and third stories of the mill, with storage bins in the second story. The water wheel and shafting for powering the mill are located in the basement. The Shade Gap Mill is the only one of the county's seven surviving grist mills to retain so much of its early machinery.



Photo 98. Shade Gap Mill.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Booher, Gerald and Jan. Mill owners. Interview by author, 8 December 1988.
- Huntingdon County Tax Assessments for Dublin Township, 1845-1865. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Miller, M. A. Meet the Blair Family. Altoona: Blair County Historical Society, 1946.
- Shade Gap Area Centennial. Huntingdon: Shade Gap Historical Committee, 1971.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century 1887-1987: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

Willibrand Brewery

W end of Main Street, on S side, Alexandria

Construction date: ca. 1829

DESCRIPTION: Located on the south side of Main Street in Alexandria, at the west end of town, this two-story brick building is placed at the extreme south end of its lot. Measuring 75' x 30', it has a random range stone foundation, metal roof on its south side, and asphalt shingle on the north, and three large roof gables facing north. Window openings in the building have flat arches of bricks set on end; all original sash has been replaced and a number of door and window openings were changed and added in converting the structure into four apartments. Two large porches on the north side and two smaller ones on the south serve the building's residential use.



Photo 99. Willibrand Brewery.

HISTORY: Henry Willibrand was first taxed for a brewery in Alexandria in 1824, but its location is uncertain. In 1829 he purchased the lot on which the building now known as the Brew House stands, and in 1833 advertised that his new brewery was in operation. After Willibrand drowned in one of the town's canal locks in 1835, Henry and John Fockler operated the brewery, which they purchased in 1840. Their deed documents the existence of a 75' brick building, thought to be the one that survives. Production at the Fockler brewery, listed in the 1850 census, was 400 barrels of beer and 1,011 barrels of ale and porter, with a combined value of more than \$9,000. Henry Fockler sold the brewery property in 1856, and it is doubtful that the business continued, as no further tax or census records of production exist.

Bulk Products

Sources:

- Alexandria Borough, Huntingdon County Historic Sites Survey, 1977-1980. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Harshbarger, Jean P., et al. Hartslog Heritage. State College: Alexandria Bicentennial Association, 1975.
- Huntingdon County Tax Assessments for Porter Township, 1834-1860. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
- Leach, Sara Amy, ed. Two Historic Pennsylvania Canal Towns: Alexandria and Saltsburg. Washington, D.C.: National Park Service, HABS/HAER, 1989.
- U.S. Census Bureau. Products of Industry, 1850.

Manufacturing

J. C. Blair Company

Current name: Huntingdon Electric Motor Co.
Sixth-Seventh streets, Penn-Allegheny streets, Huntingdon

Construction date: 1885

DESCRIPTION: The J. C. Blair Company complex, in which paper tablets were manufactured, includes five buildings designated in company records and on Sanborn maps as "A" (corner of Sixth and Penn), "B" (corner of Sixth and Allegheny), "C" (west of and attached to B), "E" (fronting on Penn, west of A), "H" (attached to south side of E). Building A (1889): the principal Blair Building measures 100' x 87', with a seven-story front and a full basement story exposed at the rear. The brick bearing walls feature colored mortar and decorative terra cotta trim, on a



Photo 100. The J. C. Blair Company Building, Huntingdon. Photo by Jet Lowe.

foundation of rock-faced brownstone blocks. The interior is trimmed in quartered oak with coffered ceilings, heavy timber posts and beams, and wood floors. It retains its original freight and passenger elevators, as well as the vault, early wiring, and fixtures. Building B (1885): a 90' x 50', four-story brick building with a cut-stone foundation has tall paired windows headed by triple-light transoms with slightly arched tops. Building C (1901): a 72' x 50' addition to B is virtually identical in construction and detail. Building E (1930): a 250' x 87', four-story brick and steel-frame factory has a concrete foundation, large steel-framed windows, concrete floors in the first and second stories, and heavy wood floors in the third and fourth stories. Building H (1930): a 75' x 65', four-story brick warehouse has a steel frame, concrete foundation, and large square steel-framed windows. Buildings A, B, and C are now used only for storage; B and C are particularly deteriorated. Buildings E and H are used by the Huntingdon Electric Motor Company.

Manufacturing

HISTORY: The company began as a small bookstore purchased by J. C. Blair in 1867, to which he added a hand press for job printing. In the mid-1870s, he experimented with padded paper tablets and began the commercial manufacture of his invention in 1878. The paper tablet, which the Manufacturing Stationers Association credited Blair with inventing, became the foundation of the mammoth J. C. Blair Company that he developed and the complex of buildings he erected. In 1881 Blair converted a former church into a manufacturing plant, and in 1885 erected building B to house his rapidly expanding business, whose products were then being sold nationally and marketed internationally. In 1889 construction began on a new building designed by F. L. Olds, then the supervising architect at the Pennsylvania State College. Olds adapted the design of the Blair Building from H. H. Richardson's widely acclaimed Marshall Field warehouse in Chicago, commissioned just four years earlier, in 1885. When erected, the seven-story Blair Building was said to be the tallest structure between Pittsburgh and Philadelphia.



Photo 101. Interior of the fifth floor of the Blair Building. Photo by Jet Lowe.

An industrialist-philanthropist, Blair offered profit-sharing to his employees, and he paid to pave town streets, and built tennis courts, playing fields, and a park in Huntingdon. In addition, he had colored flags, that functioned as a weather-prediction system familiar to residents, hoisted atop his tallest building. When he died at the age of 49 in 1897, he left shares in the company to employees who carried on the business.

In 1949 the company became a division of Western Tablet and Stationery Corporation, which eventually merged with Mead Corporation. Operations were moved in 1965 to a modern plant in

Alexandria, and this complex of buildings was donated to Juniata College. Juniata College owned the buildings for less than ten years, after which Leon Hopkins acquired the property. Since then, portions of the buildings have been rented to various tenants for warehousing and retail business. Hopkins' business, Huntingdon Electric Motor Company, occupies two floors of building E and portions of buildings A and H. He has demolished part of the former power plant and smokestack.

Sources:

- Hopkins, Leon, Owner of the J. C. Blair complex. Interview by author, 29 July 1988.
- J. C. Blair Company. Records and Photographs. Huntingdon County Historical Society, Huntingdon, Pennsylvania. (This collection is from the 1965 donation of business papers and glass negatives. Leon Hopkins has preserved the plans and architect's drawings of the buildings found when he took possession.)
- Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1884, 1891, 1896, 1901, 1926 (updated to 1949).
- Shedd, Nancy S. An Architectural Study of the Ancient Borough of Huntingdon. Huntingdon: John S. Rodgers Company, 1976.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.
- Van Rensselaer, Mariana Griswold. Henry Hobson Richardson and His Works. New York: Dover Publications, Inc., 1969.

Huntingdon Car and Car Wheel Works

Eighteenth and Penn streets, Huntingdon

Construction date: 1884

DESCRIPTION: Three structures from nineteenth- and early twentieth-century industries survive at this site in Huntingdon borough. All are in a very poor state of repair. Double Erecting Shop (1884): this 250' x 115' pilastered brick building has an unusual double-gable roof whose trusses are concealed by a later ceiling, metal roofing, and six-over-six-light double-hung sash (many covered or removed). Machine Shop (1885): a 125' x 75' pilastered brick building with a metal gable roof on heavy timber Pratt trusses; some trusses replaced with steel I-beams and others reinforced with steel plates. The building has nine-over-nine-light double-hung sash windows. Powerhouse (1902): the 55' x 45', one-story pilastered brick building has a 20' square two-story section and metal roofing.

HISTORY: In 1872 W. A. Orbison and C. W. Welch selected a site along the Pennsylvania Railroad for the location of their Huntingdon Car Works factory, where freight cars were manufactured. The firm operated for about two years, and in 1880 the works was purchased and enlarged by Blain Brothers, who added a foundry for the casting of car wheels. In addition to the car shop and the wheel foundry, the complex included a soft-iron foundry, machine shop, planing mill, and blacksmith shop, powered by a 250-horsepower steam engine. The foundry's output exceeded the needs of the car works and 10 tons of soft castings were produced daily for other works. The enterprise employed 400 workers.

By 1901 the buildings were vacant. A series of different industries occupied the complex in the early twentieth century. The Keystone Boiler Works survived for less than five years, the Atlantic Radiator Company for less than ten years; they were followed by Pierce, Butler & Pierce Manufacturing Co., another manufacturer of radiators. This firm continued until the 1940s,

Manufacturing

although parts of the complex were occupied by other interests beginning in the 1920s, including the Juniata Company, a manufacturer of farm implements, and various warehousing concerns. A number of the early buildings associated with the car works were demolished during these years.



Photo 102. Huntingdon Car and Wheel Works, rear view of Powerhouse.

The forerunner of the Bonney Forge Corporation's Huntingdon plant, last occupants of the site, moved to this location after a fire destroyed their foundry at Ninth and Mifflin streets in 1949. Huntingdon Machine and Foundry, as the firm was then known, made defense-related products during World War II and the Korean War, as well as high-pressure pipe fittings for a Bonney Forge plant in Ohio. In 1963 Bonney Forge acquired the Huntingdon Machine Company. Today, the Huntingdon plant manufactures steel fittings and valves for high-pressure energy and industrial piping systems. Bonney Forge opened a separate valve-assembly plant in 1987 near Mount Union, and the company has moved to an all-new facility at the Mount Union site.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
- Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1884, 1891, 1896, 1901, 1906, 1911, 1926, 1949.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

J. B. Kunz Company

Current name: Huntingdon Electric Motor Company
 Fifth and Church streets, Huntingdon

Construction date: 1856

DESCRIPTION: Its condition deteriorating, this building at Fifth and Church streets in Huntingdon borough measures 110' x 50' and was built in two parts. Rear section, former Methodist Church (1856): a 75' x 50' brick building, now three stories but built as two (with two-story sanctuary), has a timber post-and-beam interior frame, stone ashlar foundation, paired windows (first story, six-over-six-light, second story, twelve-over-twelve-light), decorative brick cornice, and an asphalt roof. Front section (1912): the later 50' x 35', three-story addition has a raised concrete basement story, brick walls, a steel and concrete frame, and large rectangular steel-framed windows except for the first-floor office, which has arched window and door openings. The building is topped by a modillioned cornice and prominent front and side wall dormers bearing the company name.



Photo 103. J. B. Kunz Company building, view along Fifth Street.

HISTORY: The J. B. Kunz Company traces its origins to the firm of Brewster & Kunz, formed in 1894 by John Brewster, who supplied the capital, and J. B. Kunz, who knew the printing and bookbinding trades. Kunz saw a market for mass-produced bank passbooks and began manufacturing and marketing them concurrent to operating a small book and stationery store. The pass book business was so successful that Kunz soon bought out Brewster's interest and gave up the retail store to focus entirely on manufacturing. In 1901, after a fire at his Fourteenth and

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Moore streets location, Kunz purchased the vacant Methodist church at Fifth and Church and adapted it to serve as a factory; thus following the example of his former employer, J. C. Blair, who had operated his tablet business in a converted Presbyterian church. When the Kunz Company outgrew its new quarters, Kunz made an addition to the front and created a more factory-like appearance. The additional office and manufacturing space provided by this 1912 expansion served the company's needs until 1967, when a modern plant was built at Seventeenth and Penn streets. In the new location the company manufactures an expanded line of custom-designed business products, such as checkbooks and appointment books, in addition to their original product. The firm still serves primarily banking and financial institutions.

The Fifth and Church street building was acquired in 1967 by Huntingdon Electric Motor Company, which repairs and rebuilds large electric motors. In 1984, the company moved its operations to the 1930 section of the J. C. Blair Company complex. The Kunz building is now used for storage.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties. Philadelphia: Louis H. Everts, 1883.
- Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1901, 1911, 1926.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.
- Shore, Eugene T. The Founding, Growth and Development of the J.B. Kunz Company: 90th Anniversary Booklet. (Huntingdon, PA): J. B. Kunz Company, 1984.

G. W. Miller Cigar Factory

Main Street (Rte. 522), Shirleysburg

Construction date: ca. 1850

DESCRIPTION: Located on Main Street in Shirleysburg, this 35' x 30', one-story frame building, with its gable end facing the street, has weathered clapboard siding, a rubble-stone foundation, corrugated-metal roofing, and six-over-six- and two-over-two-light double-hung windows.

HISTORY: George W. Miller's cigar factory in Shirleysburg must have begun about the turn of the century. His daughter recalls that the business was established in the center of town in the second floor of the large general store building that Miller owned. The enterprise was expanded within the building presently known as the cigar factory. Later, when the general store required use of the second floor, the cigar business was housed entirely in the one-story frame building, formerly used by T. B. Landis as a blacksmith shop. Miller's cigars and stogies were made of tobacco imported from Lancaster County, which was stripped and wrapped at the Shirleysburg factory. The finished products were distributed by horse-drawn wagon to stores in Huntingdon and surrounding counties.

Miller operated his business until 1935. The only other such establishment in the county at the time was David Bard's one-man cigar factory, which also operated in Shirleysburg during the 1920s. Newspapers record some attempts at local tobacco growing, but probably most was obtained from growers in Lancaster County, where tobacco is still produced for the cigar market.



Photo 104. G. W. Miller Cigar Factory.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
Atlas of Blair and Huntingdon Counties, Pennsylvania. Philadelphia: A. Pomeroy and Company, 1873.
 McElroy, James Thomas, Jr. McElroy's Family Memories. Privately printed, 1930.
 Schreiber, V. Theodore. Shirley's Times and Places. N.p.: Shirleysburg Bicentennial Committee, [1976].

Mount Union Manufacturing Company

Current name: Dallco Industries

Construction date: 1919

Pine Street between North Jefferson and North Division streets, Mount Union

DESCRIPTION: Occupying the entire length of Pine Street between North Jefferson and Division streets in Mount Union, this two-story, 450' x 120', concrete-block building has three saw-tooth monitors, now completely sheathed with metal roofing and siding. Regularly spaced metal-framed windows form bands around the north and east sides of the building; those at ground level are neatly covered over. The well-maintained building is in good condition.

HISTORY: The Mount Union Manufacturing Company opened a factory for manufacturing men's suits and coats in 1920. The plant originally occupied a 120' x 40' lot in the middle of the present

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structure and employed sixty-two women in 1922. That year the L. Greif Company of Baltimore bought the firm, and constructed a 130' x 120' addition, extending east to the corner of Division Street. By 1928 the business had 174 employees, and the work force continued to expand through the 1930s and World War II, when at least part of the plant's production turned to the manufacture of army uniforms. Employment reached 314 in 1938. In the 1940s the company doubled the size of the factory and, by 1948 it had 591 employees.



Photo 105. Mount Union Manufacturing Company.

The location of the sewing factory in a town with three refractory plants and the East Broad Top Railroad yards, which employed a large work force of men, gave the company a large pool of females from which to draw its workers. Initially employment at the plant was almost exclusively female. In the 1950s, with the closing of General Refractories and the beginning of a decline in employment at the other two refractory plants, men began working at the textile factory. The number of workers actually outstripped the number of those employed in the brick works. By 1959, in fact, the sewing factory employed 725 workers, about 100 more than the combined work force of the two refractories.

In 1971 the Greif Company became a division of Genesco Corporation, which built a modern plant in a new industrial park east of Mount Union. The old facility was renovated and continued to employ 225 workers in making small parts for men's coats, which were assembled in the new plant. The new system was short-lived, however, and Genesco closed both plants in 1974.

Since 1978, the Pine Street factory has housed Dallco Industries of York, a manufacturer of women's garments, which currently runs three separate operations in the former Mount Union Manufacturing plant. The business is now expanding, taking over a long-vacant shoe factory on Division Street.

This garment factory has lost some of its original architectural features, particularly in the treatment of its saw-tooth monitor roof, but it is a well-maintained example of its type and the period. The business has special importance for Mount Union as a dependable economic anchor in a town that has suffered the boom and bust of the refractories industry, and as a reminder of the role of women in the region's industry.

Sources:

A Bicentennial Keepsake. Mount Union: Allen Welch, 1976.

Huntingdon County Tax Assessments for Mount Union, 1919-1946. Commissioners Office, Huntingdon County Courthouse. Huntingdon, Pennsylvania.

Commonwealth of Pennsylvania. Industrial Directories of Pennsylvania. Harrisburg: 1922-1959.

Susquehanna Silk Mill

Current name: Owens-Corning Fiberglas Corporation

Construction date: ca. 1917

Eleventh - Fourteenth streets and Susquehanna Avenue, Huntingdon

DESCRIPTION: The Susquehanna Silk Mill consists of two buildings in Huntingdon borough, constructed about 1917. Mill: this 840' x 65', two-story building has brick pilasters and brick walls supporting a flat roof. The wood tongue-and-groove roof is covered with felt and tar and is supported by steel beams resting on the brick pilasters. Its large, almost square, windows are now infilled with glass-block masonry. An 80' x 65' office section of the mill extends east to Susquehanna Avenue. The original building is barely visible from the street because of numerous additions. The entire complex is painted white with maroon trim. The projecting office section is clad in steel. The full length of original mill is visible on the west/railroad side. Machine Shop and Boiler Room: the one-story brick building with brick pilasters has tall arched windows and a gable roof supported by partially visible heavy wood trusses. The floor of the machine shop is constructed with wood paving blocks; the boiler room floor is concrete.

HISTORY: In 1917, the Susquehanna Silk Mill Company, headquartered in New York City, purchased three tracts of land in Huntingdon along the Pennsylvania Railroad, extending from Twelfth to Fourteenth streets. It constructed a large brick building for the manufacture of silk thread. In 1920 the plant was sold to the Huntingdon Specialty Company, which continued in the same line of manufacturing until 1940, when the complex was sold to the Huntingdon Throwing Company. Three years later the plant was acquired by the Defense Plant Corporation, a federal agency created to buy industrial facilities useful in the war effort. Owens-Corning Fiberglas, installed as a tenant in 1943, was attracted to the site in part because of the presence of a work force experienced in textile manufacture. The company produced insulating board for planes and ships, and yarn for aircraft wing liners and parachutes, as well as products for domestic and industrial use. Employment during World War II ranged between 900 and 1,175. Following the war, Owens-Corning Fiberglas purchased the plant and remained in Huntingdon where, despite

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Photo 106. Machine Shop of the Susquehanna Silk Mill.

fluctuations in product demand and increased automation, it continues to be the area's largest employer.

Currently, Owens-Corning Fiberglas at Huntingdon produces filament yarn from glass marbles as well as reinforcing mats used in auto-body repair. In the 1960s the plant began making Beta fibers, a material incorporated into space suits worn by the astronauts who walked on the moon in 1969. Production of fiberglas-reinforced tanks for underground storage began at the plant about the same time, but has since been moved to a separate facility near Mount Union.

Sources:

- Huntingdon County Deeds. Office of the Register and Recorder, Huntingdon County Courthouse, Huntingdon, Pennsylvania.
- Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1926 (updated to 1949).
- Scott, Robert. Personnel Manager, Owens-Corning Fiberglas. Interview by the author, 25 July 1988.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon: Huntingdon County Historical Society, 1987.

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Bald Eagle Water Company

Current name: subsidiary of Westvaco, Tyrone
0.5 mi. W of Birmingham on N side of Rte. 453, Warriors Mark Twp.

Construction date: ca. 1910

DESCRIPTION: Numerous springs supply water to this concrete-lined reservoir, conveyed via a series of stone and concrete culverts. The principal springs are enclosed in 5' to 6' cylindrical concrete receptacles with concrete roofs; surface run-off in the hollow is diverted from the collection basin by concrete diversion walls. Two buildings are used for water processing. Filtration Building: a 20' x 15', one-story building adjacent to the reservoir has pilastered brick walls, a full-story concrete foundation, a hipped roof of corrugated sheet metal, nine-light wood-framed windows, and a large east-side door faced with diagonal tongue-and-groove boards. Pumping and Chlorination Station (1931): the front (south) section is about 50' x 36' and the equivalent of two stories high, with pilastered brick walls, concrete foundation, corrugated-metal shed roof, brick cornice, tall paired twenty-four-light windows, four heavily framed double-width doors on the east, one on the west side; the rear section is approximately 50' x 36', one story, with pilastered brick walls, concrete foundation, corrugated-metal roof, and paired twelve-light windows.



Photo 107. Bald Eagle Water Company, Pumping and Chlorination Station.

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HISTORY: This water treatment facility of the Bald Eagle Water Company is located on a tract of land developed in the 1790s by John Cadwallader. As founder of the nearby town of Birmingham, Cadwallader expected the development of an industrial town, like its namesake, Birmingham, England. Around 1798, on land adjacent to the town, Cadwallader established the first paper mill in the Juniata Valley. Called the Laurel Springs Mill, it utilized the abundant springs that dot this hollow as a source of the pure water required in paper manufacture. The paper mill operated as part of an enterprise that included grist, saw, and oil mills. The mills were acquired about 1830 by John McCahan, publisher of the Huntingdon Gazette, which was printed on Laurel Springs paper.

The paper mill closed about 1850, and the springs area was later developed as a park and picnic ground known as Hundred Springs. In 1909 the property was purchased by the Bald Eagle Water Company, a subsidiary of West Virginia Pulp and Paper Mill of Tyrone (Westvaco), for development as a water source for the paper mill. Company records indicate construction of a dam and pumping system in 1910, but tax assessments suggest construction of the present buildings in 1931 when a "water shed, pumping station and fixtures" valued at \$23,000 were first listed.

When the Tyrone mill stopped making its own pulp in 1970, daily water usage decreased. Currently, the Westvaco paper mill uses 2 million to 2.5 million gallons of water per day from Hundred Springs, which is more than half the plant's total water consumption.

Sources:

- Africa, J. Simpson. History of Huntingdon and Blair Counties, Pennsylvania. Philadelphia: Louis H. Everts, 1883.
Deed Book L-5:400, Huntingdon County Recorder of Deeds Office, Huntingdon County Courthouse, Huntingdon, Pennsylvania.
Huntingdon County Tax Assessments for Warriors Mark Township, 1910-1956. County Commissioners Office, Huntingdon, Pennsylvania.
Weiss, Martin, Superintendent of Engineering, Westvaco. Interview by author, 22 September 1988.

Huntingdon Borough Water Works

Water Works Street, E of Second and Washington streets, Huntingdon

Construction date: 1927

DESCRIPTION: Located at the east end of town, the Huntingdon Borough Water Works occupies a brick building with a 50' x 25', two-story main block and a 50' x 25', one-story wing. Both have asphalt shingle hipped roofs and raised concrete-block foundations. Twelve outdoor flocculation (or settlement) basins occupy a raised concrete area adjoining the north side of the two-story portion of the building. A round, steel 100,000-gallon tank sits at the southeast corner of the main building. The property is surrounded by a chain-link fence.

The interior of the facility has red tile floors and white ceramic tile filter beds. Eight marble stands house valves and controls in the filter room. An open well from basement to roof, just inside the main entrance, allows large pump motors to be raised by a hoist in the second-floor ceiling. A second hoist above a double door lifts bagged chemicals to the second-floor storage area.

HISTORY: The Huntingdon Borough Water Works was constructed in 1927 to replace the town's early pumping system. The new facility included a complete treatment plant, with a capacity of 2 million gallons per day. It utilized six outdoor flocculation basins and four rapid sand-filter beds inside the plant. Capacity was increased twofold in 1938 by doubling the number of basins and filter beds, and enlarging the size of the one-story wing.



Photo 108. Huntingdon Waterworks.

According to plaques in the building, Morris Knowles, Inc., of Pittsburgh carried out the design and the Pitt Construction Co. built the waterworks. Mechanical equipment by Roberts Filter Manufacturing Co. of Darby, Pennsylvania, remains largely intact. The gauges and control panel were installed in 1927 and 1938 and are still in use.

Water is drawn from a low, concrete dam in Standing Stone Creek, it passes through a carbon taste and odor filter in a small building on the creek bank, and is conveyed to the plant through a 20" pipe. Chlorine to kill bacteria, alum to settle turbidity, and lime to raise the phosphorus level are mixed with the raw water before it goes to the outdoor basins to settle and evaporate excess chlorine. Water is then forced rapidly through sand-filter beds, treated with more chlorine if necessary, and fluoridated, before going to the 175,000-gallon concrete well under the building. Low-level pumps move water within the plant, and three high-level pumps (the largest is 200 horsepower), used in combination, satisfy consumer demands on the system. Excess water is pumped into the mains flows to two reservoirs on a hill above the town, which have a combined

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capacity of 5.25 million gallons. Consumption averages 1.5 million gallons per day -- still within the capacity of the 1938 expansion. The waterworks has experienced a few changes in monitoring the water quality; however the borough's waterworks has not been substantially altered and the original equipment still performs well.

Sources:

Coffman, Jay, Plant Superintendent, Huntingdon Borough Waterworks. Interview by author, 22 July 1988.
Flow Diagram, Huntingdon Borough Waterworks. Huntingdon, Pennsylvania.
Photograph Collection. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

State Reformatory: Water Works

Current name: State Correctional Institution:Water Works Construction date: ca. 1889
E side Pike Street; N side Pennsylvania Avenue; SE side Rte. 26 (three separate locations), Smithfield Twp.

DESCRIPTION: Three widely separated buildings function as part of the system supplying water to the State Industrial Reformatory (now the State Correctional Institution) at Huntingdon. Round Reservoir (1889): this one-story pilastered brick building, 70' in diameter, has a conical slate roof with cupola and windows evenly spaced around the building for natural light. It contains an in-ground concrete reservoir. Springhouse (1889): the 15' x 10', two-story building of coursed sandstone has an asphalt-shingle roof with wide overhanging eaves, decorative scroll-saw work under the eaves, and small double-hung windows. Pumphouse (1895): one-story building with brick bearing walls.

HISTORY: Construction of the Pennsylvania State Industrial Reformatory began at Huntingdon in 1882, and the complex was ready for occupancy in 1889. The prison's potable water came originally from Mason Springs, one-half mile west along Route 26, where a stone springhouse and concrete reservoir were constructed. Water flows from this reservoir by gravity to the prison powerhouse; there it is chlorinated before being pumped to the round-brick reservoir, elevated on a small knob 1,000' from the northwest corner of the prison wall. From this structure, water flows back to the prison by gravity, attaining about 20 pounds pressure. This water source is no longer used for drinking.

A small brick pump house, built around 1895 on the southwest bank of the Juniata River, slightly northeast of the main prison entrance, was designed to supply water directly from the river for fire protection. Later, the pump house furnished water to a reservoir on a hill north of the prison, which supplied water for flushing toilets. Water was also provided to an irrigation system installed in the institution's extensive truck garden on Cypress Island, in the Juniata River.

In 1935, the prison entered into an agreement with the Penn Central Power and Light Company to use the water from Price's Spring, 2,300' north of the pump house along the river. Water flows by gravity to the pump house, which was enlarged to accommodate sump and chlorination equipment, as well as three pumps to lift the water to the hillside reservoir. From there it develops 43 pounds pressure as it flows to the prison by gravity. The water from Price's Spring is now used by the institution for its potable water supply.



Photo 109. State Reformatory, Reservoir.

Sources:

Beaver, Allen, Maintenance Supervisor, State Correctional Institution. Interview by the author, 8 August 1988.
 Prison file. Huntingdon County Historical Society, Huntingdon, Pennsylvania.
 Sanborn Map Company. Huntingdon, Pennsylvania. New York: Sanborn Map Company, 1891, 1896, 1911.

Tuscarora Oil Company: Pumping Station

Between Aughwick Mills and Shirleysburg, 2 mi. N of Shirleysburg, Shirley Twp.

Construction date: 1908

DESCRIPTION: Four structures remain from the oil-pumping station at the base of Mine Bank Ridge, southeast of Mount Union. All are in fairly deteriorated condition except the largest brick building. Office: a 24' x 15', one-story brick building with pilastered corners has timber rafters and sheathing but no roof, windows, or doors. A small round window in the front gable and remnants of well-crafted window and door moldings in the interior are extant. The structure was most recently used as a hog pen. Frame storage building: this 48' x 28', one-story frame building with clapboard siding and a metal roof has an unfinished interior and dirt floor. The structure leans noticeably. Large brick building: this 52' x 23', one-story pilastered brick building with a flat roof appears to date from a later period, and it is in better condition than the surrounding structures. Small brick building: the use of this small 10' x 8' brick building with a metal roof is unknown.

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HISTORY: Alfred C. Bedford, chairman of the board, of Standard Oil Company of New Jersey, purchased land in Shirley Township in 1908 along the right-of-way of a proposed east-west cross-country pipeline. In 1910, he transferred the land to the Tuscarora Oil Company, Ltd., for the construction of an oil-pumping station. The location was convenient to the East Broad Top Railroad (EBT), which delivered coal to fuel the boilers running the pumps. Maps of the EBT main line in 1917 indicate five structures at the site; two of them appear to be the brick office and frame storage building there now. The other three buildings are gone. Three frame employee houses are mentioned in deeds for the property but do not survive. The two brick buildings remaining at the site (other than the office) apparently date after 1917.

The Buckeye Pipe Line Company of Ohio purchased the site in 1960 from the Tuscarora Pipe Line Company (formerly Tuscarora Oil Company, Ltd.), and in 1964 conveyed it to Buckeye Pipe Line of Pennsylvania. The present owners of the property, Joseph and Gerald Bliss, acquired it in 1980 and use the field surrounding the former pipeline buildings as a cow pasture. A current cross country pipeline right-of-way still cuts through the property. It is one of four crossing the county just south of Mount Union.

Sources:

- East Broad Top Railroad and Coal Company. Right of Way and Track Map. Orbisonia, PA: Office of the Chief Engineer, 1917.
- Deeds Z-5-78, 60-158, 63-103, 157-96. Recorder of Deeds Office. Huntingdon County Courthouse. Huntingdon, Pennsylvania.
- Rainey, Lee, and Kyper, Frank. East Broad Top. San Marino, CA: Golden West Books, 1982.

Valley Rural Electric Cooperative, Inc.

1.5 mi. N of Huntingdon Borough line on Rte. 26, Oneida Twp.

Construction date: 1940

DESCRIPTION: The Valley Rural Electric Cooperative building, along Route 26 north of the Huntingdon Borough line, measures 100' x 50', is two stories high and constructed of yellow brick that extends to or below ground level. Horizontal bands of metal-framed windows, emphasized by metal awnings in a contrasting color, are the art moderne building's principal architectural feature. Its flat roof is characteristic of this style as well.

HISTORY: The Rural Electrification Act of 1935, one of President Franklin D. Roosevelt's New Deal programs, offered federal support to establish rural electric cooperatives. The intent was to bring electricity to farmers and other rural residents who lived beyond the normally profitable service areas of existing utility companies. The movement to form what became Valley Rural Electric Cooperative began with a few Blair County farmers who enlisted the interest of like-minded persons in several neighboring counties. The resulting cooperative organization was chartered in November 1938. The first lines were activated just one year later, using power purchased from existing generating plants.

Valley Rural's headquarters was established outside Huntingdon in 1940, in a new building that has served as the cooperative's operations center for nearly fifty years. Administrative, maintenance, and construction operations are all based here.

Membership in the cooperative increased from about 1,000 member-customers when the headquarters was built, to more than 15,000 current members in seven contiguous counties. An excess of 2,200 miles of electric line has been constructed.

Valley Rural is one of thirteen Pennsylvania rural electric cooperatives that joined together recently to construct a run-of-the-river generating plant at the Army Corps of Engineers' flood-control and recreation dam on the Raystown Branch of the Juniata River, five miles south of Huntingdon. The plant came on line in May of 1988. The waters of the Raystown Branch had been utilized previously by a hydroelectric generating plant constructed between 1910 and 1912. The plant was demolished in the early 1970s for construction of the high-level dam.



Photo 110. Valley Rural Electric Cooperative.

Sources:

- Minutes of the Directors. Valley Rural Electric Cooperative, Huntingdon, Pennsylvania.
- Romeo, Mary Ellen. Darkness to Daylight: An Oral History of Rural Electrification in Pennsylvania and New Jersey. Harrisburg: Pennsylvania Rural Electric Association, 1986.
- Shedd, Nancy S., and Harshbarger, Jean P. Second Century: A Huntingdon County Bicentennial Album. Huntingdon, PA: Huntingdon County Historical Society, 1987.
- Utilities file. Huntingdon County Historical Society, Huntingdon, Pennsylvania.

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Warrior Ridge Dam and Power Plant

Current name: American Hydro Power Company

Construction date: 1906

2 mi. S of Petersburg, along Conrail main line, Logan and Porter twps.

DESCRIPTION: This complex on the Frankstown Branch of the Juniata River, between Petersburg and Huntingdon, includes the Warrior Ridge dam (two separate structures: principal dam south of power plant, auxiliary dam north), a power-generating plant, four houses, and a building said to have been a church. Main Dam (1905-07): a 400' long, 27' high, hollow dam of reinforced concrete, with 1'-high plank flash boards, extends between the power plant on the north side of the river and the steep slope of Warrior Ridge on the south. Auxiliary Dam (1907): a 110' long dam of the same design and materials extends north from the power plant across an area washed out by high water while main dam was being built. Power Plant (1906-07): a major portion of the plant was demolished in 1978, but the original arrangement of buildings and operations is apparent from what remains. The western wall of the power plant with seven arched chambers in its base remains, and five of the chambers house 3-megawatt turbines. Turbine No. 3 is the only original turbine. It was made by S. Morgan Smith and dates to 1906; it underwent repairs following the 1972 Agnes Flood. The other four turbines date to ca. 1966 and were made by James Leffel and Company of Springfield, Ohio. They were installed at the Warrior Ridge plant in the early 1980s, having been purchased from the Appleton Paper plant in Appleton, Wisconsin. Portions of the walls and foundations of the steam plant remain. A concrete railroad trestle that supplied coal to the steam plant is now planked for vehicle access. Four Company Houses (1907): three frame bungalows, measuring 30' x 25', have first stories of German siding and second stories of wood shingles, with asphalt shingle roofs and reinforced-concrete foundations. One two-story, four-bay double house has German siding, an asphalt roof, and a concrete foundation. The houses have been privately owned since 1952. The bungalows are no longer identical in every detail, but their original character is still apparent. All are very well maintained. Church (1910s): this 18' x 15', one-story frame building with a concrete foundation and floor and an asphalt roof, is currently used to treat water for the houses.

HISTORY: This dam and power plant are located in a gap through Warrior Ridge and were constructed between 1905 and 1907 for the Juniata Hydro-Electric Company of Philadelphia. William H. Cushman, chief engineer for Juniata Hydro-Electric, designed the power house and hydraulic installation. A. G. Wood, a consulting engineering from Philadelphia, planned the auxiliary coal-fired steam plant. It is somewhat unusual for a hydro-electric plant also to contain a steam plant, however the wide fluctuation in water available in the drainage area led to the addition of the steam auxiliary plant so as to ensure electricity during dry periods. The General Electric Company designed the electrical installation and manufactured the generators and electrical equipment. While the plan called for six generator hydro-turbines, only four were installed initially. Each turbine unit consisted of a pair of 39" S. Morgan Smith wheels that operated at 200 rpm and had a 1,000-horsepower capacity. Direct-connected to each turbine was a General Electric 50-kilowatt 3-phase 60-cycle AC generator. The steam plant contained four boilers used with two GE 500-kilowatt Curtis two-stage vertical turbo-generators.

The Ambursen Hydraulic Construction Company, a major dam builder in the United States in the early twentieth century, designed and built the dam. As one of the earliest examples of a covered



Photo 111. Warrior Ridge Power Plant, spillway and Ambursen dam. Photo by Jet Lowe.



Photo 112. Interior of Warrior Ridge Ambursen dam, showing the hollow-core construction. Photo by Jet Lowe.

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version of a buttressed hollow-core dam, patented by Ambursen in 1904, the facility at Warrior Ridge was the focus of widespread attention in the engineering press.

The plant, which had a total capacity of 8,000 horsepower, contracted to distribute power to Huntingdon, Altoona, Tyrone, and other surrounding communities. Local newspapers reported the Huntingdon Gas and Electric Company's switch to AC power in order to utilize electricity from the new dam. Because of the power plant's remote location, the tiny community of Warrior Ridge was created so that employees could live near their work. The 1910 census enumerated a superintendent, operator, and two "stationary firemen" in residence, with two powerhouse laborers boarding a short distance away. A number of railroaders occupied a small settlement on the other side of the tracks, and eventually a railroad flag stop was established at Warrior Ridge, and a small passenger station built. The power company provided free electricity and water to residents of the company houses. The small frame building now used to treat water for the town is said to have been built about 1918 as a community church.

The entire complex was acquired in 1911 by the Pennsylvania Hydro Electric Company, when Juniata Hydro was unable to satisfy its mortgages. In 1927, the power plant and dwellings were purchased by the Pennsylvania Electric Company (Penelec), which operated both the hydro- and steam-generating facilities until 1952. At that time, the steam plant was closed and the company houses sold to individual owners. Penelec retained only the hydro-electric facility.

In the 1972 Agnes Flood most of the plant's turbines and other equipment was destroyed. It stood idle, and high estimates on the cost of rehabilitation caused the company to consider removing the dam, an alternative that would have required complete restoration of the inundated area to its former condition. Finally, in 1979 Penelec began a rehabilitation project, which was abandoned due to the expense of the accident at Three Mile Island. In 1984, American Hydro Power Company purchased the plant from Penelec. The terms of the sale included an agreement that Penelec would purchase the power generated by the 2.8-megawatt station. After restoration the plant was brought back on line in 1985.

Sources:

Ambursen Hydraulic Construction Company Pamphlet, Dam Collection. Division of Engineering and Industry, National Museum of American History, Smithsonian Institution, Washington, D.C.

"Description of the Wonderful Hydro-Electric Plant, Warrior Ridge." Semi-Weekly News (Huntingdon, Pa.), February 14, 1907.

Huntingdon County Deeds and Plans. Recorder's Office, Huntingdon County Courthouse, Huntingdon, Pennsylvania. "Hydro-Electric Developments at Huntingdon, Pa." Electrical World 22 (December 1906): 1191-94.

"Juniata Water & Water-Power Company." Electrical World 20 (January 1910): 157-59.

McMullin, Polly. "'White Elephant' Power Station To Go Back on Line." The Daily News (Huntingdon, PA), 22 March 1985.

Petersburg and Shaver's Creek Valley. Huntingdon: Petersburg Bicentennial Committee, 1976.

Ross, George. Interview by author, 23 August 1988.

Schuyler, James Dix. Reservoirs for Irrigation, Water-Power and Domestic Water-Supply. New York: John Wiley & Sons, 1909.

The Monitor (Huntingdon, PA), 22 February 1907.

"The Warrior Ridge Hydro-Electric Plant at Huntingdon, Pa." The Engineering Record 22 (December 1906): 678-81.

Whipple Dam

Current name: Whipple Dam State Park
5 mi. NW of McAlevy's Fort on Rte. 26, Jackson Twp.

Construction date: 1936

DESCRIPTION: Whipple Dam State Park surrounds a small lake used for boating, swimming, and fishing. The lake is formed by a stone and earth dam, built by the Civilian Conservation Corps (CCC) in 1936 to impound the waters of Laurel Run. The dam has a stone spillway and a gated sluiceway at its northwest end. The spillway is gradually sloped and curves gently between low stone retaining walls. The sluice is about 2' wide, and the gate is normally closed. The end of a turbine shaft, once used for electric generation at this site, projects above the flat concrete surface on which the small generating tower stood. The tower was removed recently when substantial repair and modification of the dam was undertaken.



Photo 113. Whipple Dam, spillway.

HISTORY: At a point near the present recreation dam at Whipple Dam State Park, the waters of Laurel Run were formerly dammed to power Little's (or Lytle's) sawmill, thought to be among the earliest developed in this northernmost part of the county. The last private owner of the tract on which the park is located was Osgood Whipple, from whom it takes its name.

Development of the area into a state park was accomplished with the labor and construction skill of the CCC, which constructed the dam, forest roads, picnic pavilions, and small bridges and culverts necessary to make the area usable for public recreation. The remoteness of the site meant that it

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was not served by existing power lines; thus, the dam was designed with a small power plant to generate electricity for lighting the park. Because of its low output the power plant became obsolete when rural electric lines reached the area in the early 1940s.

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